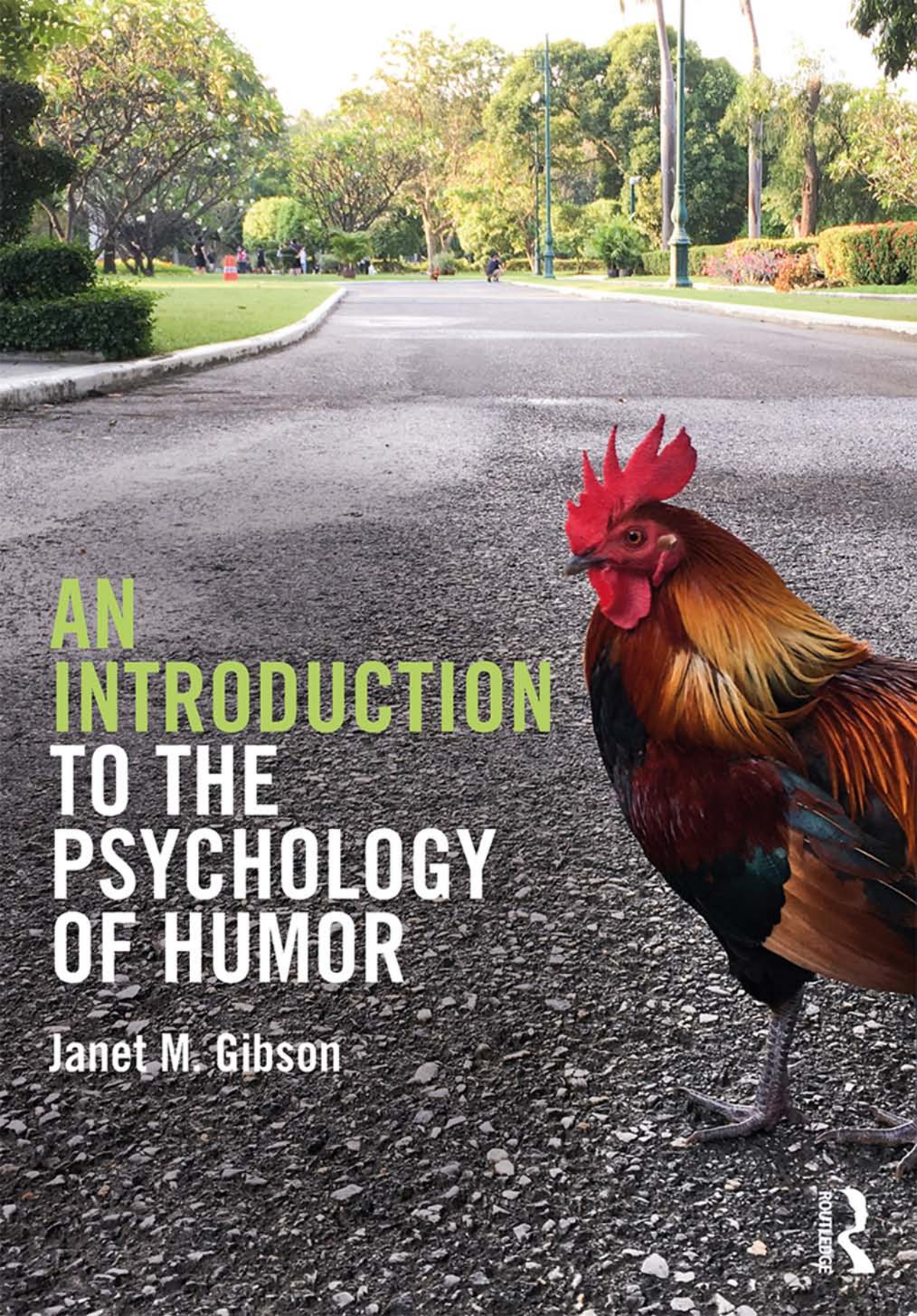
AN
INTRODUCTION
TO THE
PSYCHOLOGY
OF HUMOR
Janet M. Gibson
ROUTLEDGE

AN INTRODUCTION TO THE PSYCHOLOGY OF HUMOR

An Introduction to the Psychology of Humor provides a comprehensive and accessible overview of psychologists' research on humor. Drawing on research from a variety of psychological perspectives, from cognitive and biological to social and developmental, the book explores factors that affect our detection, comprehension, liking, and use of humor.

Throughout the book, theories and paradigms of humor are explored, with each chapter dedicated to a distinct field of psychological research. Covering topics including humor development in children and older adults, humor's effectiveness in advertisements, cross-cultural psychology and humor's functions in the workplace, the book addresses the challenges psychologists face in defining and studying humor despite it being a universal and often daily experience.

Featuring a wealth of student-friendly features, including learning objectives and classroom activities, *An Introduction to the Psychology of Humor* is an essential read for all students of humor.

Janet M. Gibson is Professor of Psychology at Grinnell College, USA.

AN INTRODUCTION TO THE PSYCHOLOGY OF HUMOR

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INTRODUCTION

"*Two muffins were sitting in an oven. One muffin says, 'Wow, it sure is hot in here!' The other muffin says, 'Ahhh!!! A talking muffin!'*" One person may think this is a very funny joke, and another may find it only mildly amusing. Why? The study of the psychology of humor provides answers to this and other questions we can ask about the who, what, when, where, and how humor happens.

Humor is typically a pleasant experience we have all experienced, but, like many concepts and behaviors in psychology, is not simple to study or understand. Fortunately, theories and methodologies in all areas within scientific psychology suggest the means to understand and explain humor as a vital aspect of our everyday life.

The study of behavior is like a mystery story, where, through observations, experimental designs, and data analyses, psychologists find evidence to refute or support theories to offer the best description, explanation, and predictions. The mystery of humor is less mysterious with a clear definition.

Definitions of humor as a psychologist sees it: a multi-faceted view

Psychology researchers use no one humor definition, as there are many aspects to humor. Humor is

- playful use of incongruity or alternative interpretations
- a positive world view
- a behavior that makes others smile, laugh, or lighten their mood
- a physiological response
- a social activity
- a tool used to counter stressors

The psychology perspectives

The mystery of behavior can be likened to a combination lock (see Figure 0.1). Through the process of science, psychologists test for the combination code that unlocks the mystery by systematically going through alternatives until the best one is found.

The various perspectives of psychology are analogous to a column in the lock's combination. There is a column for each perspective (i.e., cognitive, developmental, social, etc.). All

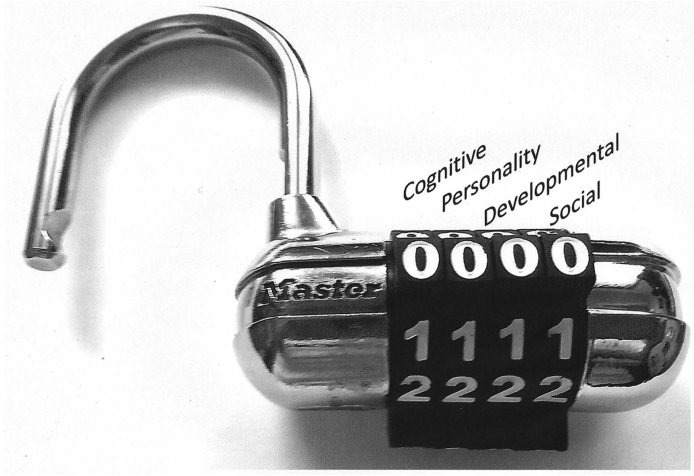


Figure 0.1 With a combination lock, each column must have the proper value aligned to unlock. The various perspectives of psychology provide elements that together unlock the secrets of humor.

these areas work on finding the correct code to unlock the mystery. Researchers typically work on only one column at a time, though one area may suggest a code to try in another column. Students need to remember that to open the lock, to truly understand humor, all columns must be involved. To have a comprehensive model of the psychology of humor, we need to know about the interplay of cognitive, biological, personality, social, cultural, and developmental factors.

Organization of the book

The order of chapters follows the order found in many Introduction to Psychology courses, except that it starts with the cognitive psychology perspective because the cognitive theory of incongruity resolution frequently appears in the other perspectives' investigations of humor. Classes which use a different order will find linkages across chapters to help use and connect related information. The perspective drives the questions researchers ask.

1. Cognitive psychology: about how we think and mentally represent information

What are the mental processes needed for understanding or producing a joke? Why is it hard to remember jokes? The chapter takes an in-depth look at incongruity-resolution theory and presents humor research in the cognitive areas of attention, memory, language, and thinking.

2. Biological psychology: about the brain and our biological nature

What areas of the brain are used in humor? Did evolution give humor adaptive value? The chapter covers brain structures involved in humor processing and discusses evolutionary psychology's view on humor.

3. Personality psychology: about what makes us unique

Why do people differ in how they appreciate or use humor? What are some humor scales that measure components or styles of humor? The chapter covers personality traits and humor styles which help explain variance in humor appreciation and production.

4. Social psychology: about us as social beings and our interactions

How do attitudes, attributions, and stereotypes influence our humor? How might humor facilitate social interactions (e.g., friends or married couples)? The chapter covers various social aspects and issues connected with particular social groups (i.e., race and gender).

5. Cross-cultural psychology: about comparisons across cultures and subcultures

How do beliefs and norms of a culture matter to what is perceived as funny? How might culture matter to the frequency or type of humor produced? This chapter compares and contrasts differences in humor use and appreciation, including uncertainty avoidance and gelotophobia (fear of being laughed at), across cultures.

6. Developmental psychology: about how we change across the lifespan

How do children's cognitive and social development influence humor perception and comprehension? Across the lifespan, how does our humor appreciation and production change? This chapter examines developmental abilities in cognitive (e.g., Theory of Mind) and social (e.g., social referencing) domains that influence children's humor comprehension and appreciation and examines research with special populations and older adults.

7. Health psychology: about achieving a healthy mind and body

Can humor buffer stress? Do those who enjoy humor enjoy better health? This chapter focuses on humor's role in maintaining health, reducing stress, and enhancing behavioral changes for improving health.

8. Positive psychology: about what we do well

Is humor a character strength? How does humor increase subjective well-being? This chapter examines humor as a character strength, as a playful way to correct others, and as an intervention to increase well-being and life satisfaction.

9. Clinical psychology: about when feelings or behavior are abnormal

How do clinical theories frame humor? Does humor play a role in therapy or treatment of various disorders? This chapter covers Freud's psychodynamic theory, Apter's reversal theory, existentialism, cognitive and behavioral therapies, aggressive humor, several clinical disorders, and the role of humor in therapy sessions.

10. Applied settings: about behavior in real-world settings or situations

How is humor studied in real-world settings? How might humor help meet goals in these applied settings? This chapter examines research concerning the effectiveness of humor in advertisements, the workplace, and educational materials.

Recap

Humor is ubiquitous, essential, sought after, and frequently experienced in our daily lives. This textbook illustrates the methods of psychological inquiry and highlights how psychology's theories explain humor detection, comprehension, appreciation, and production across many populations and situational contexts. Humor challenges researchers to define, manipulate, measure, and interpret it through the theories and methods of our various perspectives. Evidence gathered from these psychological perspectives helps us unravel the mystery of humor. The take-away message from this research is that the study of humor is important, informative, and thriving within each perspective of psychology.

Suggested readings

Check out the *International Society of Humor Studies'* website www.humorstudies.org (and their journal *Humor*) for usable information throughout the course, such as conference programs and humor rating scales. Also see the *European Journal of Humor Research*: https://europeanjournalofhumour.org/index.php/ejhr

Endlich, E. (1993). Teaching the psychology of humor. *Teaching of Psychology*, *20*, 181–183.

Tierney, J. (2007, March14). The muffin joke? Stop, you're killing me. *The New York Times*. Retrieved from https://tierneylab.blogs.nytimes.com/2007/03/14/the-muffin-joke-stop-youre-killing-me/

Suggested class activities (start the first week and use throughout the course)

Activity 0.1. Collect initial data and evaluate changes

In the first week, watch a comedy TV show or film clip (in class or by yourself). Write about your appreciation of the humor–what was funny to you? Did you dislike certain parts? Further, defend your reactions (i.e., provide justifications). Which definition(s) of humor seem(s) to apply? Every few weeks, return to your written report, apply what you have learned so far, and modify your descriptions and analyses. In small groups, discuss how your initial report changes throughout the semester: what is changing, and what is not changing? Practice applying concepts throughout the course to enrich your analyses. Late in the semester, watch a different comedy to discover how information you are learning indeed has changed (improved!) the way you view humor and/or the depth of your analyses. Make explicit comparisons to the before-and-after quality of your thinking about what you found funny.

Activity 0.2. Collect personal examples of humorous experiences

Keep a humor journal throughout the course. Daily or several times a week, record humorous events that you encounter (either as a participant or as an observer). Put in descriptions of the event with details that you can use throughout the course as examples in class

discussions–e.g., whether others were present, the relationships of the people present (e.g., friends, family, mix genders), a description of the event, and the reactions of all present. This journal provides material that you can use throughout the course as examples for class discussions, writing assignments, or for understanding the textbook material.

Activity 0.3. Encourage a critical eye

Keep a study journal focused on questions and criticisms you have throughout the semester. Research in the psychology of humor operates among criticisms and biases. You need to express in writing your questions, objections, doubts, and speculations. When asked in class if you have questions or comments, these written criticisms and questions will help you contribute to discussions and debate issues in class.

Activity 0.4. Focus on the psychology perspectives

Throughout the course, write about how the study of humor research has helped you understand a perspective of psychology, either its theories or its paradigms. Develop an explicit appreciation for strengths, weaknesses, and challenges the perspective has for studying any behavior, not just humor.

1 Cognitive psychology

Learning objectives

1. Understand the cognitive perspective of psychology.
2. Understand how this perspective applies to humor.
3. Apply information processing concepts to incongruity-resolution theory.
4. Appreciate influences of attention, memory, language, decision making, problem solving, and time perspective on humor processing.

Assumptions of the field

1. Behavior results from the interaction between the environment and our mind. It is not a passive reaction to external stimuli. For example, we interpret jokes, and this interpretation influences our behavior and thoughts.
2. Our mind is like an information processing system (a computer) that encodes, stores, and retrieves information. This system is limited and takes resources to do its processing; therefore, we are often cognitive misers who use strategies and heuristics that save time and effort.

Cognitive perspective and principles

Cognitive psychology adopts a rational philosophy which asserts that our thoughts influence our behavior so that we interact with the world rather than merely respond to it. Our interpretations of the environment are as important as, or even more important than, the actual stimuli we encounter. This perspective focuses on how our conscious and unconscious thought processes operate and influence our behavior. Cognitive psychologists seek to identify and model how our knowledge and thoughts are processed, organized, and used over time and multiple contexts.

Core concepts

Because thoughts are unobservable, cognitive psychologists use the computer as a model of the mind, where information flows through the system from input to output. According to the **information processing model**, we transform new information from our senses into mental representations. Processes of attention and rehearsal help maintain important information long enough in short-term memory until it is processed and stored in long-term memory. **Bottom-up processing** occurs when the sensory and physical attributes of information drive this processing. These processes may be most involved in jokes that play with the sound of language or their delivery (e.g., volume, timing). **Top-down processing** occurs when knowledge and meaning drive processing within the system. Because meaning plays a crucial role in humor processing, most jokes are processed top-down.

We **mentally represent** knowledge in multiple ways. Some representations contain sensory information from experience, and some are highly abstract. We have some conscious awareness of these representations. For example, we can backtrack in our thinking and see why we were expecting a different ending to a joke than the actual punchline. In general, mental representations in long-term memory are networked in an organization that allows for **spreading of activation**. When in activated states, they may be accessible and available to our conscious mind, but even when not directly used, representations spread their activation to networked information, where even **remote associations** increase their accessibility for further processing and availability for retrieval due to the activations of other representations.

Schemas are highly organized knowledge networked mental representations. They contain generalized knowledge of the subject matter and include appropriate behaviors, emotions, beliefs, values, and expected contexts. For example, schemas of birds contain biological information, settings in which they are found, whether we like or fear them, and what to do if we see one up close moving toward us. Stereotypes are schemas for classes of individuals. Most setups of jokes serve to activate particular schemas and the punchline to activate a different one. For example, in the joke, *The Dark Ages were so named because the period was full of Knights*, the schema of the Dark Ages and medieval times is activated and sets us up to think about kings and knights, and we then have to activate the meaning of *night* and *dark* to get the second meaning.

Schemas' tight organization allows for speedy access to a tremendous amount of information. Schemas are so powerful that their automatic activation cannot be stopped (don't think about elephants! Too late, we already activated that schema), and they influence the processing of all incoming information (top-down processing) with or without our attention or intention. Relevant schemas become activated as we hear a joke, and all information within the schema becomes immediately available for use (Wyer & Collins, 1992).

Cognitive psychologists ask questions such as what thought processes are needed to find jokes funny? Why is it hard to remember jokes word for word? Are all forms of humor processed the same way, or do cartoons require different processes than verbal jokes? How do cognitive processes of attention, memory, language, or thinking help explain, describe, predict, or control what we experience as funny?

Incongruity-resolution models of humor

The incongruity-resolution model (Suls, 1983) proposes that humor involves the activation of an incorrect schema, the detection of another correct schema, the realization of the error in using the first schema, and feeling amusement with the new interpretation. Theorists debate whether all these processes happen in two or three steps, whether additional processes are needed to handle our beliefs and expectations, and the extent to which social contexts, emotions, and surprise play in the detection and resolution of the incongruous activated schemas. They also debate whether incongruity is necessary, sufficient, or a consequence of the processing. By fine-tuning such distinctions, researchers hope to distinguish funny jokes from annoying ones, jokes from problems or riddles, and why some jokes make us laugh until we cry, whereas others barely get a response.

Many researchers use a three-stage model of humor (Cundall, 2007; Deckers, Jenkins, & Gladfelter, 1977). To understand a joke, we need to be able to:

1. **Mentally represent the setup of the joke**. These mental representations are created by knowledge acquired from experience, our culture, expectations, and beliefs. Events (e.g., language, pictures) will activate their relevant schema, usually without effort. Our initial response is to believe this schema is the correct one.
2. **Detect an incongruity in multiple interpretations**. We become aware that our dominant, initial representation has something wrong in it when the punchline occurs, and another mental representation is activated.
3. **Resolve the incongruity.** Resolution may come about by inhibiting the initial, literal, nonfunny interpretation, leaving us with the alternative, funny one. We experience funny feelings (e.g., mirth, joy, amusement) from the resolution of these incongruous schemas. We may find it rewarding to have discovered the alternative meaning or find it amusing to see that our initial prediction was a bit hasty (Amir, Biederman, Wang, & Xu, 2015). The emotional response–amusement, laughter, or liking–may depend on the probability of thinking of the alternative meaning. **Semantic distance** often makes the joke funnier: the more unrelated the association that resolves the incongruity, the more amused we are (Hillson & Martin, 1994). For example, in *Far Side* cartoons, it may be funnier to see snakes acting like humans than dogs acting like humans.

Examples of this model

- *What has four wheels and flies?* Our initial mental representation is of a transportation vehicle like an airplane that has four wheels and flies. Then we hear the punchline, "a garbage truck", and we realize the word "flies" is ambiguous and garbage trucks have four wheels with insects flying around them. The riddle is amusing because we realize we didn't initially see the double meaning of *flies*.
- *"Is the doctor at home?" the patient asked in his bronchial whisper. "No", the doctor's young and pretty wife whispered in reply. "Come right in"*. The patient-making-a-house-call schema changes to a lover-of-the-doctor's wife schema. This joke can be funny because we didn't originally activate the correct schema and because the correct one involves sexual taboo (see violations of social norms in Chapter 4 "Social Psychology").

- Three men are on a deserted island when they find a lamp with a genie in it. After rubbing the lamp, the genie emerges and says, "I will give each of you one wish". The first man says, "I wish I were home" and vanishes immediately. The second man says, "I wish I were home" and also disappears. The third man says, "I miss my friends, I wish they were here". When hearing this joke, we activate our knowledge about genies granting three wishes. We also activate desert island stories and how the characters need a rescue. This knowledge tells us that finding the genie is a wonderful opportunity because options for rescue are limited. The first two men do as expected in accord with this knowledge. The story becomes funny when the third man violates our expectations; we realize that we thought there was just one possible ending, which wasn't funny, and we are amused that we made a false assumption of only one ending.
- This joke is also funny because the story ends with the characters being exactly where they were before, due to the third man's wish. The ending is incongruous with a rescue. We can easily imagine and empathize with the reaction of the first two friends. The empathy we experience is our Theory of Mind at play, our ability to imagine other people's thoughts. As discussed in Chapter 6 "Developmental Psychology", empathy with the state of mind of the characters matters to finding humor in many jokes.

Types of incongruity

Incongruity occurs in humor in various ways (Shultz & Horibe, 1974). These illustrate the forms increasing in cognitive complexity.

Phonological incongruity

Why do people become bakers? Because they knead the dough. The sound is the same for two words: "need" and "knead".

Lexical incongruity

Two cannibals are eating a clown. One says to the other, "Does he taste funny to you?" The word *funny* has two meanings: odd and comical. ("Dough" in the previous joke is an example of lexical incongruity, too.)

Surface structure incongruity

I saw a man-eating shark in the aquarium. That's nothing, I saw a man eating herring in the restaurant. Surface structure concerns syntax and the rules of word order. We can parse the first sentence either as *man* or *shark* as the object of the verb *saw*.

Deep structure incongruity

Sign in a tailor's shop: "Please have a fit upstairs". Deep structure concerns how we represent the meaning of utterances. *Have a fit* either means throw a tantrum (funny) or experience a fitting (literal).

Temporal incongruity

Announcements on the radio: "Call 555–5555 for more information on getting a vasectomy. And now the winner of the do-it-yourself competition". When sentences occur temporally back-to-back, we often connect the meanings into one mental representation instead of having separate, independent representations. In this example, the two sentences are not meant to be connected, but their timing creates a humorous mental representation when listeners connect them.

Background knowledge incongruity

A wealth of unspoken, background information becomes available in an activated schema that enhances comprehension and appreciation of jokes. For example, imagine a cartoon that shows personified death commenting on the fashion of the victim who lies in a pool of blood; Death says, *Red was never your color*. This cartoon was rated as funnier than the same cartoon with a hooded human instead of the grim reaper (Samson & Hempelmann, 2011). Samson and Hempelmann (2011) found that participants rated cartoons with background incongruity as funnier than similar ones without it. Figure 1.1 illustrates a cartoon with background knowledge that enhances its humor.

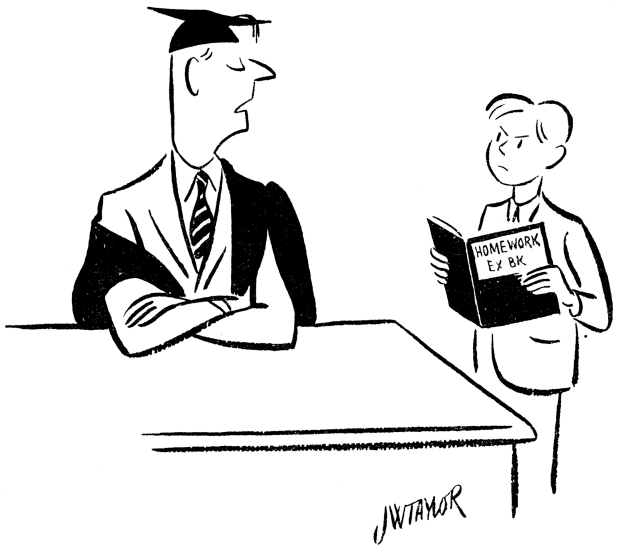


Figure 1.1 The background information of the scholar-teacher is incongruous with his father doing his grading for him. The cartoon would likely be less funny without the academic regalia.

Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

Figure-ground reversal

Gestalt images are classic examples of two meanings in one picture (such as the frequently used vase/face, duck/rabbit, and old/young lady pictures in psychology textbooks). Perceivers are able to shift which meaning to keep in mind as both meanings are correct and present in the picture. Veale (2008) viewed figure-ground reversal as a cognitive tool for reframing a nonfunny situation. In his view, salient items or the big picture are the foreground, and the second meaning is in the details. The foreground activates one schema, and the background activates a different schema. According to Veale (2008), feelings of surprise arise when the shift occurs from one perception to the other, and we realize there is a second interpretation that we didn't see at first. Further, feelings of humor (amusement) can arise when we realize both interpretations are simultaneously possible.

Does modality matter to incongruity resolution?

The cognitive processes needed to understand a joke may depend on whether the joke is written, oral, or pictorial. Can there be processing differences of humorous cartoons (pictorial) compared to verbal jokes (auditory or visual)? The answer may be yes. When we hear a joke, the stimulus is presented only once, time passes, and all the work is now happening in memory. When we see a cartoon, however, it remains present usually for the entire time that we are processing it, suggesting that the activation of the initial schema continues, even after the detection of incongruity.

In an examination of modality effects with humor, Fein, Beni-Noded, and Giora (2015) found that the meaning of a cartoon's initial schema was not inhibited even after detection and resolution occurs. They used a **priming paradigm**, where they presented the cartoon followed by a word. In a priming paradigm, the first stimulus (in this case a cartoon) facilitates the processing of a second stimulus (in this case a word). For example, a series of panels showed some darts sticking to what looks like a dartboard due to its spiral design; the last panel shows the board is really a snail's shell. Fein et al. (2015) examined whether a word related to the cartoon's dominant initial interpretation (e.g., dartboard) would be responded to faster than a word related to the punchline (e.g., snail). They reasoned that if a picture's initial meaning was still activated after incongruity resolution, then we would still observe faster responding to words related to the initial meaning. Indeed, they found that response time (RT) to the probe word was faster when it was related to the picture's initial meaning even with some delay. Thus, the activation of schemas based on pictures, unlike verbal jokes, persist when it remains in view and is difficult to suppress even when a second meaning becomes activated.

Why we don't get the joke

According to incongruity-resolution theory, the punchline must create a mental representation that conflicts with the one set up by the joke. The timing of the punchline helps activate the second meaning after the first meaning is fully processed. We use external signals such as accompanying laughter to signal the receiver that something funny just happened to motivate the creation of a second interpretation if it has not happened spontaneously. We

must have the requisite knowledge for a second schema to activate. Sometimes, the needed knowledge is cultural or specific personal experiences, which may explain why jokes may not transfer across languages, cultures, or generations because knowledge and experiences are not necessarily shared across them.

Additionally, we typically must be able to inhibit to some degree the initial mental representation and allow the literal meaning to be less important than the funny one. This reinterpretation process diminishes the importance of the initial representation (Wyer & Collins, 1992). Typically, to have a mental representation in an activated state, other knowledge needs to be inhibited. For example, when we think of things to do tomorrow, for example, we inhibit thinking about things we did yesterday. This is how we have clarity of thinking, control over our train of thought, and focus. To get a joke, after the punchline creates the funny interpretation, we need to let go of the logical or literal one created in the joke's set up. Sometimes when we do not think a joke is funny, it is not because we did not create a second mental representation, it is because the initial one dominated and may have created negative feelings that were not erased by the second one. Should the first representation stay in an activated state (see Fein et al., 2015 study noted earlier), humorous play requires some suspension of belief in its interpretations.

To find a joke funny, the detection of incongruity needs to be accompanied by a positive emotional response. The resolution of incongruity must feel pleasant and amusing, and not like we have been tricked or insulted. In fact, Hurley, Dennett, and Adams (2011) stated that the discovery of incongruity cannot be accompanied by negative emotions. If there are negative feelings, we can still understand the meaning of the joke but not see it as funny. For example, when jokes perpetuate a stereotype that we find offensive (as in ethnic, racist, or sexist jokes), we may refuse or be unable to inhibit the offensive representation. Violence in cartoons is another example; in *Roadrunner* cartoons, when an anvil hits the coyote, animal lovers may be unable to inhibit the animal cruelty meaning instead of focusing on the funny meaning of yet another inevitable failure of an optimistic coyote. The exception to this rule may be sick humor, which focuses on death or illness, which can generate feelings of disgust but also enjoyment or amusement (see Chapter 3 "Personality Psychology").

Ziv (1984) drew a distinction between comprehension (the ability to perceive incongruity) and appreciation (the ability to feel pleasure from the humor). The terms comprehension and appreciation are often used interchangeably, supporting our experience of simultaneously having meaning and feelings. In fact, when they don't co-occur, it is possible we lose the perception of humor. For example, our analysis of why a joke is funny usually decreases feelings of funniness. In these analyses, we are left with understanding but no positive appreciation. As E. B. White remarked, *Analyzing humor is like dissecting a frog. Few people are interested, and the frog dies of it*.

Limitations of incongruity theory

Valuable as incongruity theory is, it does have some limitations, a few of which are noted here:

1. A second incongruous meaning does not always trigger a humorous response. Humorous feelings depend not only on the degree of surprise but also on whether the context

is playful. For example, Alden, Mukherjee, and Hoyer (2000) studied advertisements and manipulated the playfulness of the humor (e.g., serious adults or silly, cute characters). When playfulness in the ad was high, surprise positively correlated with humor appreciation but when playfulness was low, surprise negatively correlated with humor. In a serious situation, the more surprised we are, the less likely we are to be amused.

2. Incongruity theory does not give context enough credit. As Cundall (2007) pointed out, humorous information must be original. He noted that movie spoofs were initially very funny, but after too many appeared in theaters, a new spoof was not seen as funny. Additionally, social contexts matter greatly to humor. Incongruity theory does not explain or take into account the social invitations to engage in humor. These invitations are verbally marked with phrases such as "have you heard the one about" or "Two men walk into a bar" or facially marked with smiles or goofy facial expressions.
3. We need a more developed theory that addresses the degree, quantity, and salience of incongruity. The incongruity relationship with humor may be curvilinear and not linear: too little difference or too great a difference between the two mental representation results in little amusement. The number of incongruities may need to be small. Due to our mental limitations, the salience of the initial schema may or may not allow for a second interpretation to be discovered, as not all schemas are equal in richness of information (Deckers & Buttram, 1990).
4. The social context shapes our processing of incongruity (Veale, 2004). Using the idea that we are active processors of information, Veale (2004) argued that instead of inhibiting the first schema in deference to a second activated one, it is possible that we construct a new interpretation of the joke that includes the social context of why the joke was told. He argued that social rules for gossiping and for sharing jokes form a "social logic" which shapes our mental representations. In his view, there is no resolution of incongruity happening, but that social contexts guide humor appreciation in the formation of one revised mental representation.

Despite these limitations of incongruity theory and the research that attempts to discover or clarify the processes ongoing concerning the necessary stages, incongruity-resolution theory provides a fertile research model for all the perspectives of psychology. Whether phrased in two or three stages, or whether the cognitive processes require diminishment and elaboration in the resolution phase (Wyer & Collins, 1992), students will notice the incongruity-resolution model in some form appears across the psychological perspectives covered in this textbook.

Cognitive processes

We turn now to humor research in the cognitive domains of attention, memory, language, and thinking. These areas are core interests in cognitive psychology. They matter to humor processing, too. Cognitive researchers studying these abilities ask questions such as Do we give humorous events special attention? Is humorous material more memorable than serious/literal material? Do verbal jokes have linguistic properties that enhance their humor? Do ways of thinking (i.e., intuition, insight, time perspective) matter to experiencing humor?

Attention

Attention is an important process for information processing and memory. It helps select which information gets processed and likely remembered later. Humorous information may receive more attention than nonhumorous information. When we attend to visual information, we look longer at it. If we attend longer to humorous material, Strick, Holland, van Baaren, and van Knippenberg (2010a) reasoned that we should see longer durations of eye gazes for humorous material compared to nonhumorous material. They conducted an eye tracking study for humorous (e.g., *The spider was turned down for the position as web designer*.), nonhumorous but positive (e.g., *Finally, it's summer! I lay outside in the sun the whole day*.), and neutral (e.g., *Please turn the lights on; I am trying to read a book*.) texts paired with consumer products (e.g., energy drinks). Memory for the brand names was tested afterwards with a recognition test. They used a within-subjects design, meaning that each participant saw all three types of text-brand pairs. Their results revealed that participants showed longer eye fixations to the humorous material, and, most critically, better recognition for brands not paired to humorous texts. This finding supports the idea that humorous information receives more attention.

Humor may help sustain attention, too, and allow information in funny cartoons to be processed better compared to nonhumorous cartoons (e.g., same picture but different caption). Schmidt and Williams (2001) argued that benefits from attention still exist when memory explanations (e.g., distinctiveness or rehearsal) are discounted. That humor increases attention is a likely explanation in advertising research when attention paid to only humor in an advertisement may cause poorer memory for the brand name (Hansen, Strick, van Baaren, Hooghuis, & Wigboldus, 2009; see Chapter 10 "Applied Psychology").

Working memory processes

When Baddeley (Baddeley & Hitch, 1974, 2000) proposed the working memory model, it replaced the passive information processing model with active memory structures for processing verbal information (phonological loop), visual and spatial information (visuo-spatial scratchpad), recent events (episodic buffer), and a controller of this information processing (the central executive). The central executive is like the conductor of an orchestra (Goldberg, 2009) which helps the components perform in harmony: it manages the resources of working memory, inhibits irrelevant or distracting information, monitors activations of knowledge, and controls attention. Thinking about and manipulating information within these components of working memory takes mental resources.

We use working memory resources to resolve incongruity and perhaps more resources in humor-based incongruity than mere lexical ambiguity of multiple meanings of literal language. That is, we need more resources to process the humor in *a man put on a clean pair of socks every day this week. By Friday, he could not put on his shoes*. Then we use it to understand the ambiguity in *she kicked the bucket* or *the farmer put the straw in the soda can*. Support for this idea comes from research by Bekinschtein, Davis, Rodd, and Owen (2011), who found that resolving funny ambiguity (e.g., *Why don't cannibals eat clowns? Because they taste funny*.) requires more brain activation than resolving nonfunny ambiguity (e.g.,

Why don't cannibals eat rotten eggs? Because they taste funny.). The word "funny" always has two meanings, but we are able to decide on the appropriate meaning (i.e., not as usual) with fewer resources in the nonhumorous sentence than in the humorous one.

The study of the management of our mental resources shows that central executive processes play crucial roles in detecting incongruity, suppressing dominant, literal, or nonfunny mental representations, and allowing remote activations to influence the interpretations of humorous events. These control functions aid in the flexible thinking required to handle incongruity and emotional responses.

Cognitive researchers use a number of central executive tasks to measure how well we manage available resources. For example, the Stroop (1935) task, where color words (e.g., red) are printed in various colors (e.g., red or blue ink), measures central executive processing. RT is slower in the incongruent condition (e.g., red in blue ink) because we need to suppress the meaning processed from reading to speak the color we perceive. Individuals vary greatly in their ability to suppress their reading. In essence, we can infer that the larger an individual's Stroop effect (RT incongruent minus RT congruent), the weaker their control over inhibiting the dominant process of reading. Thus, we would expect that participants who show larger Stroop effects to have more difficulty resolving incongruities in humor.

Using the Stroop task and other central executive measures, Uekermann and colleagues (Uekermann, Channon, & Duam, 2006; Uekermann, Channon, Lehmkämper, Abdel-Hamid, & Vollmoeller,2008) studied incongruity resolution of jokes in two populations, older adults and depressed adults. They presented participants with the beginning of a joke and asked them to select the correct punchline from among four alternatives that varied in function: slapstick, logical, illogical (non sequitur), and correct. For example,

> *Martin had just started his own company. When a visitor came into the office, Martin picked up the telephone. He pretended to be discussing a multi-million-pound deal. Eventually, he put the phone down and said to the visitor: "Can I help you?"*
>
> **Slapstick:** Martin's chair suddenly collapsed, and he fell on the floor.
>
> **Logical:** The visitor said: "Yes, I'm looking for a job in your new company".
>
> **Non sequitur:** The visitor said: "The color of this wallpaper matches my tie".
>
> **Correct:** The visitor said: "Yeah, I've come to connect up your telephone".

The slapstick ending involves detection of incongruity in the answer (nonsense humor) but not the resolution of incongruity connected to the joke stem. The logical ending shows comprehension for the narrative without incongruity (or humor). The non sequitur ending shows an understanding that humor has endings that surprise us which is incongruous with the joke stem, but there is no resolution. Only the correct choice involves both detecting the incongruity and resolving it.

Older adults and depressed adults in their studies were less likely to pick the correct punchline than control participants. When incorrect, older adults tended to select slapstick endings more than younger (Uekermann, Channon,& Duam 2006), and depressed adults were more likely to select logical endings and had a tendency to favor slapstick more than controls (Uekermann et al., 2008). Of critical interest is whether central executive processes can help explain why the correct answer was not chosen. As expected, higher Stroop interference

(i.e., weak executive functioning) negatively correlated with the number of correct choices, and higher executive performance on the other tasks (where scores indicated strong control functioning) positively correlated with the number of correct choices.

Both studies supported a role of central executive functioning in humor processing. In populations where central executive processes weaken, we likely will observe a corresponding decline in the ability to understand humor. Humor in aging and depression will be further discussed in Chapter 6 "Developmental Psychology" and Chapter 9 "Clinical Psychology".

Memory storage

Many of us have experienced in ourselves or in others the failure to remember the exact wording of a joke. For example, when we attempt to tell others a great joke we recently heard, we may paraphrase the setup, which causes the punchline to fail, or the setup is recalled well but the punchline's exact wording is forgotten. It is irritating and perhaps surprising to us that something we found so interesting and funny just a short while ago (let alone the horror of long delays) is not remembered well. We falsely believe that if we like something (and find it funny) then we won't forget it.

Most jokes or humorous events we experience are just like anything else we send to memory (Provine, 2001). Verbatim memory is not the format of long-term memory storage. Memory processes transform, store, and retrieve knowledge by gist. That is, we typically recall meaning better than exact details. Schemas, the main organizational tool of long-term memory, are general, and rarely reconstruct exact, verbatim details. A good joke teller must employ rehearsal and retrieval strategies to retain exact wording of jokes. Individuals with a strong sense of humor may have a larger repertoire of remembered jokes (Feingold, 1983; Feingold & Mazzella, 1991).

The humor effect

Despite the lack of verbatim recall of past information or events, we remember better, on average, the meaning of information when it is presented in a humorous context compared to when it is not, known as the humor effect (Schmidt, 1994, 2002). For example, the gist in sentences are remembered better when the sentences are jokes (e.g., *A great many open minds should be closed for repairs*.) than when they are literal statements (e.g., *A great many open minds do not function properly and should be fixed*.).

One explanation for the humor effect suggests that the funny image or text draws attention it. Attention's role in the information processing system is to hold and enhance processing for long-term retention. Emotions of amusement, enjoyment, or surprise can help attention to process the information more deeply, either unconsciously (automatically) or with more awareness and intention for holding the information longer in short-term memory. Ferré (2003) speculated that nondepressed individuals automatically select only positive emotional content for processing; negative emotional content requires focused, effortful attention for processing. Humor, eliciting positive feelings, has an automatic edge compared to literal statements which might elicit boredom or negative attitudes. Humor may also help memory, for the gist of bizarre images to last over long delays (Worthen & Deschamps, 2008).

A second explanation for the humor effect concerns the allocation of resources; we need more resources for nonfunny material perhaps because it does not hold our interest. We might need to change our allocation of resources when we know we need to work to maintain interest. One way to test this idea involves manipulating whether people know a memory test is coming or not. In incidental learning, we do not differentially allocate resources to remember the information, but in intentional learning, we intentionally allocate needed resources to study the nonfunny material to do well on the test. Takahashi and Inoue (2009) examined intentional and incidental learning of pictures as well as manipulated the explicit hints. They highlighted the difficulty of remembering the picture by providing a high humor label or low humor label. After the presentation phase, during which participants gave humor ratings to the pictures, participants received a recall test (draw the pictures). When the memory test was a surprise (incidental learning), funnier pictures were better recalled. But when they knew a memory test was coming, there was no advantage for the humorous pictures. Takahashi and Inoue's (2009) explanation, that we allocate resources to compensate for harder-to-remember materials, was supported by finding that a low humor label helped in the incidental condition. See Figure 1.2 for a depiction of this crossover interaction. Notice that the pattern for the incidental learning condition is opposite the pattern for intentional. Humor draws attention more in the incidental condition, which helps memory, but when intentionally learning, participants likely directed their attention to the ones with low humor to help remember them.

Carlson (2011) investigated three explanations of the humor effect. He tested semantic elaboration, incongruity resolution, and perceived humor. As to the first explanation, information may receive deeper processing when humor encourages an elaboration of meaning and connections to knowledge we already have (semantic elaboration). Incongruity resolution

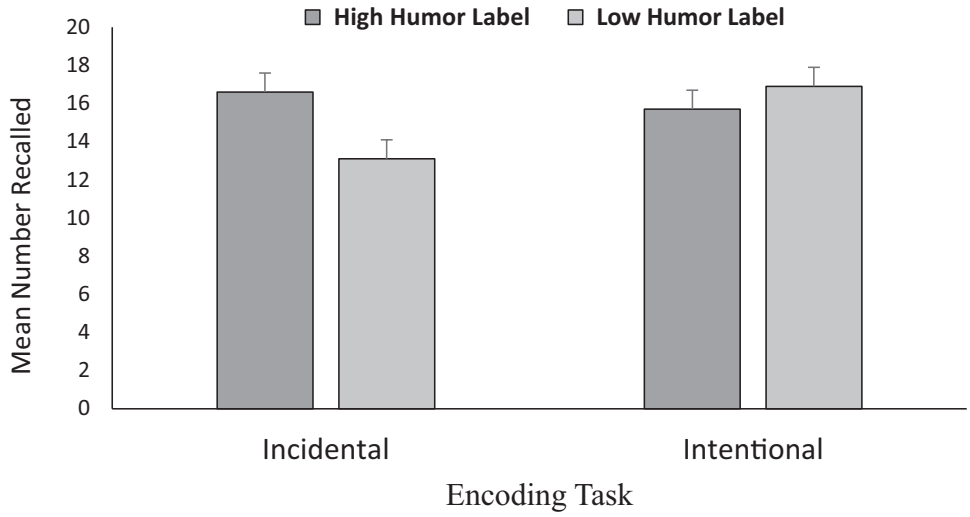


Figure 1.2 Mean recall of pictures as a function of whether they knew a memory test would occur and whether the pictures were labeled high or low humor (Takahashi & Inoue, 2009). Error bars are standard deviations.

requires more than one interpretation of information to be activated. And the perception of humor may draw attention.

Carlson (2011) attempted to control for elaboration and incongruity by manipulating the degree of humor, using humorous (e.g., *Dreams are like rainbows; only idiots chase them*.) or inspirational (e.g., *Dreams are like rainbows; they lead to treasures*.) phrases. These phrases were matched to contain similar semantic complexities. Pictures provided strong semantic elaboration, and phrases (e.g., *dreams*) provided weak semantic elaboration. Participants made funniness ratings for the pictures, keywords, and phrases. As expected, results showed that humorous pictures and phrases were remembered better than inspirational versions (i.e., the humor effect). Most importantly, the funniness ratings participants gave in the presentation phase predicted recall of the humorous sentences when semantic elaboration and incongruity resolution were controlled.

Lastly, memory of information presented in a humorous way might help memory for information because jokes frequently have a rhythm and structure to them (Rubin, 1995). In studying knock-knock jokes, for example, Summerfelt, Lippman, and Hyman (2010) found that rhythm and structure of these puns allowed for better memory of names within the text and their exact wording. *Knock, knock. Who's There? Shirley you know me by now!* Because Summerfelt et al. (2010) found enhanced memory especially when the list comprised only 20% of these jokes compared to 80%, they argued for the importance of the distinctiveness of jokes' rhythm and structure. The structure of jokes acts like other mnemonic devices that help make them memorable.

Similarly, Menninghaus, Bohrn, Altmann, Lubrich, and Jacobs (2014) studied the rhyme and meter in funny couplets. For example, *from ancient times it has been true: he who cares has liquor, too*. They found that couplets with strong rhyme and meter received higher funniness ratings. Menninghaus et al. (2014) suggested that the rhythm and structure of jokes act as a metacognitive tool that causes processing ease, much like motherese and the sing-song nature of nursery rhymes or the alphabet song helps children's language processing, and possibly the humor effect on memory.

Schmidt (1994, 2002) found that the sequence of the nature of material presented to participants mattered to the humor effect. When a list contained both humorous and nonhumorous items (randomly mixed up within the list), the humor effect occurred. But, when the list contained only humorous items or only nonhumorous ones, the recall advantage for funny items disappeared. Why should list context matter?

The most likely reason is that participants noticed the difference between the funny and nonfunny items while rating the mixed list, and they changed how they processed them. For instance, participants might choose to attend to funny items more than the nonfunny ones, might think more about the funny ones than the nonfunny ones, or might be able to use distinctiveness of the funny ones to help with their processing. But, when all the items on the list are of one type (all humorous or all nonhumorous), humorous items lose their distinctiveness, and participants may use the same strategy or similar resources on both lists.

Lastly, memory for classroom lecture material may be better when humor is added (see Chapter 10 "Applied Psychology").

Psycholinguistics

> Drawing on my find command of language, I said nothing.
>
> – Robert Benchley (cited in Esar, 1949, p. 28)

Cognitive psychologists have a long history in the study of language processing (Brône, Feyaerts, & Veale, 2006). A major debate in psycholinguistics concerns whether or how much language uses general cognitive processes for comprehension. In the modular view of language, information is processed in special systems devoted to language (e.g., phoneme identification and syntax rules). In the generalist view, linguistic information is processed using general memory structures, such as working memory's phonological loop and the central executive. The complexity of humor processing fits more easily with a general model of language. We likely do not have a special language module for processing humor, but instead we use general cognitive processes (e.g., attention, memory, and reasoning).

Similar to psycholinguists, humor researchers examine phonological (*sign on the gate of a nudist club in October: Clothed for the season*), morphological (I *must say you're looking couth, kempt, and shevelled today*), and syntactic (*I can marry anyone I please; I just haven't found anyone I please yet*) language processes (Pepicello & Weisberg, 1983). These factors add to what is missing in the basic incongruity-resolution model. **Metonymy** (when one structure refers to another) and **viewpoint** (the meaning changes when viewpoint changes) contribute to incongruity detection or resolution. As an example of metonymy, *Eating is overrated. Food is just shit waiting to happen* is funny by linguistically suggesting that when we eat excrement. (By the way, bathroom humor (scatological humor) is briefly discussed in Chapter 6 "Developmental Psychology", a kind of humor children find particularly funny). Change in viewpoint explains why this riddle is funny: *Arnold Schwarzenegger has a long one; Michael J. Fox has a short one; Madonna doesn't have one, and the pope has one but doesn't use his anymore. What is it? A: A last name*.

Psycholinguistic humor research concerns a) examining humor at the word level, b) understanding ambiguity and figurative language, c) examining how people can tell the difference between literal and metaphorical expressions, and d) understanding what is stated and what is left unsaid (inferences). Theoretically, the meaning of expressions change the meaning of individual words within them, so that we must reanalyze or "frame-shift" (Coulson & Kutas, 1998, p. 1) the meaning of initial representations onto new ones to include the new relational information. Figurative language and punchlines in jokes often require new mental representations based on meanings of single words. Consider the example: *I asked the bartender for something cold and full of rum, and he recommended his wife*. Coulson and Kutas (1998) found that reading times for joke statements were slower than literal statements with unexpected endings, supporting the idea that participants needed more time for frame-shift processing.

When we encounter words, we may like or dislike them, and we might judge them to be funny words, either because of the way they sound or what they mean. Engelthaler and Hills (2018) had 821 participants on Amazon Turk rate the funniness of a subset of 4,997 English words on a scale of 1 = not funny at all to 5 = most funny. Researchers can use these norms (https://github.com/tomasengelthaler/HumorNorms) for selecting words in humor research,

to explain how their inclusion in jokes affects the jokes' humor perception, or to understand differences in people's perception of humor. They reported *booty* earned the most humorous rating (4.32) and *rape* the lowest (1.18). Engelthaler and Hills (2018) noted that top words males liked more than females were *bondage, birthmark, orgy, brand*, and *chauffeur*, and words females liked more than males were *giggle, beast, circus, grand*, and *juju*. Younger participants liked *goatee, reform, joint, germ*, and *hunchback* more than older participants, and older participants liked *caddie, birthright, squint, jingle*, and *burlesque* more than younger ones.

To understand ambiguity and figurative language, the domains-interaction approach to metaphor (see Tourangeau & Sternberg, 1982) suggests that we compare activated knowledge shared by two disparate domains. For example, the metaphor, *some jobs are jails*, involves comparing knowledge of jobs and jails, and understanding how both limit freedom. Similarly, humor in metaphors may occur when the distance between the two disparate concepts (e.g., actors and cars) is large (e.g., *Sylvester Stallone is the Trans Am of actors*), and their similarities help resolve the literal incongruity. Less funny metaphors emphasize short distances (e.g., actors and writers), whereas more funny metaphors emphasize large distances (e.g., actors and cars) (Hillson & Martin, 1994). In this view, the more remote the relevant association needed to resolve the incongruity, the funnier the resolution.

Inferences made while reading or listening to language help build bridges for comprehension between what is said and what is not said. Perlmutter (2002) noted that to understand a joke, the listener or reader must not only make inferences but also must stop critical reasoning. When incongruity occurs because of a logical contradiction, the recipient no longer continues logical processing. Perlmutter (2002) noted that the listener suspends belief in truth and inferential reasoning. Further, he points out that joke comprehension occurs in the mind of the receiver (i.e., the bridge one builds), not in the stimulus, and this is why the same joke has different responses in people (i.e., everyone builds different bridges).

Because jokes are considered verbal communication, **pragmatics** contributes to understanding what it takes to get a joke (Perlmutter, 2002). Grice's (1975) maxims help explain the pragmatics of the social exchange of humor. These maxims state expectations of participants in a conversation. In particular, the cooperation principle states that in conversations both the listener and speaker work together to keep the conversation on track by saying just enough and clearly enough to reach optimal communication. Humor may occur when these maxims are violated. Researchers analyze recorded conversations to obtain evidence concerning humor and pragmatics.

Using **conversational analysis**, Bertrand and Priego-Valverde (2011) investigated how humor is produced and perceived in conversations. They analyzed eight one-hour recorded dialogues. They found that humor can be experienced both in a few words or in a long narrative. Consistent with incongruity-resolution theory, most jokes involved two parallel scripts, one with the expected, logical meaning and one with illogical, unrealistic, or unexpected meaning. The gap between the two meanings was typically marked by **prosody**, such as being too dramatic, changing accent or voice, and pausing. Speakers used repetition and confirmation that the other is following to help mark the humorous interpretation. One implication of these findings is that cues are different in person than in email or text messages.

Systems 1 and 2 thinking

In the field of decision making, thinking and memory processes are conceptualized as a dichotomy, named system 1 and system 2. Kahneman (2011) described these systems as thinking fast (system 1) and slow (system 2). In essence, each system is comprised of processes that work to make the overall information processing system function well. System 1 involves schema activation, intuition, automatic processes of implicit memory, inferences, and resource-saving heuristics. System 2 involves rational thinking, logic, mathematical calculations, algorithms, strategic effort, evidence-checking, and reflective thinking. Humor processing involves system 1's schema activation to create incongruity, and system 2's help to resolve it (Ventis, 2015).

Jokes frequently are worded in such a way as to suggest wrong mental representations. They share this characteristic with riddles. Bar-Hillel, Noah, and Frederick (2018) showed how riddles reveal schema activation that may block solution. For example, this riddle

> *A big brown cow is lying down in the middle of a country road. The street lights are not on, the moon is not out, and the skies are heavily clouded. A truck is driving towards the cow at full speed, its headlights off. Yet the driver sees the cow from afar easily, and avoids hitting it, without even having to brake hard. How is that possible?*
>
> (Bar-Hillel et al., 2018, p.113)

stumped about 20% of their participants, with many reporting they imagined a dark night rather than daylight. Bar-Hillel et al. (2018) noted these riddles reveal how stereotypes, norms, priming, and minimizing resources (cognitive economy) act to form specific mental representations that block solution. System 1 thinking involves the imagination and factors that affect it, including ignoring base rates, allowing a concrete image to dominate over other knowledge, such as statistical evidence, and thinking inside the box (Bar-Hillel et al., 2018). System 2 thinking helps discover new meanings and think past these limited representations of joke setups. When riddles can't be solved, we feel puzzlement. According to incongruity-resolution theory, riddles and jokes are not judged as funny unless resolution produces amusement or pleasure.

Three commonly used measures for assessing how likely we are to use system 2 thinking are shown in Table 1.1, with examples. The Cognitive Reflection Test measures our ability to rely on system 1 or 2 thinking. A high score on this test shows system 2 thinking dominance. The Need for Cognition scale measures system 2 thinking and assesses the degree to which

Table 1.1 Examples of Items Found on Cognitive Research Measures

Test	*Example item*
Cognitive Reflection Test (Toplak, West, & Stanovich, 2011)	A bat and a ball cost $1.10. If the bat costs $1 more than the ball, how much does the ball cost?
Need for Closure Scale (Kruglanski, Webster, & Klem, 1993)	I dislike questions which could be answered in many different ways. (Rate how much you agree on scale 1–5.)
Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984)	I would prefer complex to simple problems. (Rate how characteristic this statement is of you on scale 1–5.)

we like to do complex thinking. Third, the Need for Closure scale measures our motivation to provide answers without taking the time for their full analysis. A high score on this test shows more system 1 thinking. Scores on these three tests classify individuals as being high or low in each system's way of thinking.

In studying humor, Ventis (2015) designed a study using these tests to address whether system 1 thinking increased the detection of incongruity and system 2 thinking helped resolve it. He predicted that participants who were high on intuitive thinking (and thus low on reflective thinking) would score lower on a humor test because they might not resolve incongruities. Listeners provided humorous endings to jokes such as, *Give a man an inch and he thinks he's a* ____, where *ruler* provides a funny answer, taken from the Humor Perceptiveness Test-Revised (Feingold, 1983). Further, Ventis (2015) predicted humor scores would negatively correlate with Need for Closure and positively correlate with Cognitive Reflection Test and Need for Cognition scores. If you have a high Need for Closure, you likely use speedy intuitive thinking, which prevents the usage of the slower reflecting thinking, and if you use reflective thought, you will resolve the incongruity in the joke stem.

The results from 148 college students supported these hypotheses. Humor scores negatively correlated with Need for Closure scores, and positively correlated with Cognition Reflection Test and Need for Cognition scores. These correlations support the idea that individuals using system 2 thinking to resolve incongruity are more likely to find funny endings, whereas those who dominantly use system 1 (high Need for Closure) are less likely to do so. Further, the positive correlation of humor scores with Need for Cognition scores supports the idea that the pleasure experienced in thinking and resolving incongruity may enhance the emotional response to jokes (Ventis, 2015). That is, jokes are experienced as pleasurable not because of feeling clever or superior to have resolved the incongruity, but because we enjoyed the process (when Need for Cognition is high, we like effort, when low, we do not).

No predictions had been made about gender, but Ventis (2015) did find a gender difference on the Cognitive Reflection Test (males scored higher than females), on the Need for Closure scale (females scored higher), and on the humor cognition test (males scored higher). We explore possible gender differences in humor appreciation and production in Chapter 4 "Social Psychology". Additionally, humor research investigating the relation of intuition and the meaning of life is discussed in Chapter 8 "Positive Psychology".

Problem solving

Insight

There are similarities between being amused by a funny interpretation after suddenly finding incongruity and being satisfied after solving a puzzle or problem (Canestrari, Branchini, Bianchi, Savardi, & Burro, 2018). Insight happens when we realize one mental representation is wrong and we replace it with a correct one, as in working to solve a problem about Bicycles and realizing they are not vehicles but playing cards (Gibson, Dhuse, Hrachovec, & Grimm, 2011). Insight is a phenomenon we usually experience as an *aha* moment–one moment confusion and the next moment clarity. When insight occurs, we enjoy (experience pleasure in) finding the solution.

The connection between insight and humor was documented early by Hartmann (1935). He suggested that the only difference between the two is that humor contains humorous elements; both contain the sudden appearance of a change in meaning of a representation in mind of the problem/joke. Hartmann (1935) presented a study by Harrower who asked participants to produce a judge's response to a defendant who said, "*I wasn't going 50 miles an hour, nor 40, not even 30*". Examples of humorous elements added to completions, *You'll be going backward soon*, or *I suppose you were going 70 miles an hour*, change the idea of driving below the speed limit to driving backward or suggesting faster speeds.

In a more recent study, Canestrari et al. (2018) suggested both humor and insight share a joy of verification–resolving incongruity and finding a solution–which cause pleasure and enjoyment. When participants fail to solve insight problems or just don't get the joke, pleasure is lowest. Evidence that jokes involve a sudden resolution comes from the finding the correlation of funniness ratings and speed: funnier jokes are comprehended faster (Cunningham & Derks, 2005).

Kozbelt and Nishioka (2010) examined whether both humor comprehension and humor production were related to the suddenness of insight. They connected the surprise in detecting incongruity or its resolution to insight in figure captions. For example, in the comprehension task, participants saw a picture of a man and cat standing next to the cat's litter box with the caption "*Never ever think outside the box*". Participants indicated whether the caption matched the cartoon and provided confidence in their accuracy and funniness ratings of each caption. In the production task, participants typed punchlines to captionless cartoons. They also rated their confidence in having produced a good punchline and provided its funniness rating. In addition, Kozbelt and Nishioka (2010) measured the RT it took for participants to make judgments about the captions (comprehension task) and before they began typing a funny punchline (production task). If insight is involved, the researchers expected faster RTs on both tasks. They found that comprehension was speedy, but production was not. They concluded that insight may be involved in detecting incongruity but not in generating it.

Problem-solving abilities can vary across tasks. Because some individuals are better at doing verbal tasks than spatial tasks, the nature of the problem may matter to skill. For example, Belanger, Kirkpatrick, and Derks (1998) examined whether humor would prime problem solving depending on the nature of the task. Participants completed two tasks: the Miller Analogies Test (e.g., select the best choice for *PARLIAMENT is to (senators, Lords, conservatives, or Commons) as CONGRESS is to REPRESENTATIVES*) which measured verbal abilities, and a mental rotation test that measured spatial abilities. Participants rated the funniness of six jokes (presented as sentences or pictures); these were pilot tested to be either high or low in funniness and imagery. Because gender differences are often found in spatial tasks, they included gender as a factor in their analyses.

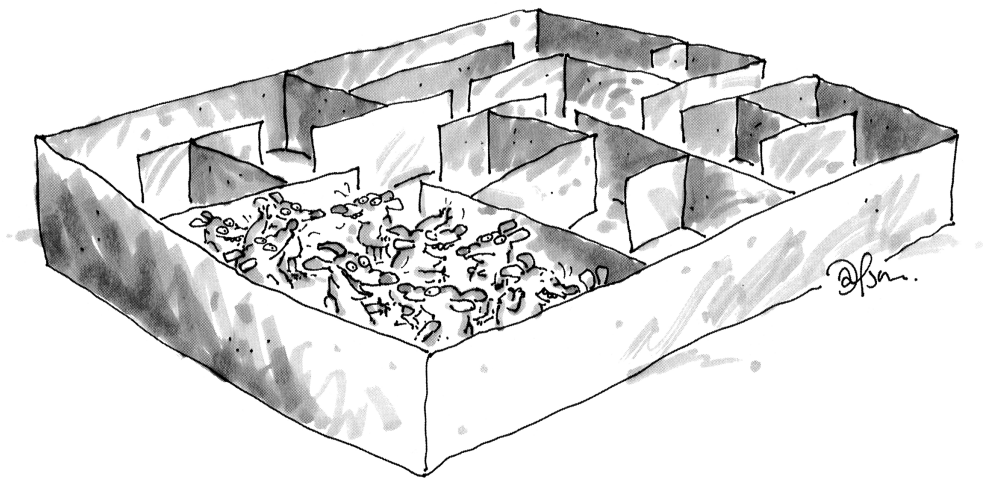
Belanger et al. (1998) found that joke high in humor speeded analogy solving for women but slowed it for men. That is, humor primed or helped women complete the MAT. On the spatial rotation tasks, women performed equally well whether primed with funny or nonfunny jokes. However, the men were faster on the spatial rotation task when the primes were high in humor compared to low in humor. These results suggest that when doing task processing that we are good at (e.g., women good at verbal and men good at spatial), a set of funny jokes

speeds our task performance. But, if we are not as good at the task (e.g., women worse on spatial and men worse at verbal) and either we use more resources to do it or we experience more frustration/other negative emotions, then humor either doesn't matter (as found with women) or it impedes speed (as found with men). Such research supports humor's role in influencing cognitive processing and shows interesting interactions that can occur depending on the demand for cognitive resources.

Figure 1.3 plays with traditional psychology studies of rats' spatial memory in maze problem-solving tasks by comparing rats searching for cheese and humans gathering in the kitchen at parties.

Creativity and divergent thinking

Insight provides one way to find novel solutions or approaches to solving problems. Creativity provides another (Belanger et al., 1998). Divergent thinking involves generating multiple uses for items or generating creative answers. Kellner and Benedek (2016) studied humor production, creativity, intelligence, and divergent thinking. In addition to producing funny captions to six items, participants listed either uses for a kitchen knife or answers to questions such as "what makes noise?" Responses were scored for quantity (fluency in divergent thinking) and quality (creativity, funniness). Their statistical analyses showed that divergent thinking predicted humor production (independently of intelligence scores). Further, Kellner and Benedek (2016) found that fluency was independent of quality, suggesting that our potential for creativity concerns both the ease of generating humor (fluency) and our success or effectiveness in creative productions (quality). They proposed that humor production is a "domain-specific expression of divergent thinking" (Kellner & Benedek, 2016, p. 5). There are many ways to engage in divergent thinking, and humor is one of them.



"The best parties always end up in the kitchen."

Figure 1.3 Problem solving with humor.
Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

Cognitive processes in the production of humor

Most of us have some experience with the disconnect between humor appreciation and production. We can easily tell what is funny or not, but we may find it hard to produce funny jokes. Perhaps this disconnect is similar to how we may appreciate a musical piece but cannot play it. As peppered through this chapter, production may require skill (e.g., divergent thinking), effort (e.g., system 2 thinking), or it may require a reorganization of thoughts (e.g., insight). The manipulation of information to produce verbal humor requires intelligence (Christensen, Silvia, Nusbaum, & Beaty, 2018).

Derks (1987) summarized evidence on three models of humor production. 1) People may produce humor by making rapid stimulus-response associations. Those who can make a quick connection between two remote associations have the ability to produce funny incongruities. 2) We may produce humor by restructuring patterns of thought to reach the goal of a surprise punchline; this model draws on Gestalt principles of organization, problem solving, and insight. 3) Humor production is hard work that requires effort and time to manipulate exact wording or the situation. Siegler (2004) noted, for example, that before expert comic writers wrote captions, they often made detailed interpretations of the pictures. Further evidence finds that humor production requires some thought and does not rely on the use of the first thing that comes to mind. Derks and Hervas (1988) manipulated how many captions participants produced–either two or ten–to old movie stills. When participants produced ten captions, others rated these captions as funnier than when only two were written, and they rated the later attempts funnier than early ones. Derks and Hervas (1988) noted that out of 684 captions collected, only three in the entire sample were verbatim repeats, speaking to the originality in production. They did not comment on the overlap across captions for gist.

Some cognitive researchers have examined the evaluation of our thinking when producing humor. For instance, **metacognition** concerns our ability to monitor our thinking. Turner (1980) argued for a metacognitive component to humor production. While writing captions we are aware of whether others will find the captions funny or not, and we use this assessment to motivate producing funnier captions. Practice (as in writing ten captions) helps us do a better job, perhaps because we work to make subsequent captions funnier than our earlier ones. It is worth noting that central executive processes play a role in metacognition, particularly in monitoring social information (Leung, Vogan, Powell, Anagostou, & Taylor, 2016). Thus, those higher in executive functioning are better able to monitor the effect of their humor on others.

In examining the subjective experience of humor production, Goldstein Graham (2010) conducted dissertation research on employees in work meetings. He found that those who produced humor during meetings reportedly shared a common cognitive subjective experience. Namely, 1) they monitored the external environment for cues, 2) they were fully engaged in the social context situation, 3) they had a sense of what their audience was thinking, and 4) if they were a leader of the group, they formed the goal of wanting to influence others, and if they were not a leader, they were very attentive to the leader's responses before and during the joke telling.

Time perspective

An interesting topic within cognitive psychology concerns our ability to bring back the past, imagine the future, and monitor present thoughts. Episodic memory is a system in which time matters, where we have the ability to review our personal past, imagine the future, and monitor the present (Nyberg, Kim, Habib, Levine, & Tulving, 2010). For example, amnesics with damaged episodic memory not only forget their past but have difficulties imagining the future. The manner in which individuals parse the flow of experience, from past, present, and future is called time perspective (Zimbardo & Boyd, 1999). As with humor, time perspective is fundamental to human experience. Our ability to enjoy humor is enmeshed with this mental capacity to time travel and experience subjective well-being. Time perspective influences our attitudes and behaviors.

Listed in Table 1.2, researchers identify five time perspectives, characteristics that come from dwelling on that perspective, and some associated behaviors.

The Zimbardo Time Perspective Inventory measures the degree to which individuals report thinking about each time perspective. For example, some individuals may have a negative past perspective–frequently thinking about bygone mistakes that don't have anything to do with the present environment, even reliving them despite the present being positive. Individuals ideally maintain a balanced time perspective (Boniwell & Zimbardo, 2003). Moderate scores on past positive, present hedonistic, and future perspectives were found to have optimal functioning and psychological benefits. Boniwell and Zimbardo (2003) noted that individuals with a balanced time perspective are those who work hard to accomplish goals they set and play hard when the work is done.

Shores and Scott (2007) noted that time perspective links to decisions of how to spend our leisure time. Zimbardo and Boyd (1999) reported that those who hold a past negative time perspective tend to derive little pleasure from free time. If we expand the meaning of leisure and free time to include amusement or humor, we can make the connection of time perspective to humor appreciation. Would those holding a past negative time perspective also derive little pleasure from humor? Would they be less likely to seek humor in their daily lives or dismiss its importance to their daily lives?

Table 1.2 Time Perspective Names, Characteristics, and a Few Associated Behaviors

Time perspective	*Characteristics*	*Associated behaviors*
Past negative	Pessimistic attitude	Depression, anxiety, low self-esteem; fewer close friends
Past positive	Sentimental, nostalgic	High self-esteem, happiness, agreeableness, use social support networks
Present hedonistic	Spontaneous pleasure	Take risks, such as unsafe sex, risky driving practices, drug misuse; sensation seeking
Present fatalistic	Lack of hope, belief in fate	Lacks hope in being able to control situations
Future	Rewards in achieving goals	Adaptive coping strategies; engage in positive health behaviors

Cognitively, humor may be related to time perspective because our time perspective influences the activation of schemas, cultural beliefs, and emotions, three major role players in the incongruity-resolution model. Our time perspective may also influence the function of humor, whether we use humor in affiliative ways to enhance social relationships and mood or disparaging ways to distance ourselves.

For example, Hampes (2013) examined time perspective and humor styles (see Chapter 3 "Personality Psychology"). He found that those who used a self-defeating humor style (i.e., put themselves down to get a laugh) held negative past time perspectives, and those who used humor in positive ways (e.g., to make others or our own selves happy) held positive past time perspectives. Such research suggests that using humor in positive ways may improve the emotional tone of details in our thoughts.

Could the reasons why some people don't find a joke funny is that they don't mentally represent details in the setup? People vary greatly in the ability to detail their mental representations of the past, present, and future (Arnold, McDermott, & Szpunar, 2011; Wang, Hou, Tang, & Wiprovnick, 2011). For example, Wang et al. (2011) found that women tend to produce more details in accounts of their past and future than men. These researchers also found that there may be cultural differences as well, such that westerners produce more details from memory than easterners.

Time perspective relates to feelings of well-being (Drake, Duncan, Sutherland, Abernethy, & Henry, 2008). People report a greater sense of well-being depending on the quality of the details of their past or present recollections. See Chapter 8 "Positive Psychology" for more research on time perspective, humor, and well-being.

Recap

How we represent knowledge and handle the demands made on the limited information processing system dominate the application of cognitive psychology to understanding humor processing. According to incongruity-resolution theory, we experience humor when we detect and resolve incongruity in our mental representation of the situation. Typically, the punchline shows a new interpretation of the original representation, and when we resolve this incongruity, positive feelings are produced.

Humorous information may receive more attention while processing it, which increases the richness of its meaning and its memorability. Mental resources needed to resolve its incongruity may explain individual differences in detecting, appreciating, and producing humor. These resources may be used unconsciously to provide insight and intuition for alternative, humorous meanings, or consciously when we dwell on past or present positive and negative thoughts (time perspective). Humor researchers use incongruity-resolution theories (and the cognitive processes of attention, memory, and thinking) to study humor processed in the brain (see Chapter 2), personalities (see Chapter 3), social contexts (see Chapter 4), and across our lifespan (see Chapter 6).

Suggested readings

Hurley, M. M., Dennett, D. C., & Adams, R. B. (2011). *Inside jokes: Using humor to reverse-engineer the mind*. Cambridge, MA: MIT Press.

Jared, D., & Bainbridge, S. (2017). Reading homophone puns: Evidence from eye tracking. *Canadian Journal of Experimental Psychology*, *71*, 2–13.

Suggested class activities

Activity 1.1. Think about what makes an event funny

a. Think about cognitive differences between hearing a joke, reading a joke, seeing a cartoon, and witnessing a funny event (e.g., slapstick comedy). What cognitive processes might we need to understand humor in each context, and would there be any differences across contexts?
b. In December 2016, a video went viral of a man's staged engagement where he pretended to be harassed by police in front of his intended, and he was forced to kneel in what looked like another example of a black man about to be shot by police. The joke was revealed when he produced a ring while on his knees, and he asked her to marry him. Afterwards, many people commented on social media that police harassment of black men was no laughing matter (nor romantic). See www.youtube.com/watch?v=AtwRknWGP8g. What do you think? And why?
c. Jokes we hear often may not be funny anymore. Yet, predictable punchlines are often rated most funny. Consider the meanings of repetition and predictability; how are they related and how are they different? In view of the incongruity-resolution theory, why might repetition make a joke less funny but predictable punchlines most funny?

Activity 1.2. Apply the incongruity-resolution model

Collect a series of *Far Side* cartoons and distribute to the class (individually or in small groups). As covered in Chapter 3, Lefcourt, Davidson, Shepherd, and Phillips (1997) noted that some people really like and some really dislike *Far Side* cartoons. Discuss whether the incongruity-resolution model can explain people's appreciation of these cartoons.

a. Each student rates the funniness of the cartoons on a scale of 1 (not funny) to 5 (very funny).
b. Each student tries to explain in words why the cartoons are or are not funny using the cognitive congruity model. Identify their type of incongruity or ambiguity.
c. Share and discuss your ratings and explanations with each other. When there are disagreements in ratings, discuss whether the explanations point to any one stage of incongruity theory to explain them. Discuss any patterns you find when you rank the cartoons by ratings; is there a common theme to the funniest ones?

Activity 1.3. Ask a research question and propose a plan to find answers

What do you think about incongruity-resolution theory? Generate a research question to test your thinking by collecting evidence. After posing the question, consider these research steps:

a. Identify specific criteria for selecting humorous stimuli to use.
b. Identify your independent variables and dependent measure.

c. Propose the procedure for data collection.
d. Evaluate your plan. What might the evidence say as an answer to your research question?

Activity 1.4. Déjà vu and other memory errors

Memory errors occur not only when we forget but also when we think a current piece of information came from our past but did not (i.e., false memories). Déjà vu, for example, occurs when we feel that we are reliving a situation exactly as before. Now, frequently jokes start with "have you heard the one about…" or "two men walk into a bar…." But these rarely cause déjà vu to occur even though these phrases must have high familiarity. Apply what you know about humor, the surprise at its incongruity and its resolution, and discuss whether it is possible to have déjà vu or false memory for jokes we have heard before and whether its frequency may or may not be different from other familiar experiences.

Activity 1.5. Puns and Tom Swifties

If your school has a pun club, contact members and interview them about why they like puns. Puns are wordplay, such as *I'm reading a book on anti-gravity. It's impossible to put down*. Tom Swifties are structured puns with both phonological and semantic ambiguities (Lippman & Dunn, 2000) such as *This is a good place to camp, Tom said tentatively*.

Consider, explore, and argue, in terms of cognitive processes, why puns and Tom Swifties may or may not be funny. Do you think we are most amused by clever puns but groan at silly ones? Why or why not? Collect pun examples to support your points.

Activity 1.6 Dreams and humor

Do you have humor in your dreams? People may talk in their sleep, but do they laugh in their sleep? Okada, Matsuoka, and Hatakeyama (2005) found strong correlations between modality frequency of our awake and dream imagery: if you find it hard to imagine smells when awake, you rarely had smells in your dreams. They argued that the correlations implied similar cognitive processes are involved in dreams as used when awake. What about humor processing? Keep a dream diary for a few weeks (or longer if you rarely dream) and gather evidence of humor occurring in your dreams. Does your dream recall show the kinds of things you find humorous while awake? Discuss whether the class finds any evidence that humor detection, appreciation, or production occurs in our dreams as when we are awake.

Activity 1.7. Extend the research

One criticism of the cognitive approach to the study of humor concerns its reliance on jokes (either written, spoken, or in cartoons). Consider the study of humor in the real world, where spontaneity, multi-modality experiences, and real events with real consequences abound. Wouldn't the study of real-world humor allow for better definitions and measurements of humor? Discuss the pros and cons of studying, controlling, manipulating variables in laboratory settings versus naturalistic ones.

Study guide

Concepts and theories

Divergent thinking
Effortful processing
Incongruity resolution
Insight
Humor effect
Mental representations
Mental resources
Metonymy
Pragmatics
Priming
Schemas
Time perspective

Review questions

1. a) Identify the various types of incongruity humor may have. b) Apply that information to identify the kind of incongruity that makes this joke funny: *Q: Why was Pavlov's hair so soft? A: Classical conditioning*. Explain your answer in terms of the incongruity-resolution theory of humor.
2. Why would attention to humorous information help us remember the information better? Consider the role of attention on memory: what is it about humorous information that might help attention to process the information for long-term retention?
3. How does the study of humor from the cognitive perspective help us understand cognition? That is, apply the findings on humor to support theories of attention, memory, and problem solving.
4. When someone selects a non sequitur ending to a joke in a humor appreciation test, it means:
   a. They detected an incongruity but did not resolve it.
   b. They failed to process the literal meaning.
   c. They activated the dominant stereotype.
   d. They picked the correct ending to the joke.
5. What is the role of remote associations in humor processing?
   a. They aid in the processing of a stereotype.
   b. They aid in finding the literal meaning of the joke.
   c. They aid in resolving the incongruity.
   d. They inhibit the meaning of the humorous interpretation.
6. To appreciate a joke, which process requires the most cognitive effort?
   a. activating a schema
   b. detecting the incongruity
   c. activating the stereotype
   d. feeling surprise or amusement
7. What role do linguistic devices such as "Have you heard the one about…?" play in humor processing?
   a. They attract attention to the joke.
   b. They distract the listener from attending to sound (puns).
   c. They alert the listener to expect the expected.
   d. They engage the listener with a factual exchange of information.

8. Which of the following describes the humor effect?
    a. Humor attracts our attention more than interesting information.
    b. Humorous ambiguity requires simpler linguistic processes than linguistic ambiguity.
    c. Humorous information is better remembered than serious or literal information.
    d. Individuals with a high Need for Cognition enjoy humor more than literal activities.

Answers to multiple choice: 4) a, 5) c, 6) b, 7) a, 8) c

2 Biological psychology

Learning objectives

1. Understand the biological perspective of psychology.
2. Understand which brain structures and systems are involved in humor processing.
3. Appreciate humor research with brain imaging techniques.
4. Apply arousal theory to humor.
5. Understand evolutionary psychology's perspective on humor.

Assumptions of the field

1. Genetics and environment affect the biological workings of the brain and body.
2. The brain and body change in response to the environment.
3. All thoughts and behavior can be reduced to biological workings of the brain and body. Psychological constructs such as personality and consciousness can be understood at neuronal and genetic levels.

Biological psychology perspective and principles

With advances in technology, we know more today than ever how the brain functions and how neurotransmitters affect our behavior. That said, there is much we still do not know. It is important to realize that the environment affects the body just as much as the body affects our interpretation of the environment. That is, to understand humor, we need to both understand how the brain can process humor as much as how humorous experiences can influence brain functioning.

Core concepts

Location and structures matter

The biological perspective assumes humor processing happens because our brain is organized to process it. Neural activation during the presentation of humor identifies possible locations involved in humor processing. We learn from individuals with brain damage which specific areas result in specific patterns to process humor, such as failure to detect or appreciate it. Thus, location of damage helps us understand the organization of neural networks and structures, and their function in humor processing.

Equilibrium

Brain processes conduct a balancing act so that our neurotransmitters are not depleted, neurons do not "burn out", nor behaviors become inflexible. There are many familiar examples of this balancing act: sleep and wakeful states balance each other. When hungry, we seek nutrients, and when fed, chemicals in food lower appetite. When stressed, we seek to de-stress. When aroused, we tire and rest. When bored, humor may raise our interest. Equilibrium is the desired state for optimal body functioning.

Thresholds

To help maintain equilibrium, neurons are excited and inhibited. Neurons must reach a certain level of activation before triggering the on-and-off switch to fire. Various neurons may have different threshold levels. Individuals, as well, may differ in their thresholds. Thus, some people need more stimulation to find a situation funny or laugh more easily than others. Risibility may be framed as a measure of level of neural stimulation needed before feeling amused or laughing.

Epstein and Joker (2007) argued that humor is a response that occurs when activation surpasses a threshold level. As we process the setup of a joke, activation increases but remains under the level needed for awareness of a humor response. Resolution of the punchline pushes activation over the threshold, and we experience humor. They also noted the importance of timing, because if too long a pause occurs before the punchline, other responses, such as horror, could occur instead of humor. Thresholds differ for various humor responses and contexts, which explains why we might easily laugh when tickled or when in the company of others (thresholds are lower for these).

Converging evidence

Not everyone holds the biological field's assumption that behavior must be reduced to physiological mechanisms. Most agree, however, that it is meaningful when physiological data supports the other psychological perspectives' theories and predictions. It is desirable for a theory of humor to have agreement between behavioral (including RT, accuracy, and self-report) and physiological measures. When we do not find converging evidence, we conduct further research to uncover the meaning of the conflict: is it the case that the behavioral or physiological theory needs refinement? Or is it that our ability to find or interpret

the behavioral or physiological data is incomplete (due, for example, to our ignorance, lack of means, or confounding factors)?

Because of the desire for converging evidence, physiological research on humor carries the burden of conducting humor research with a wide variety of measures and materials that any psychology perspective might use. These include RT, judgments of liking, production tasks, manipulations of social situations, age groups, cartoons, dynamic visual materials (e.g., movie clips, real-world observations), and verbal humor (written or oral). Researchers working from the biological psychology perspective draw on cognitive psychology's incongruity-resolution theory, on developmental psychology's Theory of Mind, and social neuroscience's theories of social information processing. Physiological research also draws on specific clinical populations (e.g., individuals with autism spectrum disorder or Alzheimer's disease) or medical situations (e.g., brain damage from strokes).

Humor researchers working from the biological perspective ask questions such as which brain structures are needed to process humor? Does damage to any of these structures prevent or mitigate humor comprehension, appreciation, or production? How do biological states such as sleep deprivation or alcohol intoxication affect humor processing? Is there an adaptive role of humor whereby evolution explains current patterns in humor processing?

Brain structures and systems

A location in the brain often concerns particular functions. We can use geography, both in terms of structures (e.g., frontal lobe) and systems (e.g., limbic system) to help understand how the brain processes humor. Figure 2.1 (cortex general areas) and Figure 2.2 (inner, subcortical structures) may help you visualize general locations of some named areas discussed next.

Humor uses both brain hemispheres and involves many cortical and subcortical areas that are widely distributed and complexly networked. That many areas are involved in humor speaks to its complex nature: humor requires cognitive, social, personality, reasoning, emotional, and motor processing (see Chan & Lavallee, 2015). A summary table (Table 2.1) of these areas and related functions are located about midway through the chapter.

Brain areas that appear to handle incongruity detection and resolution are found in cortical regions of the frontal, temporal, and parietal lobes. Specific areas include the inferior temporal gyrus, left fusiform gyrus, and regions between left temporal, occipital, and parietal lobes junction known as Brodmann areas 37, 39, and 40 (Clark et al., 2015). Humor perception likely involves the right frontal cortex, medial ventral prefrontal cortex, right and left posterior temporal areas, and cerebellum (Wild, Rodden, Grodd, & Ruch, 2003).

Attitudes of whether we like or dislike certain types of humor are thought to be represented across various brain regions, that when activated, allow for quick evaluation and emotional responses. Patterns of activation or inhibition within the network to humor involve the right dorsolateral prefrontal cortex, left premotor areas, left ventrolateral prefrontal cortex, bilateral parahippocampal gyrus, and left hippocampus (Wood, Romero, Knutson, & Grafman, 2005).

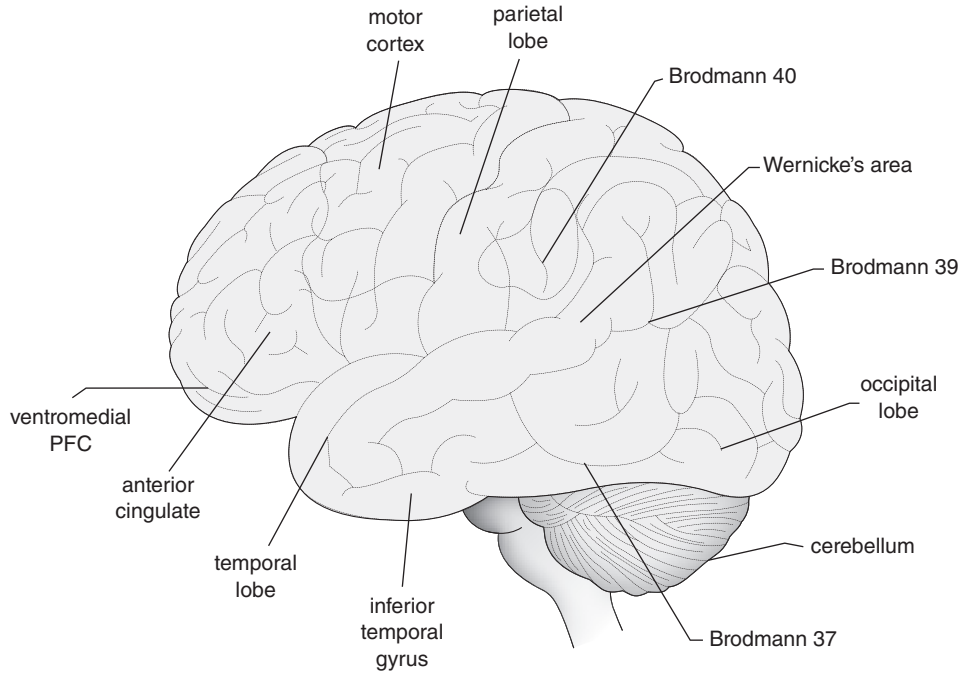


Figure 2.1 General locations on the cortex of areas used to process humor.

Source: Modified from www.publicdomainpictures.net/view-image.php?image=130361&picture=human-brain.

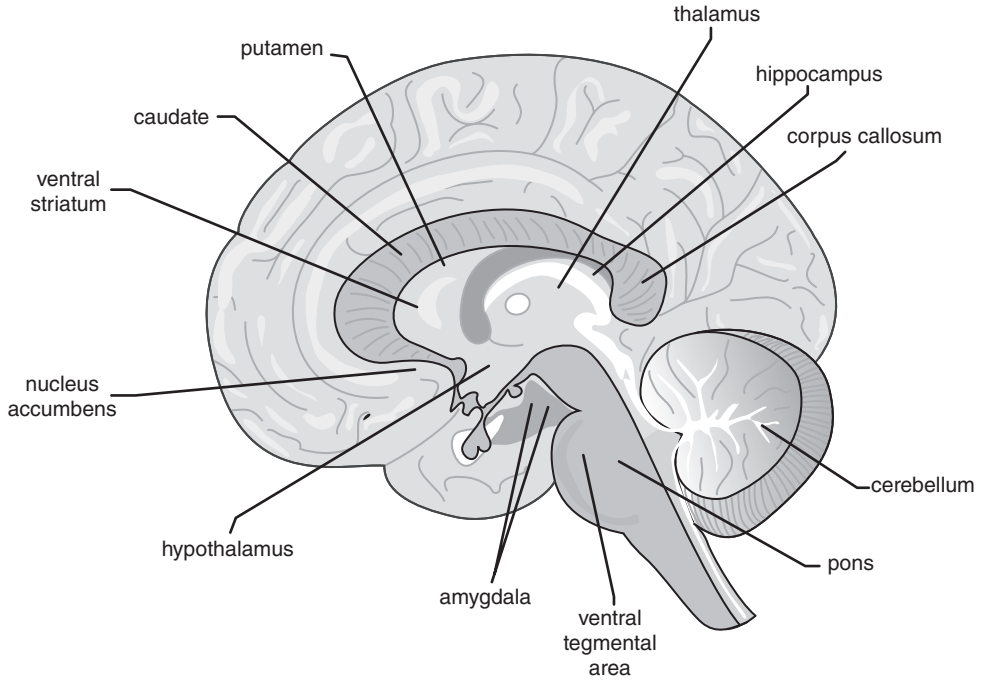


Figure 2.2 Generalized locations of structures underneath the cortex used in humor processing, shown from the left side.

Source: Modified from public domain image https://snappygoat.com/s/?q=brain#82894db2984a468a4e9fbdbd8983f384ed027d8c,6,2210.

Table 2.1 Some Major Areas of the Brain and the Implicated Functions Concerning the Processing of Humor

Area/Structure	*Some implicated functions*
Frontal cortex	
left frontal lobe	incongruity resolution, working memory, personality
right frontal lobe	Theory of Mind, integrating emotion and cognition, appreciation of humor
Broca's area	language production/syntactic processing
motor cortex	facial expressions, laughter
Middle cortex	
left temporo-parietal junction	schema activation, retrieval of lexical and semantic information
right temporo-parietal junction	mentalizing and perspective taking
left temporo-occipital junction	linking remote concepts, detecting incongruity
supramarginal gyrus (at the junction of parietal, temporal, and frontal lobes)/temporal pole	empathy, social and emotional processing
insula	mirth
Wernicke's area	language comprehension
Subcortical structures	
limbic system: amygdala, hippocampus, basal ganglia, hypothalamus, thalamus	mirth or amusement, social processing
right nucleus accumbens, caudate, bilateral putamen (connected to the limbic system, inferior frontal gyrus, left temporo-parietal junction, and right motor area)	reward pathways: motivates seeking and using humor
corpus callosum	comprehension of humor
Other (brainstem)	
ventral tegmental area, pons, and cerebellum	mirth and laughter

Brain areas that appear to cause the humorous emotions of surprise or amusement are found in **subcortical areas** (see Figure 2.2) replete with dopamine receptors (Clark et al., 2015). This dopaminergic mesolimbic reward network includes such structures as the nucleus accumbens, caudate, putamen, ventral striatum, ventral tegmental area, amygdala, and hypothalamus (Franklin & Adams, 2011). The cerebellum receives input from the limbic system.

The ventromedial prefrontal cortex and anterior cingulate areas are thought to link emotions with sensory and cognitive features of humorous materials. This linkage helps us understand and empathize with mental states of others (Coulson & Kutas, 2001; Du et al., 2013; Kohn, Kellermann, Gur, Schneider, & Habel, 2011). The right hemisphere in particular gives us Theory of Mind, the ability to know and imagine what others are thinking (Griffin, Friedman, Ween, Winner, Happé, & Brownell, 2006). Discussed in more detail in Chapter 6 "Developmental Psychology", Theory of Mind enables us to establish expectations and reactions of others, to detect incongruity from their perspective, and appreciate the humor because of their perspective.

Humor is rewarding. It energizes and motivates us to persist in activities (Cheng & Wang, 2015). Behaviorist principles of reinforcement and punishment strengthen or weaken our

humor responses to events. These principles are in play in the excitation and inhibition of neuronal communication. The brain's reward pathways are found in the frontal lobe and limbic systems. These same areas are implicated in reasoning and working memory (see Chapter 1 "Cognitive Psychology"). Reward pathways can explain why lack of sleep typically increases our tendency to find events funny. The jokes may not be funnier when we are sleep deprived, but we interpret them that way. Many of us report laughing more easily late at night when executive functioning is lower (Hasher, Goldstein, & May, 2005) than in the morning when we may be grumpy (without coffee) rather than cheerful. Hearing laughter, not just the action of laughter, activates areas in the motor cortex (McGettigan, 2014).

Von Economo neurons

Von Economo neurons are large, bipolar cells located in the anterior cingulate and frontoinsular cortex, predominantly in the right hemisphere. They are thought to control social emotions and be involved in Theory of Mind (Allman, Watson, Tetreault, & Hakeem, 2005). These neurons develop after birth until about age 4. Allman et al. (2005) proposed that individuals with autism may not have normal development of von Economo neurons. This atypical development could explain problems individuals with autism have with understanding humor (see Chapter 9 "Clinical Psychology" for more discussion on Autism Spectrum Disorder).

Neurotransmitters

The majority of mesolimbic structures involved in humor processing involve the dopaminergic reward pathways. These pathways appear to be heavily involved in learning (rewards) as well as emotional regulation. Dopamine is a neurotransmitter that not only concerns emotions such as joy and mirth, but it also is involved extensively in movement, such as smiling and laughing. Parkinson's disease, for example, affects motor neurons' myelin sheaths, so that the cells cannot transmit signals for the release of dopamine. The drug, L-dopa, helps for a while to elevate depleted levels of dopamine, but, eventually, the cells die and there are not enough receptor sites functioning for dopamine. Patients with Parkinson's disease often report a loss in humor appreciation or laughter.

Based on the assumption that humor uses the reward pathways, researchers asked whether humor could reward performance when this pathway was impaired. Mensen, Poryazova, Schwartz, and Khatami (2014) compared patients with Parkinson's disease and those who have a deficit in hypocretin. Hypocretin (also called orexin) is a peptide involved in affect regulation. It is likely controlled by the hypothalamus and amygdala. Patients with deficits in hypocretin suffer muscle loss (e.g., paralysis) after emotional processing.

The researchers compared both kinds of patients on a task that required a correct estimate of the passage of time within seven seconds. When correct responses were made, a humorous cartoon appeared as the reward. If they were incorrect, they saw a neutral drawing. They measured patients' responses using EEG (electroencephalography) to study the temporal aspects of activation of neurons within the brain's reward pathway. They found impaired activation of the reward pathway from the humorous cartoons in the Parkinson patients but increased activation in the hypocretin-deficit patients. Mensen et al.'s (2014)

research helped confirm that patients with Parkinson's disease have impairment in dopamine regulation in the reward pathways, which humor activates.

Serotonin (5-HT), another neurotransmitter, also has many receptors in the activated brain areas used for humor processing. Serotonin helps memory. It is also involved with sleep functions of the cerebellum. As noted in Chapter 1 "Cognitive Psychology", the humor effect concerns increased memory for humorous material. Release of serotonin may be what helps this humor effect. Serotonin receptors are also found in the stomach. Levels of serotonin may interact literally and metaphorically with those gut feelings of intuition; intuition's role in humor appreciation of system 1 is noted in Chapter 1 (see research by Ventis, 2015).

Epinephrine (adrenaline), norepinephrine, and dopamine are neurotransmitters belonging to a group of molecules called catecholamines. Laughing stimulates the production of catecholamines and endorphins (Dunbar et al., 2012). Epinephrine and norepinephrine stimulate alertness and energy. The activation of neurons that produce these catecholamines cannot be sustained for a long time. Just as neurons fatigue with excessive firing, most people report feeling tired after a laughing spell.

Endorphins released with humor may help tolerate pain (Cogan, Cogan, Waltz, & McCue 1987), enable us to handle stress (Lai et al., 2010), and lower blood pressure (Martin, Kuiper, Olinger, & Dance, 1993). A demonstration of finding the release of endorphins after laughter raises pain thresholds can be seen in a study by Dunbar et al. (2012), who showed participants videos that either caused laughter or not and measured how long they could keep their hands in ice. The ice test measures pain tolerance. Those watching the funny video could keep their hands in ice longer, indicating their higher pain threshold. The researchers found similar results who watched live comedy or drama theater productions. See Chapter 7 "Health Psychology" for further research on how humor reduces stress and boosts the autoimmune system.

Brain damage research

Damage to the brain can affect humor processing in numerous, complex ways. Sometimes damage is diffuse and sometimes discretely minimal. Keep in mind that places in the brain may serve more than one function and some functions may require multiple areas to be intact. However, even by looking at general locations (e.g., right hemisphere), we learn about how humor is processed. The researchers' goal is to identify sites of damage and their resulting intact or impaired humor functioning, and thereby understand or predict behavioral consequences for patients with damage to these areas.

The study of humor from the cognitive and social psychology perspectives emphasizes the need to process cognitive (incongruity resolution, working memory, and linguistic processes) and social (social norms, Theory of Mind and empathy) information, and experience positive affect from processing these humorous events (Uekermann & Daum, 2008). Based on these perspectives, it is expected that damage to areas that enable these functions would impair either humor's comprehension or appreciation. Indeed, lesions in the ventromedial prefrontal cortex resulted in impaired priming of stereotypes and loss of appreciation of jokes that invoked stereotypes (Milne & Grafman, 2001; Vrticka, Black, & Reiss, 2013) and difficulties with comprehending jokes (Uekermann & Duam, 2008). Dementias may also affect patients'

abilities to activate schemas and retrieve knowledge needed for detecting incongruity. Further, damage to emotion pathways diminishes empathy and Theory of Mind (which enables us to empathize with feelings and perspectives of others), and therefore lowers appreciation of jokes (Clark et al., 2015).

Damage to memory systems, such as that found in the famous anterograde amnesic, H. M. who had bilateral hippocampal damage, may result in language deficits and the ability to detect ambiguity (Mackay, Stewart, & Burke, 1998). In their analysis of transcripts, Mackay et al. (1998) argued that H. M.'s comprehension difficulties reflected a poor sense of humor, though Milner, his primary research doctor, thought otherwise. Damage to the corpus callosum, which connects the right and left hemisphere, may occur when neither right or left hemispheres are damaged (such as removing it due to cancer or being born without one). Without a corpus callosum, comprehension of verbal humor is diminished (Brown, Paul, Symington, & Dietrich, 2005), and problems involved in emotional processing, such as recognizing the emotions of others and Theory of Mind impair humor comprehension (Lábadi & Beke, 2017).

Brain damage may also affect the type of humor we use most of the time or use appropriately. Clark et al. (2015) noted that some brain damage can cause compulsive punning or an altered sense of humor, such having a strong preference for pranks or comedic farce. Someone with frontal lobe damage might not realize the effects of their jokes on others and continue to tell jokes when no one else enjoys them. Sometimes, damage to the frontal lobes can result in an addiction to telling jokes, silly behavior, and inappropriate laughter (Shammi & Stuss, 1999). The frontal lobes connect to other areas of the brain, and damage to them impairs many functions, including personality, working memory, and emotions.

In looking at damage to the right frontal lobe, we frequently observe a reduction in humor appreciation (e.g., funniness ratings). For example, Shammi and Stuss (1999) studied patients with specific damage (from strokes, lobectomies, or tumors) in various areas of the brain and compared their humor appreciation to undamaged-brain patients. All participants completed a variety of tests, including rating the funniness of humorous statements (e.g., *Sign in a Hong Kong tailor's shop: "Please have a fit upstairs"*.) or nonhumorous statements (e.g., *Visitors are requested to turn off the lights when they leave the room*.) and selecting the funniest ending of longer jokes, such as

> *The neighborhood borrower approached Mr. Smith at noon on Sunday and inquired "Say Smith, are you using your lawnmower this afternoon?" "Yes, I am" Smith replied warily. Then the neighborhood borrower answered:*
>
> **slapstick ending:** *"Oops!" as the rake he walked on barely missed his face*.
> **logical ending:** *"Oh well, can I borrow it when you're done, then?"*
> **non sequitur ending:** *"The birds are always eating my grass seed"*.
> **correct, funny ending:** *"Fine, then you won't be wanting your golf clubs–I'll just borrow them"*.

Participants' laughter and smiling were also recorded. Shammi and Stuss (1999) found that patients with damage to the right frontal lobe showed the greatest impairment in humor appreciation. They did not show any difference in funniness ratings between neutral and

funny verbal statements, and they did not laugh or smile as much as other participants. By contrast, patients with damage to the posterior areas of the brain showed no deficits in appreciation.

Participants' selection of slapstick or non sequitur endings in Shammi and Stuss' (1999) study suggests that patients with right-hemisphere damage knew the joke ending should not be logical or what was expected, but they were unable to detect or resolve the incongruity, consistent with research by Bihrle, Brownell, Powelson, and Gardner (1986). Further, Shammi and Stuss' (1999) findings suggest that patients with right-hemisphere damage have trouble integrating emotions and cognition; without both, humor appreciation decreases (Wapner, Hamby, & Gardner, 1981).

The right frontal lobe is critical for unique human experiences. It integrates our past (episodic memory) and maintains self-awareness. The loss of humor appreciation reflects a loss of our subjective states and metacognition. Patients with only right frontal lobe damage may experience a dissociation between what they know and what they feel, as evidenced when they rated an ending as funny, but their facial response did not reflect this appreciation.

Further, the right hemisphere is involved in processing expectations of social communication, such as knowing when others are sincere or faking it, when they are lying or telling the truth, and when they are literal or joking. Typically, when we tell a joke, we expect the receiver to realize it is a joke. When we lie, we expect to deceive the receiver. Often, the receiver uses social cues to discern whether we are lying or joking. Damage to the right hemisphere impairs the ability to tell the difference between lies and jokes (Winner, Brownell, Happé, Blum, & Pincus, 1998).

In looking at the left hemisphere, damage here typically affects language, working memory, attention, emotion, personality, and arousal. Individuals with left hemisphere damage usually do not perceive the incongruity in initial cartoon panels and prefer a literal ending to them (Shammi & Stuss, 1999). They show impaired activation of meaning resulting from reduced schema activation and not having the resources needed to discover or resolve the incongruity.

Lastly, the cerebellum plays a role in emotion processing and the control of laughter. Though located far away from the frontal lobes and the reward pathways of the limbic system, the cerebellum connects to them. Serotonin receptors are found in the cerebellum. Individuals who have damage to the cerebellum may feel depressed (Frank et al., 2013), and such depression could affect their humor experience. To explore such a relation, Frank et al. (2013) compared individuals who had stroke damage in the cerebellum and healthy controls. They found damage did increase levels of depression and lower levels of cheerfulness. Surprisingly, however, these patients showed no significant differences in humor comprehension or appreciation. Such findings warrant further research into the complex relationship between depression, emotion, and comprehending humor.

Brain imaging research

Event-related potentials (ERPs)

Action potentials of neurons on the surface of the cortex create electrical signals that can be picked up by electrodes placed on the surface of the scalp. Event-related potentials (ERPs)

show neural changes in activations across time (before, during, and after presentation of information), measured in milliseconds. Events of interest in humor processing are when 1) surprise resulting from incongruity occurs, 2) resolution occurs, and 3) positive affect is experienced.

N400 and P600 effects

ERPs pick up a change in cortical readings in the centro-parietal areas when semantic violations occur. For example, *A sandwich walks into a bar and the barkeep says . . .* is a semantic violation, because sandwiches don't walk. The electrodes pick up an enhanced negative deflection starting around 200–250 ms. and lasting until around 500–550 ms. with a peak around 400 ms. (Kutas & Hillyard, 1980). Incongruity detection is revealed in a N400 effect. When incongruity resolution occurs and results in humor, we typically observe a P600 effect (Mayerhofer & Schacht, 2015). That is, we see a positive signal that differs from signals when no resolution occurs. The P600 effect can last between 600 and 1200 ms. and might reveal a form of monitoring that checks processing outcomes (Van Herten, Kolk, & Chwilla, 2005). These N400 and P600 effects are hypothetically graphed in Figure 2.3.

Humor researchers examined the N400 and P600 effects in response to different types of experimental materials. Mayerhofer and Schacht (2015) attempted to disentangle the steps of detection of incongruity, resolution of it, and the emotional response. They created materials that were original jokes or modified text with incoherent or coherent endings to manipulate their predictability and comprehensibility. They give an example of a coherent ending, *Mummy, I just turned 14. May I be allowed to wear makeup? No, you may not. Now eat your soup, my girl*, where the daughter is reminded of her youth, modified to a noncoherent one, *Mummy, I just turned 14. May I be allowed to wear makeup? No, you may not. Now eat your soup, my father*.

Mayerhofer and Schacht (2015) asked participants to give ratings of familiarity, comprehension, amusement, and ratings of "made me laugh/smile" for 288 items. As predicted, they

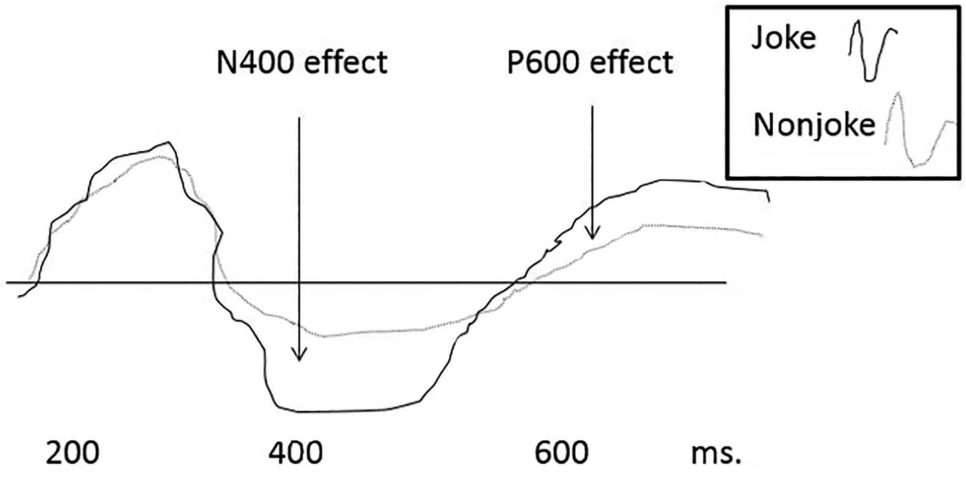


Figure 2.3 Hypothetical depiction of ERP readings displaying N400 and P600 effects.

found a N400 effect for original jokes, and it differed from that found for incoherent endings, reflecting less difficulty in resolution when jokes have an alternative solution (incongruity resolution) compared to when they do not (incoherent endings). They did not find a P600 effect.

Using different materials, Coulson and Kutas (2001) studied ERPs in response to jokes, and nonjokes, defined by whether the ending was expected or not. For example, *by the time Mary had her 14th child, she ran out of names for her pets* (nonjokes ending) or *husband* (joke ending). Their data showed that ERPs differed depending on whether participants succeeded at comprehending the given jokes. Only individuals with good comprehension showed both N400 and P600 effects. Their ERP data support the theory that comprehension requires detection of incongruity (N400 effect) and resolution (P600 effect).

These results were confirmed in a study by Feng, Chan, and Chen (2014) who manipulated the materials to separate when incongruity resolution resulted in amusement and when it did not. They manipulated punchlines so that sometimes they did not fit, creating a nonsensical condition. This nonsensical condition allowed for measuring detection of incongruity but no resolution or amusement. *In which ocean is the International Date line located?: without a trace*. The nonjoke condition allowed for detection and resolution but no amusement. *Which metaphor describes something that is impeccable? Without a trace*. The joke condition allowed for detection, resolution, and amusement. *Tian's household does not have a landline phone. Guess the idiom: without a trace*. ERP results supported incongruity detection and resolution theory, as they showed stronger N400 and P600 effects for jokes compared to nonjokes. Additionally, Feng et al. (2014) observed a greater positive ERP between 800 and 1500 ms. for jokes rated the funniest, and they suggested that this wave indicates emotional experience during the resolution phase (which they called elaboration).

Sometimes the behavioral data do not show an effect of a manipulation, but the ERP data do. Such a finding was reported by Du et al. (2013) where comprehension rating did not differ between jokes and nonjokes, but their ERPS did discriminate between them. Funny items showed the N400 and P600 effects more than nonjokes did. Thus, ERP data supported the three-stage model of humor (detection, resolution, and appreciation), but the behavioral comprehension data was insensitive to these processing differences.

Functional Magnetic Resonance Imaging (fMRI)

Brain cells create magnetic fields when they consume oxygen, and MRI and fMRI machines can detect the movement in these fields and translate them into picture form. In fMRI, pictures show the areas where neurons are consuming more or less oxygen compared to other areas while individuals are completing tasks in the fMRI machine. Cells that are working more during a task than at rest require more oxygen and generate a stronger magnetic field. The fMRI images show structures/areas in precise detail involved in processing, whereas ERP readings reveal time-based processing.

Capacity to process humor

Our brain's capacity to process humor's cognitive, social, and emotional components requires gray matter, the mostly unmyelenated neural matter (e.g., dendrites, cell bodies) that is found

throughout the brain. Using MRI, Kipman, Weber, Schwab, DelDonno, and Killgore (2012) expected a positive relation between left hemisphere gray matter volume and humor appreciation. After controlling for age and sex, they found that gray matter volume of the left inferior frontal gyrus (for incongruity resolution), temporal pole of the temporal lobe (for social and emotional processing), and insula located deep in the folds of the lobes (for mirth) was positively correlated with both visual and verbal humor appreciation scores.

Incongruity resolution

Researchers use fMRI and different kinds of humor materials to help understand which areas of the brain are involved in detection and resolution of incongruity and the emotional experience of humor. For example, Chan, Chou, Chen, and Liang (2012) compared activations when participants read jokes and **garden path sentences–**both statements need resolution, but garden path sentences do not result in humor. (Syntactic garden path sentences have an ambiguous syntax that only becomes puzzling after a certain point if you parsed the syntax incorrectly for the final meaning. For example, *The horse raced past the barn fell* is puzzling once you encounter the word "fell". The resolution requires realizing that "raced" begins a phrase, as in *The horse that raced past the barn fell*.). Chan et al. (2012) compared fMRI readings for the jokes, garden path sentences, and nonsensical sentences that had no resolution. They found that the left superior frontal gyrus and bilateral inferior frontal gyri were most active for jokes. For emotions of amusement, they found increased activations in the left ventromedial prefrontal cortex and both right and left amygdala and parahippocampal gyrus.

Amusement

The emotions concerning amusement or enjoyment of humor are processed in the limbic system using the reward pathway of the brain. Franklin and Adams (2011) used fMRI to study the role of the reward center (mesolimbic pathways) while participants watched videos of stand-up comedians, which based on pilot work were classified as funnier or less funny. Participants watching these videos in the fMRI machine rated videos in the funny condition as funnier than those in the less funny condition. Funny videos resulted in greater activation in the reward centers–right nucleus accumbens, caudate, and bilateral putamen, left inferior frontal gyrus, left temporo-parietal junction, and right supplemental motor area. Interestingly, findings were similar using a regression analysis based on individual's subjective ratings of funniness instead of the experimenters' classification of funny and nonfunny videos. Funnier videos revealed greater activation in the amygdala and parahippocampal cortex. Franklin and Adams (2011) noted that because humor activates the brain's reward network, we are motivated to include humor in our daily social interactions. See Chapter 7 "Health Psychology" for research on the self-regulation of amusement as a coping-with-stress mechanism.

Creativity

Additionally, fMRI data suggest that it is funniness and not just discovery of a resolution that increases activation of a brain area for processing a joke. Amir et al. (2015) created pictures of abstract shapes that were captioned with creative descriptions that were either insightful or humorous or neutral (control descriptions). For example, a picture of two sets of rectangles

was described as *fluorescent light bulbs* in the insightful condition, and a picture of a single dot offset by a cloud of dots was described as *Germs avoiding a friend who caught antibiotics* in the humorous condition. Control conditions for these pictures included *Rectangles with square tab*s or *A plethora of dots surrounded by a dot*. They reasoned that activation differences between the control descriptions and the creative descriptions would reveal areas of the brain doing additional work with the creative statements. If humor processing requires more than creativity, then we expect to see differences in activation between insightful and humorous descriptions.

Amir et al.'s (2015) fMRI data indicated humor is more than appreciating creativity. Their results showed that the reward centers, temporal pole, temporo-parietal junction, and temporo-occipital junction were more active for humorous than insightful captions. Based on their findings, they suggested that retrieval of lexical and semantic information occurs at the left temporal pole, and detection of incongruity from semantic processing that causes surprise occurs at the temporal-occipital junction. The right temporo-parietal junction does the mentalizing or perspective taking needed to compare interpretations. When all these patterns are present, we experience humor, not just insight.

Temporal sequence in activation

To gather a temporal unfolding of activation of brain structures while processing humor, Osaka, Yaoi, and Minamoto, and Osaka (2014) examined fMRI changes while participants viewed a cartoon strip frame by frame. Very similar to findings from ERP readings reported by Feng et al. (2014) earlier, Osaka et al. (2014) found changes in activation for areas activating schemas, detecting incongruity, resolving incongruity, and experiencing emotions. In the second frame that developed the schematic scene, they observed activation of the temporo-parietal junction, in the third scene when incongruity occurred, they observed activation in the temporal and frontal areas, and in the fourth frame where the punchline occurred, they observed increased activation in the medial prefrontal cortex and cerebellum.

Taken together, these studies suggest that the frontoparietal lobe resolves incongruity, the temporo-occipital junction links remote concepts, the right frontal lobe enables Theory-of-Mind processing, and the mesolimbic system, orbitofrontal cortex, amygdala, and parahippocampal gyrus are used for emotional and social understanding of humor.

Transcranial direct current stimulation

It is possible to send electric current to neurons on the surface (cortex) of the brain. These currents result in excitation or suppression of neural activation. In this way, instead of waiting for this neural activity to occur naturally in response to events, transcranial direct current stimulation allows researchers to instigate the neural response. Anodal polarity increases excitation in neural membranes, and cathodal polarity inhibits it.

Slaby et al. (2015) used transcranial direct current stimulation while participants watched humorous short (20 s) videos of stand-up comedians. They focused on the left temporo-parietal junction which previous research indicated is likely involved in incongruity resolution and humor appreciation. This area also is implicated in empathy. They recorded activity changes at various brain locations in relation to the timing of laugh tracks on the videos. In addition to the physiological readings, Slaby et al. (2015) measured participants' humor

appreciation on a rating scale and collected various personality measures (e.g., Big Five personality and Humor Styles Questionnaire (HSQ), see Chapter 3 "Personality Psychology").

The findings indicated that perceived humor decreased when excitation occurred in the area of the left temporo-parietal junction. Why would exciting these neurons decrease appreciation instead of making the comedians appear funnier? Slaby et al. (2015) suggested that excitation of this areas increased empathy for the targets of the comedian's jokes. Empathy reduces seeing the stereotype which comedians exploit (see Chapter 4 "Social Psychology"). When participants empathized with targets of the comedian's jokes, they did not share in their poking fun at them. Some support for this interpretation comes from the reported humor styles of Slaby et al.'s (2015) participants: those participants who held a more aggressive style of humor–participants who normally enjoy making fun of others–were more likely to show this decrease in humor appreciation due to stimulation of the left temporo-parietal junction.

See Table 2. 1 for a summary of major brain areas implicated in humor processing.

Arousal theory

Arousal theory concerns the relation between physical arousal and performance. It uses the concepts of equilibrium, tension, and relief (Berlyne, 1960). The idea states that physical arousal has a curvilinear relationship with performance, and, in this case, humorous feelings or judgment of funniness. As shown in Figure 2.4, low arousal results in low responses to humor. High arousal results in a low response to humor as well, because when in such a hyperaroused state, we are too overwhelmed to respond to events. According to theory, we are motivated to keep the system at equilibrium. The optimal response to humor occurs when in a moderate state of arousal (McGhee, 1983).

If we think of arousal as tension, too much tension hurts. We feel relief when tension or overarousal is reduced and returns us to a normal state. Thus, a good joke will not only take us from low arousal to medium arousal, it may also be one which begins to move us past the hump in setup and then brings us back to the middle when the punchline occurs. Detection of incongruity moves us past the hump and tension increases with the confusion, but resolution relieves this tension, both cognitively and physically, and moves our arousal back to medium level (Godkewitsch, 1976).

There are many different ways in which tension and arousal can increase when telling a joke: level of surprise, complexity, change, ambiguity, incongruity, and redundancy. Any of these ways will catch our attention or interest and arouse us physically. Apter's reversal theory and Freud's psychodynamic theory (see Chapter 9 "Clinical Psychology") draw on arousal theory to explain the roles of humor in our lives.

Sleep

Lack of sleep disrupts cognitive processing which requires executive functions and mental effort (Harrison & Horne, 2000). For instance, the frontal lobe shows decreased use of glucose after 24 hours of sleep deprivation (Thomas et al., 2000), indicating that

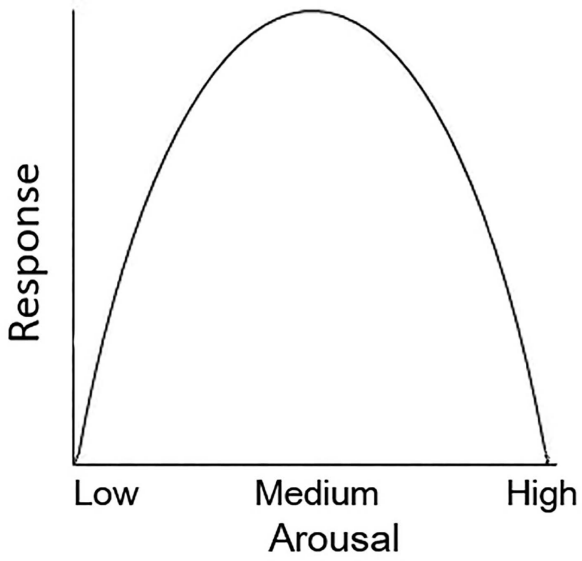


Figure 2.4 The Yerkes–Dodson (1908) law shows the curvilinear relationship between arousal and responding to humorous events.

sleep-deprived neurons are working less and therefore demanding less glucose to function. It fits, then, that sleep deprivation would affect humor processing that relies on frontal lobe functioning.

Many sleep-deprived individuals take caffeine to counteract the effects of sleep deprivation. Caffeine helps increase alertness. However, more alertness does not necessarily mean an increase in efficient central executive functioning. Killgore, McBride, Killgore, and Balkin (2006) studied the effects of caffeine and sleep deprivation on humor appreciation. Their primary purpose was to show that complex cognitive processes needed for humor may be unable to function well with sleep deprivation even when we take caffeine to help increase alertness.

In Killgore et al.'s (2006) study, 54 adults (18 to 36 years of age) were sleep deprived for 48 hours. They were randomly assigned to receive one of three stimulants (caffeine, modafinil, or dextroamphetamine) or a placebo. Participants viewed both verbal and cartoon materials. The humor test required participants to choose which of paired items was funniest. For example, Headline 1–*Veterinarian Investigates Failed Panda Mating*; and Headline 2–*Panda Mating Fails; Veterinarian Takes Over*. Killgore et al. (2006) found no change in humor scores for verbal statements for any of the stimulants compared to placebo, but they did find improvement with cartoons, and most notably for stronger stimulants. Caffeine did not help humor detection performance that was poor due to sleep deprivation. On measures of vigilance, a nonhumorous task of attention, all three stimulants improved performance.

These results show that sleep deprivation impairs cognitive functions used to detect or appreciate humor and that caffeine does not help compensate for this impairment. Students can also generalize these findings to their study habits. When they are sleep deprived, ingesting caffeine may help their alertness but complex cognition (needed to learn well) including humor appreciation may not be facilitated.

One reason we need to sleep is that sleep helps consolidate the memories formed while awake. Consolidation causes long-term retention of our daily memories. As covered in Chapter 1, the humor effect concerns the memory benefit for learning material framed in a humorous way. Chambers and Payne (2014) conducted a study to examine how sleep matters to the humor effect. Specifically, participants studied 27 cartoons and their captions. In the 12 hours afterwards, participants either slept for more than 6 hours or did not sleep (or nap) at all. The memory test occurred 12 hours after study. In the test session, participants recalled the captions and provided descriptions of the cartoons in as much detail as possible. Chambers and Payne (2014) manipulated the nature of the captions: in addition to funny captions, some did not fit the cartoon (odd) and some were literal descriptions of it. Two control groups were also used: one group participated in morning and the other in the evening, with both groups having only a 15-minute delay between study and test.

As expected, participants rated humorous captions as funnier than odd and literal captions, both in the control short-term 15 minutes and at the 12-hour delay. Also, as expected, they showed better recall in the 15-min condition for humorous items only, replicating the humor effect. Of interest, however, is whether 12 hours of sleep would maintain this humor effect. The sleep group showed the humor effect, but the group that stayed awake did not.

In a second experiment, Chambers and Payne (2014) changed the procedure slightly by having participants provide humor ratings (in addition to recall) when they returned 12 hours later. Sleeping within the 12-hour interval decreased their appreciation ratings of the funny captions, whereas not sleeping increased them. In fact, the sleep group increased their ratings for the nonhumorous items, too, in addition to lowering ratings for the humorous ones. Chambers and Payne (2014) suggested that those who sleep may have lowered their ratings either because REM sleep causes a reduction in amygdala processing, lowering reactivity to emotional materials afterwards, or because jokes are usually less funny when we hear them again. The sleep-deprived individuals maintained the same level of appreciation for the repeated cartoons perhaps because the lack of sleep impaired their memory for their earlier presentation.

Alcohol

Morreall (1983) suggested that alcohol lowers the threshold of amusement, causing individuals to find things funny when intoxicated that they would not when sober. If so, we might expect to find that humor appreciation increases under the influence of alcohol. However, given that alcohol is a depressant and lowers arousal and our cognitive resources, we might expect to find humor detection or appreciation is lower than when sober.

Weaver, Masland, Kharazmi, and Zillmann (1985) examined the effects of alcohol on people's responses to humor. They used two types of television videos popular in the 1980s: salient, raw humor (slapstick comedy from the *Carol Burnette Show*) and subtle, refined humor (verbal routine of George Carlin). They hypothesized that salient, raw humor, such as slapstick comedy, requires fewer cognitive operations, whereas subtle humor requires more work to detect the incongruity and resolve it. The researchers predicted an interaction: alcohol would increase humor perception for salient, raw humor but lower it for subtle, refined humor.

Weaver et al. (1985) randomly assigned 36 male participants to three conditions: sober, low dose alcohol, and higher dose alcohol. Doses were 0, 0.75 oz. or 1.5 oz. of 100% proof vodka per 50 lb. of body weight mixed with orange juice. The experimenters presented the video clips in blocked fashion so that participants saw one kind of comedy first and then the other second. Participants were told these videos might be used in a future study to reduce expectations that they were supposed to find them very funny. Two measures of humor perception were taken: 1) video-recordings of participants' faces later coded for smiles and laughs and 2) funniness ratings.

Data analyses found the predicted interaction with funniness ratings. As shown in Figure 2.5, the increase in alcohol intake increased humor ratings for blunt humor but decreased ratings for subtle humor. All groups rated the preintoxication-viewed video as equally funny, the low dose group rated the subtle humor as funnier than the blunt humor video, and the high dose group rated the blunt humor as funnier than the subtle humor video.

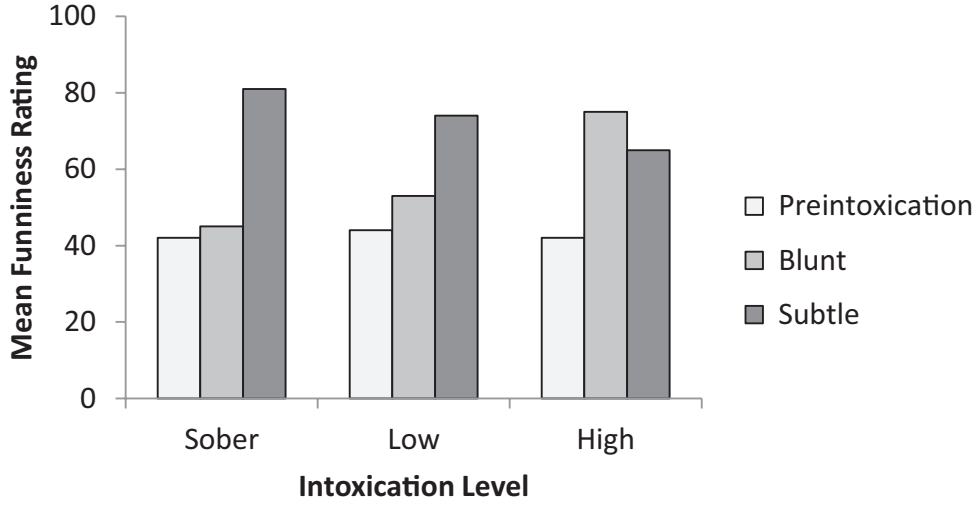


Figure 2.5 Weaver et al.'s (1985) interaction between intoxication level and humor type on funniness ratings.

In a more recent study employing 513 participants tested in small groups, alcohol increased the number of Duchenne smiles (see the next section on laughter) while watching a 5-minute clip of a Seinfeld act, but it did not increase enjoyment of the humor compared to those in the placebo or nonalcoholic beverage conditions (Sayette et al., 2018). Notably, the number of social smiles were equivalent across participants in the three conditions.

Other research examined the effect of alcohol on humor processing. Chronic alcohol intake not only damages the liver, but also it damages the brain. For example, alcoholism can cause atrophy of the frontal lobe. Kopelman (2008) reported that the research literature shows a loss of executive functioning by patients with chronic alcohol use like that observed with aging (Shammi & Stuss, 2003). The literature also reports problems with social cognition, such as interpreting the emotions of others from their facial expressions (Uekermann, Channon, & Daum, 2006). Taken together, this research indicates expected difficulties in processing humor.

Uekermann, Channon, Winkel, Schlebusch, and Daum (2006) examined humor perception of participants with alcoholism. They asked participants to choose endings to jokes (see examples in Chapter 1). These correct endings require cognitive processes to detect subtle humor, but alcoholism reduces the ability to complete these cognitive processes due to damage to the hippocampus and the frontal lobe. Uekermann, Channon, Winkel et al. (2006) found that individuals with alcoholism, when incorrect, had a tendency to select slapstick or logical endings of humor. Participants also rated both the slapstick endings and the correct endings as less funny than did controls. Whereas individuals with a normal brain under the influence of alcohol may find salient, slapstick humor funnier than controls (e.g., Weaver et al., 1985), individuals with a brain damaged by sustained alcohol abuse no longer maintain that degree of appreciation.

Laughter

> Humor is laughing at what you haven't got when you ought to have it.
>
> – Langston Hughes (as cited in Newman, 1998, p.184)

We typically show our response to humor with smiles and laughter. Much research has studied the extensive network of muscles and nerves involved in smiling and laughter (e.g., Provine, 2001). The **Duchenne display** is named for a stronger response where we not only move our lips upward, but we also crinkle the skin around our eyes when we narrow them as we smile. In the Duchenne display, the zygomatic major (for smiling) and orbicularis oculi muscles (for eye crinkling) are used, whereas in non-Duchenne display we use only the zygomatic major muscles.

The emotions of amusement when strong enough will activate the same neurons that cause us to cry, and this is why sometimes the same facial expression and tears can occur as a response to sorrow as to humor. Our respiratory muscles are involved in laughter as well, which can turn to hurt or pain when we laugh too hard or too long. Researchers have studied a range of physiological responses, from faked smiles to hardy belly laughs to pathological laughter (uncontrollable laughing without the emotion or appropriate event).

Laughing involves two neural pathways. The emotionally driven pathway is involuntary. It involves structures of the limbic systems, specifically amygdala, thalamus, and dorsal/tegmental brainstem. An involuntary pathway is not under our control; we cannot start it or stop it at will. The cognitive-driven pathway is voluntary, however. We can stop its processing or enhance it with conscious interpretations of the event. This voluntary pathway of laughing involves the frontal/premotor areas, the motor cortex, and the ventral brainstem. The dorsal upper pons is thought to coordinate these two pathways (Wild et al., 2003).

In looking at tickling, Wattendorf et al. (2013) tickled the sole of feet of participants while fMRI pictures were taken. They manipulated whether participants were told to stifle the laugh, encouraged to laugh, or allowed to respond naturally. Wattendorf et al. (2013) were interested in a) whether laughter when tickled used similar brain areas that we use in response to humorous events and b) whether these areas are under our control (they would not activate when trying to inhibit laughter from tickling). Motor areas involved in laughing are under both voluntary and involuntary control, as inhibiting laughing was able to decrease activation relative to the other laughing conditions. Their findings showed that the hypothalamus, in particular, was activated, where there is a concentration of hypocretin cells that increase the arousal we feel when tickled.

Any disconnect in normal processing can affect facial muscles, emotional regulation, response to incongruity detection, and blending messages of meaning and emotion. Several neuropsychological conditions are associated with uncontrolled laughter. A condition called gelastic epilepsy can cause uncontrollable laughter without the mirth emotion. Lesions in the hypothalamus might be implicated (called hypothalamic hamartomas), but Wild et al. (2003) also document other rare cases of uncontrollable laughter from patients where other areas were implicated, such as the pons area in the brainstem or areas in the frontal lobe. Uncontrollable laughter might arise from failure to inhibit the motor response or emotions so that laughter is inappropriate for the social context. Pseudobulbar affect disorder is named for patients who have episodes of uncontrollable laughing or crying due to lesions in any areas within the laughter network. Other brain-related disorders such as multiple sclerosis, traumatic brain injury, or strokes may increase uncontrollable laughter by impairing the regulation of emotional expression.

Wild et al. (2003) addressed a "laughter network" which involves neural communication from the brainstem to prefrontal cortex to the motor area and the mesolimbic system. They suggested that emotionally driven laughter does not start in the motor cortex but rather involves the whole network initiating the response, suggesting that patients with uncontrollable laughter may have problems at any point within the network.

Researchers can use this network to help understand why we laugh when tickled or why sometimes laughter is contagious (Wild et al., 2003). But given the complexity of so many brain areas involved in humor detection and appreciation, and the fact that laughter can occur for other reasons besides humor, the story of how, why, or to what degree we laugh in response to humor is yet to be pieced together from its many puzzle pieces. We laugh more with others than we do alone; we laugh during conversations with each other, and we laugh when someone else tickles us but not when we tickle ourselves. McGettigan (2014) noted stronger activations of the motor cortex when individuals listened to many others laugh

compared to one or a few. She noted that laugh tracks on TV shows (which are the sound of many people laughing) invoke a laughter response in listeners, even if they don't like listening to laugh tracks.

The speech signal of laughter overlaps a great deal with ordinary speech, but it tends to show a higher fundamental frequency than normal speech. The fundamental frequency is the lowest thick band of vibrations in the speech signal. This difference may help individuals detect laughter as a cue to aid in processing co-occurring verbal statements. Participants show different responses when hearing laughter that was a genuine response to humor than to fake laughter. Using fMRI, hearing fake laughter activated the frontal lobe, where we process Theory of Mind because we try to figure out why others are laughing by empathizing with them (McGettigan, 2014). While listening to real or fake laughter, participants who were better able to discriminate the real from fake laughter were more likely to show stronger activations of the motor and somatosensory cortex.

As noted earlier, the act of laughing releases endorphins, which in turn raises the pain threshold. McGettigan (2014) likened this release to the runner's high and feelings of happiness that can result from endorphins. Laughter typically results in feelings of happiness. Her message, then, suggests that there is some truth to laughter is (the best) medicine for feeling better. Happiness as a cause and an effect of humor is discussed further in Chapter 8 "Positive Psychology".

Evolutionary psychology

Evolutionary psychologists suggest that many behaviors humans have today occur because they have adaptive value. One theory suggests that humor is an attribute for selecting strong partners. For example, showing that we can create or appreciate humor indicates cognitive fitness or social competence. Survival of the funniest! Additionally, Darwin (1872) suggested that humor had a social function of aiding in the cohesion of groups (see Chapter 4 "Social Psychology"), and in our past, groups were more likely to survive than individuals. A related theory is that laughter in response to an ambiguous event signals the lack of threat.

Another idea from the evolutionary perspective suggests that aggression helped the strong survive, and humor is a form of aggression (e.g., Aristotle or Freud). Today, we see physical signs of aggressive stances when humor is framed as pleasure from winning (i.e., resolving incongruity conquers ignorance). For example, consider the cartoon character of Homer Simpson, who raises his hands in the air as he says "whoo hoo" when something funny occurs. Hands raised in the air is actually an aggressive gesture made in the victory of battle (and by the victors of sports matches). Being humorous or showing your cleverness in detecting humor is analogous to winning a game. Figure 2.6 illustrates aggressive humor and pokes fun at cognitive competence for improving living conditions for early humans.

Evolutionary psychology studies factors that affect mate selection. In general, a strong mate ensures genes will be passed on to the next generation. Cognitive and social competence makes for an attractive mate (Wanzer, Booth-Butterfield, & Booth-Butterfield, 1996).

"It's very original but couldn't you think up something to keep us warm?"

Figure 2.6 Humor, but not indoor plumbing, might have encouraged survival of the funniest.
Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

Creating or appreciating humor are signs of cognitive and social competence. Someone who appreciates humor has the cognitive skills to detect ambiguity and resolve it. Someone who produces humor has the skills to connect remote associations, create an ambiguous situation, and realize others will be surprised by its resolution (Klasios, 2013). Someone who laughs at humor is viewed as more socially competent, and thus more likely to succeed in intimate relationships than those who don't "get" it.

Research supports this theory. Social bonding occurs when we like others who are humorous, and we find them more attractive and appealing (see Chapter 4 "Social Psychology"). Research shows that men tend to prefer partners who are good humor appreciators and women tend to prefer partners who are good humor producers (Hone, Hurwitz, & Lieberman, 2015; Howrigan & MacDonald, 2008). We see this idea illustrated in the movie, *Who Framed Roger Rabbit* when Jessica (a human) says she loves Roger Rabbit (a cartoon) because "he makes me laugh".

Chang, Ku, and Chen (2017) interpreted their ERP data in terms of the idea that men are producers and women are appreciators of humor. They used question-and-answer items that were either funny (e.g., *Q: Who goes to the hospital most often? A: Doctors*) or literal (e.g., *Q: What is the name of the planet we live on? A: The Earth*). They collected ERP data while participants rated the degree of surprise, comprehension, and funniness of 30 question-answer jokes and literal items. They found both genders had similar N400 effects in detecting incongruity, but women had stronger P1000–1300 amplitudes compared to men. This late stage of processing is likely due to the integration of cognitive resources and emotional

processing (Chang et al., 2017). They also found that, whereas ratings for surprise, comprehension, or funniness did not differ between genders, men showed a significant correlation between comprehension and funniness ratings, whereas women did not. That is, men were more likely to say a joke was funny if they understood it, but women did not. Chang et al. (2017) suggested men used more automatic processes, whereas women recruited more mental resources to integrate their cognitive and emotional processing to appreciate humor.

Recap

Many studies examine brain functioning and humor, few of which are discussed here. The converging evidence from studies on individuals with brain damage and healthy controls argues that many areas of the brain are involved in processing humor. Detection, comprehension, and appreciation of humor require cognitive, emotional, social, and personality processes that are coordinated by frontal, motor, and sensory areas. Both brain hemispheres are involved in humor processing. Factors that negatively affect brain functioning, such as sleep deprivation and alcohol consumption, typically impair humor processing. Laughter activates both cognitive and emotional pathways in the brain, and conveys social information, such as sincerity and empathy. Evolutionary psychologists advocate that the organization of the modern brain is a product of evolution and a cause of patterns we may find between the sexes in humor appreciation and production.

Suggested readings

Noh, J., Seok, J., Kim, S., Cheong, C., & Sohn, J. (2014). Neural substrates associated with humor processing. *Journal of Analytic Science and Technology*, *5*, 20–26.

Provine, R. R. (2004). Laughing, tickling, and evolution of speech and the self. *Current Directions in Psychological Science*, *13*, 215–218.

Rodden, F. A. (2018). The neurology and psychiatry of humor, smiling, and laughter: A tribute to Paul McGhee part II: Neurological studies and brain imaging. *Humor*, *31*, 339–371.

Suggested class activities

Activity 2.1. Thresholds of awareness

In small groups, discuss the notion that a threshold of activation must be reached to bring thoughts or feelings of amusement to consciousness. Connect this idea to incongruity-resolution theory, where the detection of incongruity begins with nonconscious processes that activate remote associations and end with sending to consciousness a second mental representation that holds the funny interpretation. How could thresholds explain the success or failure of the meaning of the second schema coming to consciousness? Generate ideas of how our experiences might influence threshold levels.

Activity 2.2. Multiple physiological and behavioral measures

Physiological measures detect effects of experimental manipulations that may or may not agree with our subjective experience or behavioral responses. For example, the brain might

discriminate between two jokes, whereas the self-report ratings do not. In small groups, discuss what it might mean when a) only physiological data show an effect of humor, b) only behavioral data show an effect of humor, c) neither physiological and behavioral data show an effect of humor, and d) physiological and behavioral data both agree. What reasons might there be for each situation? Discuss your answer in terms of the various perspectives of psychology.

Activity 2.3. Structure of jokes that maximize humor response

In small groups, discuss must-have characteristics of short jokes (such as one-liners) for the audience's response to fall under the optimal area of the arousal curve. Discuss must-have characteristics of long, narrative jokes (such as ones that tell a story) for the audience to end at the optimal area under the curve. Generate examples of successful and unsuccessful jokes that fit arousal theory. Come away with an appreciation for how jokes use arousal to optimize our humor experience.

Activity 2.4. Sleep and risibility

Using your diary (or memory) of humorous events, do you find evidence that sleep matters to your humor appreciation? Tally the frequency of laughing/finding events funny or not laughing/not finding events funny when getting a good night's sleep compared to only a few hours or less. In small groups, share everyone's tallies, and observe whether the evidence supports the role of sleep in humor appreciation.

	Good Night's Sleep	*Sleep Deprived*
Laughing/finding it funny		
Not laughing/not finding it funny		

Activity 2.5. Ambiguity and laughter

Generate ideas of ambiguous materials to appreciate the skill needed to ascertain whether they are a threat or a joke. For example, a new member of a group spills a drink on the leader and everyone gasps. If the leader laughs, everyone relaxes. Come to an agreement of how laughter helps everyone in the group know how to handle ambiguous situations.

Activity 2.6. Generate the take-away message

Biological psychology presents a number of terms, locations, and processes that can be overwhelming to learn. a) Sift through these, and form a take-away message concerning an emerging theme that there is no one "funny bone" in our brain. b) Provide some examples connecting location and function (e.g., frontal lobe and working memory). c) What are the implications that there is no one localized funny zone in the brain that accounts for our humor comprehension or appreciation.

Activity 2.7. Generate research ideas on biological individual differences

Studies on emotions and creativity might look at the behavioral effects of physiological variables, such as handedness, menstrual cycles (or hormones), and circadian rhythms. a) Using PsycInfo, examine the literature on one of these variables. b) Generate a research question to investigate whether humor appreciation or production could be affected by your selected variable. c) Write a proposal that argues that the answer to your research question would contribute to our understandings of individual differences of humor.

Study guide

Concepts and theories

Activation
Arousal theory
Duchenne display
Evolutionary psychology
Excitation
Inhibition
Non sequitur punchlines
N400 effect
P600 effect
Sleep deprivation
Theory of Mind
Thresholds

Review questions

1. Provide an example from the research of how data from brain imaging supports the cognitive incongruity-resolution theory of humor.
2. Location helps speed communication of brain processes. Identify several functions that are close to each other and some that are further apart. How might distance affect processing of neural signals?
3. Appreciating humor and producing it are two different behaviors. Discuss how various physical states (e.g., sleep, alcohol, stimulants, and neurotransmitter adjustments) might not always affect both behaviors the same way.
4. Why should we conclude that humor is not a localized function in the brain?
   a. Humor is processed only in the gray matter and not in bones (hence no funny bone).
   b. Humor is processed in all parts of the limbic system.
   c. Humor is processed mostly in the right hemisphere.
   d. Humor is processed in distributed locations throughout the brain.
5. What dominant functions of the frontal lobes are important to humor processing?
   a. working memory and episodic memory
   b. emotions and reward
   c . sleep and vision
   d. semantic associations
6. Why is appreciating humor considered a sign of cognitive fitness in the evolutionary perspective?
   a. It takes physical strength to put up with humorous people.
   b. Cognition control emotions.
   c. Humor appreciation requires functioning of complex processes distributed across the brain.
   d. It takes more cognitive effort to appreciate humor than to produce it.

7. Which concepts help explain why medium arousal is better than low or high arousal for an optimal response to humor?
   a. schema activation and working memory
   b. equilibrium and thresholds of attention
   c. inhibition and excitation
   d. converging evidence and experimental dissociations
8. Which imaging technique has the best temporal precision of humor processing?
   a. ERP
   b. fMRI
   c. PET scan
   d. transcranial direct current stimulation

Answers to multiple choice: 4) d, 5) a, 6) c, 7) b, 8) a

3 Personality psychology

Learning objectives

1. Understand the personality perspective of psychology.
2. Understand how the personality perspective studies humor.
3. Know how the Big Five theory of personality applies to humor traits.
4. Identify some patterns found with humor dimensions and styles.
5. Identify some individual differences and scales used to study humor.

Assumptions of the field

1. Individuals possesses personality characteristics that uniquely belong to them. These endure over time.
2. Personality describes, explains, and predicts behavior.
3. The field assumes no particular philosophy; hence, there are various theories and approaches that draw on cognitive, behavioral, social, Freudian, humanistic, and existential philosophies. Each of these perspectives makes its own assumptions.

Personality perspective and principles

Our personality is like snowflakes, where no two people are identical, but unlike snowflakes, endures over time. Researchers in personality psychology aim to describe the characteristics that make us different. The lexical approach is the dominant way in experimental psychology to describe personality; it uses words to describe people, such as *thoughtful, outgoing*, or *funny*. Researchers also aim to study how these characteristics endure over time and across situations. As with any personality characteristic, humor as personality trait has consequences to how we behave (Heintz, 2017).

Personality psychology researchers grapple with definitions of humor and the meaning of having "a sense of humor". Humor researchers working in the personality psychology

perspective ask such questions as which traits or styles best describe the humorous person? Which personality characteristics (e.g., extroversion) are correlated with humor? What are valid and reliable measures of humor as a construct? As an individual difference, how might measures of humor help predict liking or expressing humor?

Core concepts

Personality measures often are rating scales that measure the characteristics most like the individual. Associations among constructs and dimensions suggest how and why a description of personality fits the person. **Correlation** (the *r* statistic) is the most common measure of association. When scores on one measure are high, we ask whether scores on the other measure are high (positive correlation), low (negative correlation), or are sometimes high and sometimes low (no correlation). **Regression** analyses go beyond correlation and help researchers determine how well a personality description predicts humor or other behavior of interest. The statistic from regression, R^2, reports the amount of variance accounted for in the dependent measure (y) by the variables (x) entered into the regression analysis. Does humor uniquely explain other behaviors? Does our personality uniquely explain funniness ratings?

Another statistical technique, **factor analysis**, can reveal which tasks or items on a scale relate to each other more than the rest. Using these identified factors, further research can reveal when these factors explain other behavior. For example, a humor measure may include 30 statements. A factor analysis on these statements might reveal three factors (i.e., cognitive, social, and emotional); all scale items loaded on the cognitive factor would share a theme concerning thinking or information processing and not share as much in social and emotional themes. Respondents who score high on the cognitive factor might show a higher appreciation for jokes requiring incongruity resolution than nonsense or sexual humor. Much personality research on humor focuses on developing measures that have good **construct validity** (they measure what they should measure), **reliability** (they do find the same pattern each time the scale is used), and **predictability** (they find in future data the expected pattern).

Correlations do not imply causation

When we find humor production and creativity are highly correlated, for example, we cannot reason that creativity caused production or that producing humor caused creativity. To reason about causality, we must conduct experiments, where researchers manipulate variables that help make sense of correlations found in prior research. However, correlations are helpful in identifying which associations are worthy of further study.

Individual differences and randomness

Researchers cannot randomly select their participants and say, "you will be extroverted" and to others "you will be introverted". Nor can we say, "please be funny" and expect everyone has the ability to comply. However, we can organize data by participant variables (e.g., age, gender, and personality measures). In many studies conducted today, these individual

differences are treated like independent variables (which use random assignment) without much distortion to statistical analyses that assumed random assignment. The reasoning holds, for example, that when introverted individuals find cartoons funny, but extroverts do not, personality likely caused the observed difference. Classification based on participant variables can go beyond self-report of rating scales and use reliable, extensive coding of responses in qualitative data, such as humor studies which use diary studies or videotaped facial expressions.

When we think of personality, we tend to think of it as self-contained inside the individual. However, keep in mind that social and physical worlds influence personality, both in its formation as well as its expression. In a dynamic model of personality, predicting a person's humor or behavior will depend on the context in which they are situated. Thus, although some humor theories focus mostly on a definition of humor within the self that can generalize across individuals, personality theorists are interested in variability due to social and cultural contexts. Researchers manipulate the context in which individuals are studied. These manipulations may intentionally emphasize or draw on personality characteristics to observe participants' behavior in those contexts.

Humor definitions

> There are very few judges of humor, and they don't agree.
>
> – Josh Billings (as cited in Esar, 1949, p. 38)

Clearly, although responding to humor is a daily experience for most, not everyone finds the same joke funny. We differ in our appreciation of jokes, situations, or events. For example, while our friends are doubled over in laughter from a joke they just heard, you could be thinking, *You can't be real; that's not funny at all*. We also differ in the kinds of humor we produce. Personality differences may be one reason for this variability. The personality perspective considers humor in (at least) four ways:

- **Humor as an ability**: a creative aptitude.

  This view takes the position that humor is like a skill or talent; some of us are gifted with humor and some are not. To be funny requires the ability to perceive incongruity between people or events and to share these perceptions with others (Ziv, 1984). Individuals differ greatly in their ability to produce humor spontaneously or on request (Nusbaum, Silvia, & Beaty, 2017). Further, to laugh in response to humor requires the ability to comprehend and enjoy it. This view predicts that our ability could be increased with more knowledge (perhaps to help activate appropriate schemas) and more practice at divergent thinking. However, ability may require certain personality characteristics, and, therefore, if we lack certain traits, then practice may not help improve our sense of humor.
- **Humor as a mood or state**: not as stable across contexts.

  This view suggests that humor appreciation or production depends on our current state. For example, a cheerful mood helps appreciate humor, whereas a depressed or anxious mood harms it (Ruch & Carrell, 1998). This view predicts that a manipulation of mood should affect our humor appreciation or production. For a related view, see

Apter's reversal theory of humor in Chapter 9 "Clinical Psychology", where he posits that we experience humor when we shift to a playful state of mind, a safety zone with low anxiety.

- **Humor as a personality trait**: stable across multiple contexts.

  Likely, traits become permanent by adulthood and do not vary daily like mood (Kagan, 1998). A good deal of developmental research shows that traits we exhibit early in life persist across our lifespan. Traits may be considered as a prevalence or tendency exhibited across various contexts. For example, trait cheerfulness concerns a prevalence of a good mood, a tendency to smile and laugh easily, and a tendency to switch to a playful mode when the context suggests it (Martin, 1996; Ruch & Carrell, 1998).

  Today, the trait approach dominates research in psychological science. It uses words as descriptors of traits. Ruch (1998) noted that because most cultures have depth in their lexical vocabulary for humor, these words help differentiate how their combination (e.g., laughs easily, cheerful, quick-witted, and open to experience) describes us as unique individuals.

- **Humor as a personality style**: a preference.

  Styles differ from traits with their focus on patterns of how we think, feel, or behave rather than a focus on stable characteristics of our identity. We may prefer to use humor to make others feel good, for example. Styles may change over time and across contexts, whereas traits are more ingrained in our personality.

Dimensions of humor

Theorists support a multi-dimension or multi-component view of humor. Most contain the major idea that humor is comprised of cognitive, social and emotional components, with later models focusing on humor preference or function. Eysenck's (1942) research suggested three components: cognitive, conative, and affective components, where conative referred to humor showing superiority and aggression (see Freud, 1905. A few years later, Cattell and Luborsky (1947) suggested five components of humor: good-natured self-assertion, rebellious dominance, easygoing sensuality, resigned derision, and urbane sophistication.

Later, Ruch (1998) suggested three dimensions of humor preferences based on factor analyses of preferences for jokes measured on his 3 WD test: incongruity resolution (getting the point), nonsense (degree of absurdity), and sexual themes. In extensive research in the past 20 years, Ruch and colleagues developed a humor taxonomy by examining both structure and content of jokes and studied the associations of individuals' preferences for these humor types to other personality traits (e.g., see Ruch & Forabosco, 1996, for elaboration). More recently, Ruch (2012) modeled a sense of humor based on factor analysis of 100 items from various scales derived from past research to capture everyday usage (habitual humor); he called this model 4FMH, based on finding four separate factors that best fit. The construct of sense of humor splits into positive and negative humor, with positive humor encompassing socially warm and reflective humor, and negative splits into mean-spirited and inept humor. In this way, a sense of humor is composed of a) the social, emotional, and communicative functions of humor, b) willingness to break rules, c) is readily amused, and d) is playful, imaginative, and detects and enjoys many forms of humor.

Using self-report questionnaires, Svebak (1974a)'s data suggested the need to include in the construct of humor a social world, with humor being a break from the monotony of everyday life. He developed a sense-of-humor scale that measured three components to humor: a cognitive sensitivity to social world situations, a personal attitude of liking being humorous, and a temperament for emotional permissiveness.

In addition to a social component, Feingold and Mazzella (1991) advocated for a cognition component that included memory and intelligence. They argued that the intelligence needed for humor was separate from general intelligence. Their humor model focused more on cognitive variables, such as verbal ability, than on personality. Such work used the Remote Associations Test (RAT), a common measure of creative or divergent thinking. For example, what word is associated with *cube, daddy*, and *cane*? Individuals who can think of the associate are more likely to be skilled in the flexible thinking processes needed to resolve incongruities in humorous situations. (The answer to the RAT example is *sugar*.)

Thorson and Powell (1993) argued for a multidimensional definition of sense of humor that included personality characteristics but focused on production more than other models which focused mostly on appreciation. They created the Multidimensional Sense of Humor Scale (MSHS) where participants rated their agreement with such statements as *I'm confident that I can make other people laugh*. A factor analysis of ratings on the MSHS revealed four humor factors: humor creativity, using humor to cope, recognizing or appreciating humor in others, and appreciating your own humor. Based on their research, having a sense of humor involves a personality willing to put oneself out there and take risks expressing humor, and being willing to ignore or act against social conventions.

Discussions among researchers on humor components mirror discussions among psychologists on personality factors in general. The challenge is to examine the evidence for how aspects, elements, or components of humor, summarized in Table 3.1, relate to characteristics, factors, or traits of personality. There are numerous models and ideas of how best to capture personality. Although researchers in personality debate the best way to factor analyze or describe the minimal set of traits of anyone's personality, the Big Five approach is,

Table 3.1 Summary of Models of Multidimensional Components to a Humorous Personality

Researchers	*Components*
Eysenck (1942)	cognitive, conative, and affective
Cattell and Luborsky (1947)	good-natured self-assertion, rebellious dominance, easygoing sensuality, resigned derision, and urbane sophistication
Ruch (1998)	cognitive (incongruity resolution), nonsense (absurdity), and sexual themes
Ruch (2012)	socially warm, reflective, mean-spirited, inept humor
Svebak (1974a)	cognitive sensitivity to a social world, liking being humorous, and emotional permissiveness
Feingold and Mazzella (1991)	focus on memory for jokes and divergent thinking
Thorson and Powell (1993)	humor creativity, coping, recognizing, and appreciating humor in others, social risk taking

well, big. That is, the Big Five dominates the field like how information processing dominates research in cognitive psychology, and humor researchers frequently use it to study the influence of personality and humor.

Big Five: Openness, Conscientiousness, Extroversion, Agreeableness, Neuroticism

These five factors are the set of dimensions which uniquely describes, explains, and predicts our behavior (McCrae & Costa, 1986). Each factor is a continuum of degree. We can best remember them by their acronym OCEAN.

- **O**penness to experience (vs. close-minded)
- **C**onscientiousness (vs. carelessness)
- **E**xtroversion (vs. introversion)
- **A**greeableness (vs. hostility)
- **N**euroticism (worry and anxiety vs. emotional stability)

All these factors may affect our humor comprehension, appreciation, and production. McCrae and Costa (1986) reported humor correlated with extroversion. Telling jokes or laughing with others requires a comfort level with being the center of attention, taking social risks, and enjoying being with others. Extraversion predicts spontaneous humor production. People who enjoy being with other people and being the life of the party are likely to use humor to take chances and not worry about being rejected (Moran, Rain, Page-Gould, & Mar, 2014). Introverts and extroverts may enjoy different types of humor. For example, Kambouropoulou (1926) found introverts enjoy more cognitive complex humor.

Openness to experience includes creativity and correlates with humor (McCrae & Costa, 1986; Ruch & Hehl, 1998). Participants high in openness to experience preferred nonsense incongruity-based humor, and those low in openness prefer incongruity-resolution humor–the more open to experience, the more productions created or the funnier the ratings. Ruch and Köhler (1998) found that openness correlated with humor production of captions. Further, Nusbaum et al. (2017) reported that openness to experience more than the other Big Five factors predicted ability to produce humor.

Agreeableness means a willingness to play along, to move from the literal to the figurative or from the task at hand to focusing on social relationships of the group. Further, being in a state of anxiety (high in neuroticism) may prevent the willingness to play along. This willingness or flexibility may be related to Apter's states of mind, discussed in Chapter 9 "Clinical Psychology".

Moran, Rain, Page-Gould, and Mar (2014) examined the Big Five factors as a predictor of humor appreciation and humor production. They found that extroversion was the only significant Big Five factor for production, but that both extroversion and openness to experience predicted humor appreciation. Figure 3.1 shows a cartoon based on the extroversion/introversion dimension of the Big Five coupled with a sexual theme; appreciation of humor with sexual themes may be correlated extroversion (Ruch & Hehl, 1988).

"I must say, I find the introverts less threatening."

Figure 3.1 Findings show that humor appreciation is stronger for extroverts than for introverts.
Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

In Chapter 1, we covered connections between time perspective and humor. The past, present, and future not only compete for cognitive resources, but they help shape our identity and personality. Stolarski, Fieulaine, and van Beek (2015) reported that holding a present fatalistic perspective was negatively correlated with openness to experience. That is, if you tend to think your present circumstances are not strongly influenced by your actions, then you are less likely to seek a variety of new experiences. This present fatalistic perspective is also negatively correlated with conscientiousness and agreeableness (Stolarski et al., 2015). A present hedonistic time perspective describes someone who thinks about the pleasures of the moment rather than the rewards of tomorrow. This perspective correlates with Big Five personality traits of extraversion and neuroticism and negatively with conscientiousness (Stolarski et al., 2015). These patterns make sense that humor would correlate with past positive and present hedonistic time perspectives (Drake et al., 2008; Hampes, 2013; Shores & Scott, 2007)

The Big Five personality factors are related to the coping styles people use to deal with stress (O'Brien & Delongis, 1996) and using humor to cope with stress. Specific personality attitudes, such as optimism, are related to health and our responses to humor (Colom, Alcover, Sanchez-Curto, & Zarate-Osuna, 2011). See Chapter 7 "Health Psychology", for discussion of using humor as a coping mechanism.

Cheerfulness

Ruch and colleagues (e.g., Ruch & Carrell, 1998; Ruch, Köhler, & van Thriel, 1996, 1997) have conducted many studies on humor and personality, and cheerfulness emerged as an important characteristic. Cheerfulness as a trait implies a stability or habit, whereas as a state concerns a mood or being in good spirits at the time of the event. Individuals high in cheerfulness might be described by words such as *funny, hilarious, sportive*, and *mirthful*. Ruch and colleagues developed the ten-item State-Trait Cheerfulness Inventory (STCI) to measure cheerfulness that contained items such as *I often smile*, or *I am often in a joyous mood*. Cheerfulness correlates with extraversion and negatively with neuroticism factors of the Big Five (Ruch & Köhler, 1998). Cheerfulness correlates with measures of humor as a character strength (see Chapter 8 "Positive Psychology").

Ruch et al. (1997) examined whether seriousness also mattered to humor. Might a person who takes a serious viewpoint at life (a trait) still find a joke funny or still laugh along with cheerful people? The answer is likely no. When asked if the characteristic "humorless" describes you, Ruch et al. (1997) found that cheerful people tended not to describe themselves as humorless, whereas serious people more frequently did.

Further, in one study that examined cheerfulness, seriousness, and bad moods, Mitrache, Esser, Proyer, and Ruch (2011) found that agreement with statements on the Humor Use in Multiple Ongoing Relationship (HUMOR) scale resulted in cheerfulness and seriousness showing correlations in opposite directions, whereas bad mood was unrelated to either. As examples, agreement with the statement *I play practical jokes* positively correlated with cheerfulness scores but negatively correlated with seriousness and did not correlate with bad mood. Agreement with *I laugh at TV or radio programs that I think are funny* positively correlated with cheerfulness but negatively with seriousness and was not correlated with bad mood.

Humor styles

A different approach to the study of humor classifies our liking for humor types or how we use humor. Styles do not describe us as unique individuals as traits do. Instead, they describe how individuals use or express humor. Humor as a style frames it as cognitive play not unique to a specific personality trait or factor (Schermer, Martin, Martin, Lynskey, & Vernon, 2013).

One method to measure style uses a card-sorting task where the participant creates piles of cards that have statements on them, as in, *Makes jokes about problems to make them seem ridiculous or trivial*. Some piles would contain cards that are most like you and others would have statements that are least characteristic of you. Sorting helps participants focus on the salience of characteristics as they discriminate among them. Craik and Ware (1998) developed five humor styles based on the sorting of the 100 statements in the Humorous Behavior Q-Sort Deck (HBQD):

1. **Socially warm vs. cold humorous style**. This dimension measures our tendency to use humor to promote positive feelings and interactions vs. avoidance and aloofness. An example of a socially warm style is *using jests to put people at ease*. An example of an avoidance style is *smiles grudgingly*.

2. **Reflective vs. boorish humorous style**. This dimension measures the spontaneous use of humor vs. insensitive or competitive use of humor. An example statement of a reflective style is to *take pleasure in reflections of everyday aspects of life*. An example of a boorish style is to *tell jokes to impress others*.
3. **Competent vs. inept humorous style**. Competence is the ability to tell jokes with confidence and accuracy, and the negative pole is a lack of this ability. An example of competence is *telling jokes with excellent timing*. An example of inept style is *ruining the joke by laughing before getting to the end*.
4. **Earthy vs. repressed**. Earthy jokes contain taboo subjects. A person with a repressed style finds no delight in such jokes. An example of the earthy style is *enjoying parodies that others find obscene or blasphemous*. An example of the repressed style is *disgust at sick jokes* (sick humor is discussed later in this chapter).
5. **Benign vs. mean-spirited humorous style**. The benign style describes someone who finds pleasure in funny activities and often finds them mentally stimulating. Someone with a mean-spirited humor style uses humor to disparage or attack others. An example of the benign style is *finding intellectual wordplay enjoyable* (as in joining a pun club). An example of the mean-spirited style is laughing *at people rather than with them*.

The HBQD takes time to complete and score. Humor researchers wanting a shorter and quicker measure use rating scales to measure humor style. The widely used HSQ, designed by Martin, Puhlik-Doris, Larsen, Gray, and Weir (2003), reports four humor styles: affiliative, self-enhancing, self-defeating, and aggressive. When individuals favor a style, we can predict their behavior and attitude (e.g., preference, liking) in contexts that are consistent or inconsistent with that style.

The HSQ discerns the positive and negative functions of humor (Martin et al., 2003). Positive functions involve enhancement, whereas negative functions involve destructive means in social interactions (see Table 3.2). The positive styles concern using humor to amuse. Affiliative humor is used to amuse and increase positive feelings in others. *If we shouldn't eat at night, why do they put a light in the fridge?* Self-enhancing humor helps maintain a humorous outlook even when we are stressed. *I may be getting older, but it's better than the alternative*. The negative styles use humor to hurt ourselves or others. Self-defeating humor disparages us to amuse others. *If only there was a class in being an idiot, I'd get an A+ because I am at the top of the class in screwing everything up*. Aggressive humor teases or ridicules others to hurt them or to make us look good. *Two wrongs don't make a right,*

Table 3.2 Four Humor Styles, as Measured on the HSQ (Martin et al., 2003)

	Positive	*Negative*
Focused on others	**Affiliative** Make others feel good	**Aggressive** Make others feel bad
Focused on self	**Self-enhancing** Make yourself feel good	**Self-denigrating** Put yourself down

take your parents as an example. Aggressive humor likely pushes people away and keeps them distant from the joker. These social functions of these styles are discussed in Chapter 4 "Social Psychology".

As we might expect, mood relates to humor styles. Kuiper, Grimshaw, Leite, and Kirsh (2004) found that self-enhancing and affiliative humor were negatively associated with depression. If we can enhance our relationships with others and present ourselves in a positive way, then we are less likely to feel depressed. When we feel depressed, we tend to withdraw rather than connect to others. In their data, self-defeating humor style was positively associated with depression; too much of putting ourselves down, even when laughing at ourselves, may affect our belief system and world view, leading to or enhancing depressed feelings. Interestingly, an aggressive humor style was unrelated to mood.

Evidence suggests that genes that shape our personality also contribute to our humor styles (Schermer et al., 2013). Vernon, Martin, Schermer, and Mackie (2008) studied humor styles in monozygotic and dizygotic twins. They asked whether genetics or environment drives our humor style. Their analyses partialed out the effects of shared variance caused by genetics or environment. The twins with the closest shared genetic makeup (monozygotic) shared positive styles (affiliative, self-enhancing). The two negative styles (aggressive, self-defeating) were more influenced by environmental factors. Vernon et al. (2008) also looked at the Big Five factors. They found genetics explained all five factors. In other words, for example, if your twin was extroverted you likely were as well. Personality and positive humor styles appear to be determined by genetics.

Associations of humor styles with personality traits

Mendiburo-Seguel, Paez, and Martinez-Sanchez (2015) conducted a meta-analysis on research on personality and humor styles (as measured on the HSQ and Big Five personality traits). A **meta-analysis** is a statistical technique where statistics from many studies are merged and analyzed as if all data were collected in one study. Instead of multiple participants providing means for data analysis, the meta-analysis uses the means of multiple studies for analysis. Mendiburo-Seguel et al.'s (2015) examination of findings in the literature revealed that a) affiliative humor style was significantly correlated with all Big Five factors except conscientiousness, b) self-enhancing humor and aggressive humor styles correlated with all Big Five factors, and c) self-defeating humor style correlated with all but openness to experience.

Craik and Ware (1998) correlated their five styles identified by their HBQD with the Big Five factors. They reported that the 1) socially warm style correlated with extroversion and agreeableness, 2) reflective style correlated with openness to experience, 3) competent style correlated with agreeableness and negatively correlated with neuroticism, 4) earthy style did not correlate significantly with any factor, and 4) benign style correlated with agreeableness and conscientiousness. These correlations speak to the broad range of personality characteristics captured in humor styles and the factors of the Big Five.

In addition to a card-sorting task and rating scales, diary studies capture the frequency with which humor types are used in our everyday behavior. Heintz (2017) asked

Table 3.3 Correlations of the Big Five with Heintz's (2017) Seven Components of Humor Behavior

	Open to Experience	*Conscientiousness*	*Extroversion*	*Agreeableness*	*Neuroticism*
Cheerful	0.09	0.04	0.30***	0.14	−0.24**
Witty	0.14	−0.04	0.15	−0.04	−0.18*
Deriding	0.02	−0.14	0.07	−0.19*	−0.09
Amused	0.30***	−0.02	−0.05	−0.02	−0.02
Sarcastic	0.04	−0.11	−0.03	−0.11	−0.05
Self-directed	−0.03	0.07	0.04	0.03	−0.05
Canned	0.10	0.08	0.00	−0.14	−0.00

N = 123. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

participants to note the frequencies of 45 behaviors on five consecutive evenings. Participants also completed the Big Five personality inventory. She factor analyzed these behaviors to arrive at seven dimensions of humor behaviors from everyday activities (see Table 3.3 for the list). Heintz (2017) correlated these dimensions with the Big Five factors. Interestingly, conscientiousness did not significantly correlate with any of the seven dimensions.

Sick and dark humor

> Tragedy is if I get a paper cut.... Comedy is if you fall into an open sewer and die.
>
> – Mel Brooks (cited in Shapiro, 2006, p. 106)

Ever laugh while disliking the event or joke? Or perhaps you find a joke funnier the grosser it is? Sick humor (sometimes called black humor) refers to a class of humor whose content concerns death, disease, deformity, the handicapped, or disgusting things. Bathroom (or scatological) humor is focused on urination and defecation. Some people like it, some people do not, and sometimes it all depends. The wide variation across individuals' preferences for sick humor warrants closer inspection. The following joke is an example of sick humor:

A lawyer questions a coroner in order to find out why she did not do a complete autopsy:

Lawyer: Before signing the death certificate, did you take this man's pulse?

Coroner: No.

Lawyer: Did you check to see if his heart was still breathing

Coroner: No.

Lawyer: Did you check whether he was still breathing?

Coroner: No.

Lawyer: Let's be clear. You signed this death certificate without performing any of the recommended tests for establishing whether a person is really and truly dead?

Coroner. Yes. Why? Did you find his head?

If you laughed after reading the last line, you like sick humor, and if you felt negative emotions (e.g., shocked, disgusted) then you do not. Might you have both a positive and negative response? Let's examine first whether we can feel amusement and disgust at the same time in response to sick humor before examining correlates of sick humor with personality.

Emotion theorists asked whether amusement and disgust inhibit each other (like opposites, where *cold* inhibits thoughts of *hot*) or whether they are independent feelings, capable of being felt simultaneously and capable of being independently experimentally manipulated. To find out, Hemenover and Schimmack (2007) used a movie clip from a physical comedy that involved a human eating dog feces. Prior to watching the movie clip, they asked participants to rate their amusement or disgust for a human eating dog feces. Then, while watching the movie, one group evaluated the scene from the movie actor's point of view–What would it feel like to be the person eating the feces? The other group evaluated it from an observer's point of view–What would it feel like to be watching someone eating the feces? The researchers predicted that taking an observer's perspective would increase amusement, allowing for mixed emotions to occur. This prediction is consistent with the belief that those who like sick humor can separate reality and fantasy, whereas those who dislike it cannot (Herzog & Bush, 1994). Thus, when a participant takes the perspective of the movie character, it is more difficult to separate the two than someone taking the perspective of an observer.

As predicted, participants with an observer's perspective reported being more amused afterwards, whereas there was no change pre vs. post amusement ratings for those watching from the actor's perspective. Disgust increased for both groups of participants to a similar degree, and there was no interaction between feelings and perspective. These results support an independence of disgust and amusement, because perspective taking differentially affected amusement (more for objective perspective, no change for actor perspective), but both perspectives equally increased feelings of disgust. Supporting this conclusion, individual paired ratings showed no correlation between the amount of disgust and amount of amusement felt.

For a second issue on sick humor, you might think that you must have a sick personality to like sick jokes. Not so. Researchers have found that those who like sick jokes have well-adjusted personalities. Lefcourt and Martin (1986), for example, found that handicapped individuals who liked jokes about the handicapped had a very positive self-concept. Appreciation of sick humor examined with the Big Five finds that those who score high on the open to experience factor and low on agreeableness rate sick humor as funny. When individuals are low on agreeableness, they are high on hostility. These individuals likely use sarcasm, are not eager to please others, and are more comfortable ignoring the social graces. Thus, they can maintain positive feelings from the sick joke.

Herzog and Bush (1994) examined 300 participants' preferences for 52 sick jokes. No comparisons were made to nonsick jokes. They found that preferences could be explained by the content category of the joke (which they classified as general, death, dead-baby, or handicapped), a cognitive component (understanding the point being made and seeing the fit between the punchline and the situation), and a personality/emotion component (dealing

with the discomfort of the content). Specifically, they found that preference for sick jokes was negatively correlated with vulgarity and difficulty (i.e., we do not like what is vulgar nor what we do not understand). Preference was strongly positively correlated with punchline fit, surprise, novelty, and interest. Data were also analyzed by category of sick joke. Preference for death jokes was best predicted by fit and interest: for handicapped jokes, it was best predicted by difficulty, fit, and surprise; for dead-baby jokes vulgarity, surprise, and novelty were best predictors; and fit alone predicted preference for the general category of sick humor.

Dark humor differs from sick humor in that it focuses on deviations from social and moral norms no matter the content. For example, a cartoon might show people urinating or vomiting in public places. Some researchers do not discriminate between the two classes, but it may help keep the difference in mind, as dark humor typically pertains to violations of social norms, and it often expresses aggressive and hostile feelings. Willinger et al. (2017) found that individuals in their sample who liked dark humor tended to have the strongest cognitive abilities. These abilities allow them to construct an interpretation that draws on background information to reframe the activated unpleasant schema and resolve the incongruity with pleasure. They found that a higher level of education was positively correlated with dark humor preferences, whereas self-reported mood disturbance (e.g., depression) and aggressiveness was negatively correlated with liking it.

Gender differences may help explain the degree to which people find these norm violations funny. Aillaud and Piolat (2012) examined gender differences of funniness ratings of uncaptioned cartoons. Participants rated the cartoons on a scale from 1 to 4 for comprehension, surprise, violation of norms (joke was unbecoming or unseemly), and funniness. The researchers found both genders viewed dark humor as more surprising, but women judged dark humor cartoons are more violating norms and less comprehensible than nondark humor cartoons. Women rated dark humor cartoons as significantly less funny than nondark humor cartoons and as less funny than men did. Men gave higher humor ratings to both dark humor and nondark humor cartoons than women did, but the difference between genders was bigger for dark humor. Funniness ratings for each gender correlated with comprehension (the more it was understood the funnier it was), and for men with surprise (the more surprising, the funnier) and for women with violation of norms (the more it violated, the less funny). Gender differences concerning humor are further discussed in Chapter 4 "Social Psychology".

Such research is consistent with the view that jokes are perceived as funnier when we have psychological distance (McGraw, Warren, Williams, & Leonard, 2012). Not only sick humor but also any jokes that make fun of tragedies are often perceived funnier when we are not close to the situation. Psychological distance makes the violations of norms benign rather than offensive, upsetting, or threatening. McGraw et al. (2012) cited two great quotations that capture this benign violation humor. The first is from Mark Twain: *Humor is tragedy plus time*, and the second is from Mel Brooks: *Tragedy is when I cut my finger. Comedy is when you fall into an open sewer and die*.

A third issue concerning sick humor involves common threads in world beliefs (e.g., humans are superior to animals) among those who like sick humor. Much of Gary Larsen's *Far Side* humor, for example, falls into the category of sick or dark humor. These cartoons

frequently poke fun at death or use animals in place of humans to poke fun at human behavior. As found in other sick humor studies, some people greatly like *The Far Side* and some strongly dislike it (Lefcourt, Davidson, Shepherd, et al., 1997). Lefcourt, Davidson, Shepherd, et al. (1997) found that preferences are related to willingness to contemplate your mortality or holding the view that humans are equal rather than superior to animals. Specifically, people who are comfortable in contemplating their own mortality, are willing to donate their organs after death, or hold a world view of human species on the same level as animals tend to like Larsen's *Far Side* humor. According to Lefcourt, Davidson, Shepherd, et al. (1997), to appreciate the humor of *Far Side* cartoons, we need to take a perspective of our having less importance and taking ourselves less seriously. We need to see that humans are like other animals (or animals are like humans).

In their pilot study, Lefcourt, Davidson, Shepherd, et al. (1997) found that 15% said they did not understand *The Far Side* cartoons at all, with some expressing resentment at being questioned about their meaning, and only 30% noted the similarities between human and nonhuman behavior in their explanation of them. These data, while helpful in selecting stimuli for their studies, clearly show the variance in likability of *Far Side* humor.

A closer inspection of their research shows how the researchers creatively obtained information on these world beliefs and drew conclusions concerning liking sick humor. In their first study, Lefcourt, Davidson, Shepherd, et al. (1997) examined 88 participants' reactions to death by asking them to complete several tasks concerning their death, including filling out their own death certificate and writing their own obituary. Before and after these tasks, they also completed a mood measure. Measures of mood disturbance from doing the death tasks were lowest for those who liked *The Far Side*, supporting the idea that sick humor is both appreciated and comprehended when we are most comfortable with thinking about death.

Their second study looked at organ donation. After obtaining participants' preference for *The Far Side* humor and some personality measures, the researchers examined participants' actual driver licenses for their willingness to be an organ donor after death. They found that donors, particularly for those low on the personality trait of authoritarianism, had a higher preference for *Far Side* humor. Authoritarianism is marked by reverence for tradition or convention, and, thus, humor that violates social and moral norms would likely not be funny to those high in authoritarianism. Consistent with the first study's findings, being comfortable enough to consider and agree to donate your organs after death indicates being comfortable and finding amusement in *The Far Side* cartoons. In the third study, Lefcourt, Davidson, Shepherd, et al. (1997) examined anthropocentrism, the belief that humans are superior to other living things, on a 12-item scale developed by other researchers to study our attitudes about human's relationship with other living things. As expected, liking *The Far Side* was negatively associated with anthropocentrism. This research supports an important role of personality and world views in our preferences for sick humor. Yet to be studied is whether repeated exposure to sick humor can change our personality or world views.

Creativity and the production of humor

To produce novel humor is to be creative. Creativity uses **divergent thinking** that can be measured in terms of fluency, flexibility, elaboration, and origination (Ziv, 1984). We typically

find positive correlations between humor production and creativity scores (e.g., Ziv, 1981, 1984). Thinking creatively is only one requirement, however, to produce humor; we must also be able to express it (i.e., communication skills, either verbally or in action) and be willing to do so in front of others. In addition, we need to monitor the effect of our humor on our audience and adjust if they are not reacting as we hoped.

Nusbaum et al. (2017) discussed creativity and humor production in terms of the Big Five personality model. Creativity was most related to the openness to experience factor. Answers on this factor indicate that individuals who are open to experience view themselves as creative, spend time on creative activities, appreciate creative arts, experience awe and wonder easily, and have a vivid inner fantasy life. The range of these characteristics speaks to challenges in studying individual differences within creative and humorous individuals.

A variety of tasks measure humor production. The most commonly used task requires participants to write captions to cartoons. Recall from Chapter 1 "Cognitive Psychology" that Derks and Hervas (1988) found that those asked to write many captions were able to produce funnier captions than those asked to write a few. More attempts to be creative encourages further efforts to more creative than ones already produced. Another common production task requires participants to produce a completion to a joke stem (Howrigan & MacDonald, 2008). Other creative production tasks involve participants replacing serious routines with funny ones, such as writing a funny job resume when provided a photo of an applicant and creating funny sections that included name, occupation, hobbies, bio, typical day, and philosophy of life.

Many experiments only use one humor production task. However, to compare them, Nusbaum et al. (2017) examined three production tasks within one study. These involved 1) writing a funny caption to cartoons, 2) completing a funny scenario with a funny ending to an incomplete last sentence, and 3) completing a funny job resume. Their findings indicated that each task measures humor production well. Additionally, scores of participants' funniness on these tasks correlated with the Big Five factor of open to experience. In an additional study, Nusbaum et al. (2017) had participants write funny definitions for novel word pairs (e.g., *yoga bank*). Once again, the strongest correlation of funniness ratings was with openness to experience. They found funniness ratings correlated with facets of openness to experience, namely creativity, aesthetic appreciation, inquisitiveness, and unconventionality. On all their tasks, producing humor was associated with openness to experience more than with the other four factors of the Big Five.

Interestingly, whereas researchers asked how creativity influences humor, the opposite direction also poses an interesting question: does humor influence creativity? Ziv (1984) found that before taking a creativity test, participants who listened to a tape of humorists scored higher on subsequent creativity tests (specifically the originality factor) than those not exposed to humor beforehand. Ghayas and Malik (2013) provided corroborative data; humor, as measured on the MSHS, predicted creativity, as measured on a multiple-choice creativity test.

It makes sense to study professional comedians to learn what it takes to produce humor well. Humor researchers study biographies, recordings, comedy club visits, or interview comedians directly to obtain data on their personalities and comedic routines. Using such materials, Craik and Ware (1998) characterized the humor of famous comedians Woody Allen, Lucille Ball, Bill Cosby, Whoopi Goldberg, Arsenio Hall, and David Letterman using statements

of the HBQD task they developed. As discussed earlier, the HBQD contains statements of everyday humorous behavior, such as *Jokes about problems to make them seem ridiculous or trivial* and *Needles others, intending it to be just kidding*. These descriptions helped characterize comedians' identity, humor functions (e.g., reducing stress or influencing others' opinions), cognitive and social capacities, and orientation toward life (Craik & Ware, 1998). Among their characteristic findings, for example, Woody Allen engaged in self-depreciatory behavior, Lucille Ball played the clown, Bill Cosby had the ability to tell long, complex anecdotes successfully, Whoopi Goldberg displayed a quick wit and ready repartee, Arsenio Hill maintained group's morale through humor, and David Letterman was sarcastic (Craik & Ware, 1998).

Charlie Chaplin said, "To truly laugh, you must be able to take your pain and play with it" (Williems, 2015). Ziv (1984) reported that many professional comedians came from low-income, minority groups and described their family life as filled with parents who fought a lot. Many in his sample failed at school. The fact that a difficult childhood may contribute to being humorous may relate to the Freudian theory that humor is a defense mechanism (see Chapter 9 "Clinical Psychology") or a coping mechanism (see Chapter 7 "Health Psychology"). Curiously, Ziv (1984) noted that amateur humorists do not show such a pattern. Several explanations for this finding include 1) disadvantaged childhoods motivated professional comedians to practice their craft to fill a void or need, 2) using humor provided a stark contrast of rewards which then encouraged them to practice more than others, or 3) their childhood provided them with material that emphasized the role of incongruity and ambiguity in our social lives.

Questionnaires/surveys/inventories

In this last section, we turn to descriptions of personality scales widely used by humor researchers working in all perspectives of psychology.

Researchers of personality and individual differences use questionnaires and surveys based on evidence-based theories. These scales undergo rigorous testing to elevate their validity and reliability. **Construct validity** of a scale identifies how well the scale measures what it is supposed to measure. Therefore, the definition of humor is important and why many papers are devoted to identifying its components. **Reliability** of a scale speaks to the robustness of the scale across time–ideally, every time we complete the scale it will report the same pattern of results, whether we took it last year or this year, whether in the morning or in the afternoon, and whether in a good mood or bad mood. Naturally, humor, as many emotion-related constructs, varies somewhat within an individual as do moods and day-to-day concerns, but nonetheless, a reliable scale is desirable. Statistical measures of validity and reliability help researchers evaluate the goodness of the scale. Researchers frequently compare scores on these humor questionnaires with others that measure constructs of intelligence, cognition, or mood.

Need for Levity and Need for Humor Scales

A Need is stronger than a preference. As a trait, we are motivated to satisfy needs or else we feel unhappy or unfulfilled. As an individual difference, those with a high Need for Humor

will like or respond to jokes differently than those with a low need. They may be more motivated to seek humor in social interactions or experiences (e.g., see a comedy instead of an action flick). In the applied world, it helps to know not just the situations in which humor will be well-received but whether your audience has a Need for Humor. Comedians in a comedy club, for example, can expect their audience has a Need for Humor and use filling that need to enhance their comedy or modify their routines.

Cline, Kellaris, and Machleit (2011) created the Need for Levity and Need for Humor scales because they were interested in the role of humor in advertising. Their research is covered in Chapter 10 "Applied Psychology". The Need for Levity scale assesses both the Need for Humor and the need for lighthearted experiences (which Cline et al., 2011, call whimsy); items include *I can often crack people up with the things I say*, and *I enjoy hearing someone tell a joke* (see Cline et al., 2011, to see all 12 items). The Need for Humor scale focuses on the need to seek out and generate humor. Those with a high Need for Humor agree with such statements as, *I often come up with witty comments*, and *I often read jokes and funny stories*. The 11 questions of the Need for Humor scale can be found in Picard and Blanc (2013).

The Situational Humor Response Questionnaire (SHRQ)

Martin and Lefcourt (1984) developed a 21-item questionnaire that measured the frequency with which a person smiles and laughs in a wide variety of life situations.

An example of a question on the SHRQ is

> *If there had been a computer error, and you had spent all morning standing in lines at various offices to get the problem sorted out,*
>
> *a. I wouldn't have found it particularly amusing.*
> *b. I would have been able to experience some amusement but wouldn't have shown it.*
> *c. I would have smiled a lot.*
> *d. I would have laughed a lot.*
> *e. I would have laughed heartily.*

This scale has been translated into more than ten languages (Martin, 1996). Scores on the SHRQ correlated with extroversion (Ruch & Deckers, 1993) and positive self-esteem (Martin, 1996). Wycoff and Pryor (2003) found that the scores on the SHRQ correlated with scores on the Coping Humor Scale (CHS) and the Creative Personality Test. It was negatively correlated with the Personal Report of Communication Apprehension Scale; those individuals who respond with humor across situations are less likely to worry about relating and talking to others. However, scores on the SHRQ did not correlate with some other measures of humor appreciation (see Deckers & Ruch, 1992), possibly because the options on the SHRQ do not capture all nuances of humor appreciation, and because we smile and laugh for other reasons than amusement.

Humor Use in Multiple Ongoing Relationships Scale (HUMOR)

Manke developed HUMOR to measure behaviors in her research with children and families. This scale consists of 13 items that examine various contexts that humor occurs. There are

questions about telling jokes, types of humorous behavior (teasing, laughing, acting silly), or using humor to change a serious situation. For example, *I play practical jokes*. A total score of 13 is lowest and 65 is highest. Manke (2007) reported a strong genetic component for HUMOR scores of mothers and siblings but not for friends. In other words, we can explain an individual's humor use when we know the mother's or sibling's humor use, but we cannot explain it when we know their friends' scores.

Interestingly, Manke (2007) suggested her results reflected how we think about experiences when filling out the HUMOR scale. With family, we think of experiences over time, but with friends, we think of specific experiences. Familial relationships, being more stable, produce better predictions in the same way that a sample's average is better than a single participant's score in predicting or describing a relationship. She also noted that families learn together the when and how to use humor, and they learn to deal with stress and situations in similar ways. For example, in a participant's family, humor may be mostly used as a coping strategy, creating a homogenous set of responses. Their friends, on the other hand, are more mixed in their learning-to-use humor experiences, and this variability weakens the friends' HUMOR scores in predicting the participant's HUMOR score relative to the family's scores.

Humor Styles Questionnaire (HSQ)

Martin et al. (2003) theoretically designed the HSQ to measure the four styles depicted earlier in Table 3.2. These styles show how people use humor. Most of the other humor scales focus on the positive humor styles, but the HSQ includes put-down humor of the self or of others. The two axes are not dichotomies but matters of degree. Their paper provides the 32 items (8 per style) of the HSQ. Examples of items on the HSQ of each style: affiliative: *I enjoy making people laugh*; self-enhancing: *if I am feeling depressed, I can usually cheer myself up with humor*; self-defeating: *I let people laugh at me or make fun at my expense more than I should*; and aggressive: *if someone makes a mistake, I will often tease them about it*.

Martin et al. (2003) reported that males tend to have more aggressive humor and self-defeating styles than females. They noted this pattern connects to measures of femininity and masculinity; for example, competitiveness is a masculine trait and is an aspect of aggressive humor. Martin (2007) reported positive correlations with the HSQ and the SHRQ, MSHS, CHS, and STCI (cheerfulness). Correlations with these scales provide **convergent validity**; they all measure sense of humor, especially for experiences with affiliative and self-enhancing styles. Martin et al. (2003) found that the Big Five factors also correlated with HSQ scores. Interestingly, extroversion was most related to affiliative humor style and was not correlated with the negative styles. Being outgoing is a personality trait used to connect with other people (the function of an affiliative style) rather than compete or act with hostility. More research on the HSQ is reported throughout this textbook, as the HSQ is widely used by researchers in other psychology perspectives.

Multidimensional Sense of Humor Scale (MSHS)

Thorson and Powell (1993) developed a 24-item scale drawing on six humor dimensions: our recognition of the self as humorous, recognition of other's humor, humor appreciation,

laughing, perspective taking, and coping functions. A sense of humor captures our own humor use as well as appreciating humor in others. Their factor analysis of MSHS scores resulted in four factors. The first, humor creativity, included such items as *I can say things in such a way as to make people laugh*. The second factor, speaks to coping, includes items such as *Humor helps me cope*. The third factor refers to recognizing or appreciating humor in others, as in *People who tell jokes are a pain in the neck*. The fourth factor focused on humor appreciation, as in *I'm uncomfortable when everyone is cracking jokes*. Thorson and Powell (1993) correlated these four factors with 15 diverse personality characteristics. The strongest positive correlations were with exhibition and dominance. Those who tend to create humor show a tendency for dominance. They also found that those who reported using humor to cope were less likely to be aggressive.

A **median split** is a technique where researchers compare scores in the bottom and top halves of the data set, and a quartile split uses only the bottom 25% and the top 25% and ignores the middle half. Because Thorson and Powell (1993) tested over 400 participants, they had a good distribution of MSHS scores to conduct a quartile split. They asked which personality characteristics were found in people who scored lowest on the MSHS and whether the pattern was different from those in the upper quartile. In this lower group, they found that humor creativity factor negatively correlated with the other three factors. Such a pattern was not found in the highest quartile. In addition, the lower quartile showed a positive correlation with deference, whereas the higher quartile showed a negative correlation. These differences suggested to Thorson and Powell (1993) that individuals with a low sense of humor have a different world view and use for humor in their lives; those with a high sense of humor are better adjusted and less cynical about the world.

Sense of Humor Questionnaire (SHQ)

Svebak (1974a, 1974b) developed a 21-item questionnaire that measured an individual's sensitivity to humor, their attitude toward humorous situations, and openness to express mirth. The scale consists of three factors, sensitivity to humorous items (e.g., *Does it ever happen that you share in a hilarious situation only to wonder afterwards, what was **so** funny about it?)*, attitude toward funny people and situations (e.g., *Humorists irritate me because they so blatantly revel in getting others to laugh*), and openness to expressions of mirth (e.g., *If you found a situation very comical, and nobody else seemed to be of the same opinion, would it then be easy for you to keep your face straight?*). These factors correlate with other scales: both the sensitivity and attitude factors correlated with Humor Coping Scale (HCS), and sensitivity correlated with the SHRQ. See Svebak's (2011) review on issues and findings on the SHS in the humor literature.

Sense of Humor Scale (SHS)

Ruch and Heintz (2018) revised an earlier scale developed by McGhee (1999) to measure humor skills. The focus of this scale is to measure the playfulness of humor. The six skills include enjoyment, laughter, verbal humor, finding humor in everyday life, using it to cope with stress, and laughing at yourself. The revised scale consists of 24 items, four items per

humor skill. On the SHS, participants rate, on a scale of 1 to 7, how much they agree with statements such as *it is important to me to have a lot of humor in my life*. These six skills measured on this revision correlated with cheerfulness and life satisfaction (Ruch & Heintz, 2018).

Humor Coping Scale (HCS)

Martin and Lefcourt (1983) examined people's humor use to help cope with stress. An example of one of the seven items of the HCS is *I usually look for something comical to say when I am in a tense situation*. See Chapter 7 "Health Psychology" on the use of the HCS in the study of humor as a coping mechanism.

Need for Cognition Scale

Need for Cognition refers to people's enjoyment of thinking. Would you rather do a difficult puzzle or an easy one? Those with a high Need for Cognition enjoy the challenge of the difficult one. Cacioppo et al.'s (1984) developed a short version (18 items) of a longer scale to measure an individual's enjoyment to think. An example of an item is *I would prefer complex to simple problems*. In a busy world where students have papers to write, exams to study for, and demands of extra-curricular activities to meet, it might seem odd that someone would prefer to deal with complex problems instead of simple ones. But, if you have a high Need for Cognition, then you are bored when things are too simple. Those with a high need enjoy the challenges found in intellectual pursuits. The scale ranges from a low of 18 to a high of 90; many college students' scores fall within the 50s.

Does liking to think correlate with humor appreciation? Wycoff and Pryor (2003) found that Need for Cognition scores correlated with scores on the Creative Personality Scale but not with those on the SHRQ or CHS. Research in my lab (Gibson et al., 2017) similarly found that Need for Cognition did not correlate with various scale measures of humor (NFH, HUMOR, and Cheerfulness), but it did correlate with participants ratings of funniness of jokes that required resolution of incongruity, suspension of beliefs, or required knowledge more than jokes using only wordplay. For example, funniness ratings of a knowledge joke, *Three statisticians went out hunting, and came across a large deer. The first statistician fired, but missed, by a meter to the left. The second statistician fired, but also missed, by a meter to the right. The third statistician didn't fire, but shouted in triumph, "On the average we got it!"*, significantly correlated with Need for Cognition scores, but jokes that were mere wordplay, *A sandwich walks into a bar. The barman says, "Sorry we don't serve food in here*". did not. Need for Cognition may help to explain variance observed in humor appreciation under some circumstances, as with complex humor, but likely is not needed to enjoy all forms of humor.

Recap

Personality researchers tackle the complexity of humor by considering the complexity of both personality and humor. They examine humor by factors of cognition, emotion, and the situation, often using the Big Five personality scale or Martin et al.'s (2003) HSQ. Personality factors of extroversion and openness to experience appears to matter most to a humorous

personality and feeling cheerful (low neuroticism or high emotional stability). Styles may be described in terms of function (promotes self or relationships; for benevolence or disparagement). Both the Big Five and humor styles help predict whether individuals find an event funny or can produce humor.

Individuals differ in both their personality, preferences for sick humor, and ability to produce humor. Creativity may help increase our proclivity and success in producing humor. Because individuals vary greatly in what they find funny and how they use humor, there are many scales developed to measure these individual differences, ranging from a Need for Humor in our daily life to responding across varied contexts or multiple relationships. Scales used to measure other constructs, such as Need for Cognition, further help to a) explain variance in humor responses, b) predict response in future situations or experimental conditions, and c) understand the complexities of the humorous personality.

Suggested readings

Lefcourt, H. M. (2001). *Humor: The psychology of living buoyantly*. New York: Springer Science + Business Media LLC.

Martin, R. A., & Kuiper, N. A. (2016). Three decades investigating humor and laughter: An interview with Professor Rod Martin. *Europe's Journal of Psychology*, *12*, 498–512.

Martin, R. A., & Steffy, R. A. (2012). Herbert M. Lefcourt (1936–2011). *American Psychologist*, *67*, 494.

Ruch, W. (Ed.). (1998). *The sense of humor: Explorations of a personality characteristic*. New York: Mouton de Gruyter.

Suggested class activities

Activity 3.1. Scholarship on the Big Five

Form an appreciation for the breadth of research that uses the Big Five. Go to PsycInfo, the database of psychological literature, and search the "Big Five". Glean a sense of the breadth and depth of issues involved and compare these to a narrowed search of "Big Five and (humor or humour)". b) Go beyond the psychology database and search the Web to see the vast interest in the Big Five and humor in the business world. c) Discuss differences between the psychology literature (PsycInfo) and that found on the Web.

Activity 3.2. Comparing factors

Connect ideas expressed by Big Five personality factors and Ruch's three humor factors. For example, Ruch's research addressed toughmindedness (the toughminded like sexist humor more than the tenderminded). Which Big Five factors do you predict would correlate with liking humor with sexist themes and why? How might his terminology fit openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism?

Activity 3.3. Cheerfulness and thresholds

Integrate the concepts of cheerfulness and thresholds (see Chapter 2). High cheerfulness might be conceived as having a low threshold for responding to humorous stimuli. If you are low on trait cheerfulness, your higher threshold means that you need a stronger stimulus (the joke needs to be funnier) before you smile or laugh. a) Apply the notion of threshold to

cheerfulness as a state and trait. b) Consider implications for humor research if cheerfulness was defined in terms of a threshold response level to humorous stimuli.

Activity 3.4. Styles across contexts

Discuss how humor styles may or may not change across different contexts. a) Can we have more than one style? Think of situations (places, persons, or activities) where we might express different styles. b) Even though contexts might change, might our dominant style would still pervade? Why or why not?

Activity 3.5. Survey funny birthday cards

Either individually or in a group, conduct a survey of humorous birthday cards (either in stores or on the Web). Look beyond the jokes about aging and being another year older. How are the different humor styles conveyed in picture or words? For example, a card with a picture of a person standing in a field of wheat that says *Happy birthday to someone who is outstanding in their field* expresses affiliative humor. a) Tally frequencies of each style you observe and examine/discuss any patterns you find. b) Do you think that we send a card with a style that we like or one that we think the receiver likes? How might age, gender, or relationship of the card giver and recipient matter?

Activity 3.6. Ethical issues in studying sick humor

Discuss ethical issues in conducting a study on sick humor. What might the recruiting message be? What might the consent form need to contain to warn them about its possible negative reactions to materials without suggesting how they should respond to them? Given the wide variety of responses to sick humor, what might a researcher do during debriefing to ensure participants leave no worse than when they arrived nor leave the study upset or unhappy?

Activity 3.7. Design a research project

1. Individual differences help to explain variance found in collected data. Might the individual difference of **optimal time of day** explain differences in humor production? Most students report that the evening is their optimal time for thinking, whereas most older adults find it is the morning (May, Hasher, & Stoltzfus, 1993). Might humor appreciation or production be affected by the time of day in which the humorous situation occurs? Identify scales or measures you could use and how you would recruit participants to ensure that the personality traits, humor styles, and optimal time-of-day differences are represented in your sample.
2. Although we cannot cause a person to have a given personality trait or style, we can manipulate contexts in which the person behaves. For example, a shy person can be placed in a solo, one-on-one, or group condition where you observe their humor use. Design a study that would allow you to a) identify your participants' personality traits or styles and b) examine influences on humor appreciation or production in particular contexts.

3. Design a study where you control or emphasize particular personality styles or traits. Is it possible to favor or inhibit the influence of personality on our humor appreciation or production by manipulating the situation? Identify independent variables you could manipulate to answer your question.

Study guide

Concepts and theories

Big Five
Cheerfulness
Construct validity
Correlation
Dark humor
Factor analysis
Humor scales
Humor styles
Individual differences
Personality traits
Reliability
Sick humor

Review questions

1. Identify the five factors of the Big Five model. Describe how humor is associated with each.
2. Identify the four humor styles from Martin and Lefcourt (1983) the HSQ. Provide an example of each style.
3. How might knowing that someone displays a certain trait or set of personality traits help you predict their a) appreciation and b) production of humor?
4. How does dark humor differ from sick humor?
   a. Dark humor is preferred by men, and sick humor is preferred by women.
   b. Dark humor is disgusting, whereas sick humor is aggressive.
   c. Dark humor's content violates social and moral norms, whereas sick humor's content focuses more on poking fun at death, disease, or the handicapped.
   d. Dark humor includes gallows humor, and sick humor includes vulgarity.
5. Cheerfulness is studied as a trait or a state. What is the difference?
   a. A trait implies a stability or habit, whereas a state implies a mood or temporary feelings.
   b. A trait implies a mood or temporary feeling, whereas a state implies a stable factor or habit.
   c. A trait is a descriptor of personality, whereas a state is a cognitive process.
   d. A trait is a descriptor of personality, whereas a state is a descriptor of behavior.
6. The MSHS developed by Thorson and Powell (1993) finds four factors. They are
   a. humor creativity, coping, appreciating humor in others, and appreciating your own humor
   b. cognitive sensitivity to social situations, humorous attitude, emotional permissiveness, and extroversion
   c. incongruity resolution, degree of absurdity, sexual themes, and hostility
   d. openness to experience, extroversion, agreeableness, and neuroticism
7. What is "perspective-taking humor" (see Lefcourt, Davidson, Shepherd et al.'s, 1997, study)?
   a. Being able to see that far away things should appear smaller.
   b. Being able to imagine that animals can talk.

c. Being able to describe the humor of other people.
d. Being able to see humans and animals as similar.

8. Which of the following is an important finding concerning creativity and humor production?
   a. Creative people need to think fluently.
   b. Creativity activities can increase humor production and humor can increase creativity.
   c. Creativity is related to the conscientious factor of the Big Five.
   d. Humor production is best measured with fewer attempts than many attempts.

Answers to multiple choice: 4) c, 5) a, 6) a, 7) d, 8) b

4 Social psychology

Learning objectives

1. Understand the social perspective of psychology.
2. Appreciate social factors that affect our experience of humor.
3. Understand how our attributions and attitudes influence humor processing.
4. Identify gender differences in humor preferences and production.

Assumptions of the field

1. Other people (present or imagined) influence our behavior.
2. Borrowing from the cognitive perspective: our thoughts, schemas, and processing limitations influence how we think about other people and the explanations we make of their behavior.
3. Borrowing from the behavioral perspective: people are stimuli, and their presence and behavior reward and motivate us.
4. Borrowing from the biological perspective: the real or imagined presence of other people can change our physical states.

Social perspective and principles

Humans are social beings. We conform, comply, and obey other people, and we act in ways we would not when alone. Further, we use others to help form our identity and define social roles we play in life. Because other people are important to us, we aim to explain, predict, and control their behavior. We wonder how they feel and think about us and engage in impression management (Johnson, Griffith, & Buckley, 2016). Will they like it if we tell a joke? Might they find it vulgar or inappropriate?

Core concepts

Norms are collective information that we use to know how to behave and fit in. Social norms inform us of what is expected or acceptable. For example, if we walk into a classroom and see everyone standing, then we will likely stand, too. At a birthday party, if everyone is making jokes about the person's age, then we do, too. Humor frequently violates or stretches norms to create incongruity, surprise, or raise our awareness that norms matter to our behavior and attitudes.

Attributions are explanations we make of people's behavior, including our own. Positive attributions use characteristics we value. *She's smart*. Negative attributions devalue. *She's too bossy*. Dispositional attributions place the cause of behavior as coming from within the individual. *I am funny*. Situational attributions place the cause outside of the individual. *I laughed because my friends expected me to*. Through the study of attributions, psychologists learn how humor may strengthen feelings of friendship or lead to offensive impressions of racism.

Attitudes are schemas that, when activated, make available to us much information about our beliefs, opinions, feelings, and ways to act. Someone tells a political joke about democrats, and our schema for democrats is automatically activated, bringing to mind knowledge about the party, our feelings about them, and how to respond (we either find the joke funny or not, depending on our attitude). We cannot stop this automatic activation. Further, it takes effort to not act on activated information or to keep an open mind.

Stereotypes are schemas we have for social classes of people, based on individual differences (e.g., age and gender), occupations (e.g., professors and students), or situations (e.g., at work or in a bar). We need speedy access to this knowledge because social interactions are extremely complex, and stereotypes save us processing time. They allow us to explain and predict quickly the behavior of others. Of course, the downside of stereotypes is that often information in them is so generalized that we make false assumptions about individuals. Many jokes make use of our activated stereotypes, and punchlines are funny because they catch us making false, generalized assumptions.

Social psychologists ask such questions as how might humor facilitate our interactions (strangers, friends, or married couples)? What is the role of stereotypes in jokes? Do men differ from women, due to their different social roles, in their appreciation or production of humor?

Social aspects of humor

Humor is a social lubricant in many ways. It is a tool that encourages social interaction (DiDonato & Jakubiak, 2016). It is a way to self-disclose our attitudes or feelings without explicitly stating them. With humor, we can express criticism in a nonthreatening way. Humor has the power to bridge discussions when there are disagreements or helps introduce difficult topics to begin a conversation (Ziv, 1988). As a conversation starter, it can bring assurance that others are listening to us when they respond, and their response can become a discussion point. For example, beginning a difficult discussion on rape with a joke about rape may help

individuals discuss their reactions and begin to question their beliefs or myths about rape (Strain, Martens, & Saucier, 2016).

Humor helps strengthen relationships. It draws attention to us and helps others get to know us. If others like our humor, then it can forge friendships because we made them happy. Making this same point, Sonny Bono said when he was an entertainer, he made jokes to please the audience, but when he went to Congress, he made jokes to get fellow politicians to like him and therefore be willing to work with him (Yarwood, 2001). Additionally, humor helps form or maintain our group identity. Those who laugh with us are part of our group (the ingroup). In this way, humor is an expression of shared values. Usage of stereotypes in jokes may reinforce a group's identity as well.

Another aspect of humor is that it saves face. For example, rather than be embarrassed by our mistake, we can laugh along with others. If we don't frame the mistake as funny and laugh at our mistake, we may feel embarrassment and shame instead. When we take ourselves less seriously and laugh with others at our mistakes, we feel empathy, closeness, and other good positive feelings. Humor has the power to lighten up and diffuse tension or to put the silver lining on the gray clouds of failure for all to appreciate.

Laughter of others

We increase our tendency to laugh when we hear the laughter of others (Chapman, 1983). This social aspect of humor motivated the use of **laugh tracks** on television shows. Though some of us may find them annoying and unnecessary, laugh tracks help people who watch alone feel like they are sharing the experience with others. Further, laugh tracks serve as **social cues** to alert us that something funny has happened. These cues help viewers detect ambiguity and do cognitive backtracking of reinterpreting and resolving incongruities. In everyday interactions, laughter functions to signal the absence of threat, which according to evolutionary psychology (see Chapter 2), gives laughter adaptive value in social situations.

In one example of the important role of laughter in social contexts, Devereux and Ginsburg (2001) examined frequency of laughter in matched pairs of strangers or friends who watched a humorous video together compared to those who watched alone. The time individuals spent laughing was nearly twice as frequent in pairs as when alone. Frequency of laughing was only slightly shorter for friends than strangers. According to Devereux and Ginsburg (2001), laughing with strangers served to create a social bond that made each person in the pair feel comfortable. This explanation is supported by the fact that in their stranger condition, when one person laughed, the other was likely to laugh as well. Interestingly, the three social conditions (alone, paired with a stranger, or paired with a friend) did not differ in their ratings of funniness of the video or of feelings of happiness or anxiousness. This finding implies that their frequency of laughter was not because we find things funnier when we are with others, but instead, we are using laughter to connect with others.

Why might two friends laugh nearly as frequently as two strangers? We might expect friends to laugh much more with each other than strangers. One possibility is that laughter is a form of communication of norms among strangers. Friends already know what to expect with each other; they do not need to hear laughter to know the other is comfortable with

them. Strangers need social cues, like laughter, to help establish what to expect from each other (Devereux & Ginsburg, 2001).

Status

In many groups, there is a status hierarchy, such as veterans and rookies, or fourth-year and first-year undergraduates. Because laughter is social communication, its quantity and quality likely depend on status. For example, dominant members' laughter tends to be more expressive, and low-status members' laughter is more inhibited (Oveis, Spectre, Smith, Liu, & Keltner, 2016).

Humor can improve our status in a group, but it can also lower it. Bitterly, Wood, Brooks, and Schweitzer (2017) found that appropriate humor increased status but inappropriate humor harmed it. When humor increased status, it was because it relayed self-confidence and competence. An inappropriate joke conveyed low competence, even when the confidence of the joker was high.

To give some details, Bitterly et al. (2017) examined inappropriate humor in the context of a job interview. Participants played the role of the manager who asked an applicant questions to test their creativity, spontaneity, and thoughtfulness. After the interview, managers evaluated the job applicant based on their answers. Unbeknownst to the manager-participant, the applicant was a **confederate** whom experimenters had trained to respond to one particular question with either a) an appropriate joke, b) an inappropriate joke, or c) a serious statement. For example, the manager asked, *What is a creative use for an old tire?*, and the confederate responded either: a) *Someone doing CrossFit could use it for 30 minutes then tell you about it forever* (considered an appropriate joke response), b) *Melt it down, make 365 condoms, and call it a GOODYEAR*! (considered an inappropriate joke response), or c) *Make a tire swing out of it* (considered a serious statement).

After the interview, participants-managers rated the applicant on leadership status. As shown in Figure 4. 1, mean status ratings for applicants who made appropriate jokes depended on whether the participant laughed at the response: participants who laughed (labeled successful) gave the highest status ratings compared to those who did not laugh (failed jokes). For inappropriate jokes, status ratings for participants who laughed were about the same as serious answers, but, for participants who did not laugh, the applicant's status was rated lowest of all conditions. By comparison, mean status ratings for applicants who gave serious answers was second only the successful appropriate joke. Thus, leadership status ratings depended on whether the joke was successful and made the manager laugh, especially when it violated expected norms of an interview (inappropriate jokes).

Participants also gave confidence and competence ratings of applicants. These ratings revealed that participants thought that telling a joke in a job interview conveyed confidence, and jokes that caused positive social reactions (e.g., laughter) conveyed both cognitive and social competence. Confidence and competence together raise social status (Bitterly et al., 2017). These findings support humor theories in the evolutionary psychology perspective (see Chapter 2 "Biological Psychology"). Such data also relate to the use of humor as a tool for effective leadership in the workplace (see Chapter 10 "Applied Psychology").

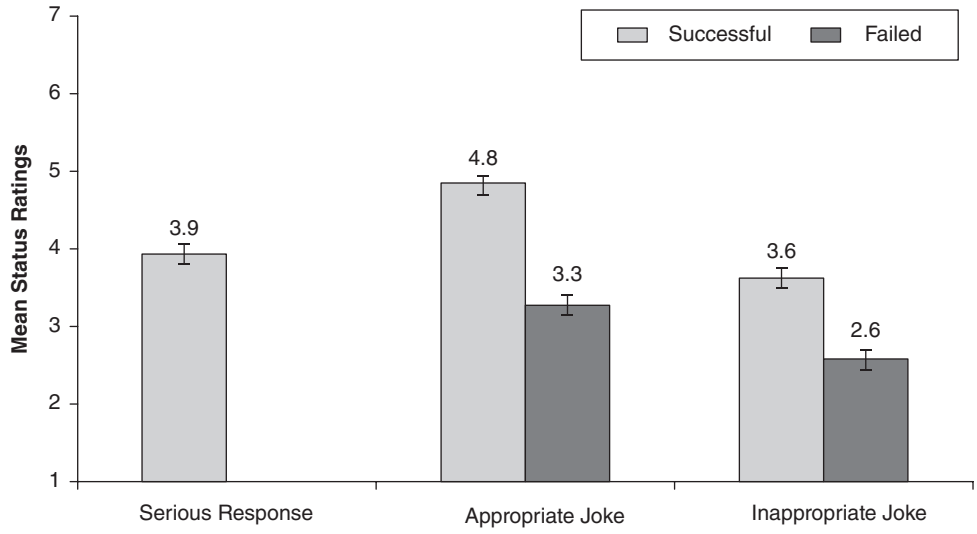


Figure 4.1 Mean leadership status ratings for jokes that made the participant laugh (successful) or not (failed) as a function of whether the confederate made a serious response, an appropriate joke, or an inappropriate one (Bitterly, T. B., Brooks, A. W., & Schweitzer, M. E. (2017). Risky business: When humor increases and decreases status. *Journal of Personality and Social Psychology*, *112*, 431–455.

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Related to status is power. Those with high social power have control of resources (e.g., needs to influence others) in social relations (Knegtmans et al., 2018). Research indicates that those high in social power express more positive emotions and have less inhibited behavior, whereas those low in power express more negative emotions and pay attention to threats. Someone with control of resources may not worry about following social norms, whereas low power individuals are sensitive to the appropriateness of humor. Consequently, high-power individuals might find a joke that violates social norms as funnier than those low in power.

Knegtmans et al. (2018) studied the role of power in appreciating offensive humor. They experimentally manipulated power by first having participants write a short essay on a time when they had power over others or a time someone else had power over them. The researchers found that those in the high-power condition rated offensive jokes as less inappropriate and less offensive than those in the low power condition. Most importantly, they rated them as funnier. Statistical analyses revealed that funny ratings increased by power was mostly due to feelings that the jokes were not offensive. When individuals viewed jokes as inappropriate, they were less likely to see them as funny. Thus, social power's influence changed the perception of what is appropriate; the more power you feel, the less threat/offense you see to others (Knegtmans et al., 2018). They found the difference between power conditions was greatest for jokes about people with disabilities than for ethnic or sexist jokes.

Dominance

Related to status is **dominance**. Some social groups have power over others. When an ingroup makes jokes about the outgroup, it matters whether the outgroup is dominant or submissive to the ingroup. Jokes made about low-dominant outgroups might be perceived as funnier by the ingroup members because they reinforce the dominance of the ingroup. Alternately, ingroup members might rate these as funny because they believe jokes are not to be taken seriously, they are just jokes, and not true beliefs of the ingroup.

Cavalier humor beliefs

A cavalier humor belief is the belief that jokes are not to be taken seriously, are not an expression of members' true attitude, and thus are not insulting or harmful to the outgroup. Such a belief could be held by members of the ingroup as well as by the outgroup (who may laugh, too, at being the butt of the ingroup's joke). Hodson, Rush, and MacInnis (2010) examined this belief about jokes being just jokes as an individual difference. Some people hold a cavalier humor belief, whereas others believe jokes reflect personal attitudes. Hodson et al. (2010) created a 15-item measure of cavalier humor beliefs. They predicted that those high in this belief would find jokes about a low-dominant outgroup funny. Further, they predicted that those high in cavalier humor beliefs would use both affiliative and aggressive humor styles (see Chapter 3 "Personality Psychology") to express their bias against the outgroup. In addition, they predicted holders of cavalier humor beliefs would be high in extraversion and openness to experience.

Hodson et al.'s (2010) results reported positive correlations between holding a cavalier humor belief and affiliative, aggressive, and self-enhancing styles of the HSQ; there was no significant correlation with self-defeating style. Although they observed a positive correlation between cavalier belief and extraversion, they found no correlation with openness to experience. More important, Hodson et al. (2010) determined through statistical analyses that holding a cavalier belief predicted favorable ratings of jokes that disparaged the outgroup.

Members of a dominant group who are high in cavalier humor beliefs may use humor about outgroups without realizing they may, in fact, hold prejudice. That is, their belief that a joke is always just a joke prevents them from seeing how humor may harm and how their joke reflects their attitude. Hodson et al. (2010) found a relationship between cavalier humor belief and prejudicial beliefs. They warn that rationalization resulting from a cavalier humor belief prevents holders from taking a closer look at their own prejudices. This view helps explain why holders of cavalier humor beliefs do not understand why others find them prejudiced when they don't see it.

Bullying

Humor plays a role in how people relate to each other, and bullying typically involves using humor to ridicule and hurt others (Søndergaard, 2018). Bullying is framed as aggressive behaviors "predicated on an imbalance of power" (Hartley, Bauman, Nixon, & Davis, 2017, p. 78). Bullying in schools or the workplace is a serious social problem. Vulnerable populations include children with physical or intellectual disabilities. As Hartley et al. (2017) noted,

many children with disabilities are integrated into general education classes and may be singled out as victims of bullying. Hartley et al. (2017) noted that making jokes was an effective response to stop bullying for nonspecial education children, but children in special education, particularly those with language disabilities, were less likely to use this strategy.

Sari (2016) examined cyberbullying and humor styles in Turkish high school students. Some cyberbullying behaviors included modifying a picture, creating web pages with insulting statements or videos, and sending out emails to humiliate others. Individuals who reported having maladaptive humor styles (aggressive or self-defeating) more likely admitted to cyberbullying. As you might expect, aggressive humor style predicted cyberbullying.

Sari (2016) speculated that individuals with self-defeating styles were using humor to cope with their own low self-esteem. That is, individuals may develop maladaptive humor styles to cope with low self-esteem or as a way to maintain their social status. Sari (2016) proposed that educators should look at students' humor styles to reduce cyberbullying. Encouraging students to use affiliative and self-enhancing humor may help reduce the need for students to use maladaptive humor to cope with problems or their self-esteem, or give them a means for developing better social relationships with fellow students.

Bullying may involve humor by ridiculing/teasing others, taking pleasure in laughing at others (katagelasticism), and feeling fear that others will laugh at you (gelotophobia). Proyer, Meier, Platt, and Ruch (2013) examined these dispositions in adolescents. They noted that the fear of being laughed at shares characteristics with other social anxiety disorders. Moreover, those who fear being laughed at interpret overheard laughter as ridicule, even when that was not its purpose. They cited literature that showed those with gelotophobia often report being bullied. From their research, Proyer et al. (2013) suggested that children need to learn how to interpret humor. We should not assume all children successfully process the social complexities of laughter or situations in which humor occurs. For example, if children can sharpen their discrimination of what is a funny remark and what is ridicule, they can respond appropriately, such as smiling more, which signals to others that they like them. Importantly, these responses better allow them to experience the pleasures that positive humor affords and which their misinterpretation prevents. A similar point was made by Salavera, Usan, and Jarie (2018) in their research on gender differences; they proposed that humor can be used to educate students how to build social skills to improve their social interactions.

Stereotypes and attitudes

We hold stereotypes for gender, age, race, occupations, and probably any category that clusters people by a commonality, such as weight, height, hair color, sexual preference, political party, intelligence, religion, and geographical location. To maximize our efficiency in information processing, we organize our social knowledge so well that once schemas are activated, we quickly know how to socially interact with members of these groups. The cost of this efficiency is that we see the forest and not the trees. We use one exemplar to stand for the whole category. Positive stereotypes exemplify the best of the category and negative stereotypes the worst.

> *Santa Claus, the tooth fairy, an honest lawyer, and an old drunk are walking down the street together when they simultaneously spot a hundred-dollar bill. Who gets it? The old drunk, of course, the other three are fantasy creatures.*

In this joke, lawyers are the stereotype being poked fun at. Information in social schemas includes the attitude to hold and behaviors to enact. Thus, when we activate negative stereotypes, the attitude is generally dislike, disappointment, or avoidance. Further, these attributes draw our attention, and we think about them instead of other positive characteristics of the group. Thus, salient characteristics of stereotyped groups typically are the focus of jokes.

Positive stereotypes might be in play when a joke surprises us with unexpected behavior that creates incongruity. For example, it becomes funny when smart people do dumb things. The following joke illustrates how violations of a positive stereotype of older adults as well-mannered can be funny.

> *Thinking that the presidential candidate needed to show a more human side of himself, his committee advised him to visit an old age home. Walking into the room of an old man, with the cameras whirring, the nominee was surprised when the old man offered him some peanuts from a bowl on the table. "Thank you", said the nominee after being offered more for the 3rd time, "why don't you have some yourself?" "Oh, I can't eat them", said the old man, "I don't have any teeth". "So why do you have them?" asked the confused nominee. "Oh, I like the chocolate around it" was the glib reply*.

It is difficult to know whether liking jokes that use negative stereotypes reveals agreement with the stereotype and its corresponding attitudes or reveals enjoyment at the incongruity of a false stereotype. Theoretically, any incongruity is a source of amusement, but when people are amused by disparagement humor based on negative stereotypes, it is difficult to discern whether amusement is pleasure of attitude agreement or incongruity resolution. Banjo (2009) noted that it is possible to like racist or ethnic humor because it is incongruous with our cultural competence.

Research on humor that uses negative stereotypes shows that our attitudes predict humor appreciation. For instance, Burmeister and Carels (2014) examined obesity-related humor. They collected data on participants' attitudes toward obesity (e.g., *Do they dislike fat people?*) and beliefs on the controllability of body weight (e.g., *All fat people have to do to not be fat is stop eating*.). Participants watched videos that contained jokes that disparaged fat people. The researchers found that the relation between dislike of fat people and liking fat jokes reached statistical significance. Participants who believed that weight was controllable showed a stronger tendency to like fat jokes.

With research showing that our attitudes predict humor ratings, we can ask whether the reverse relationship applies–does humor influence stereotypes and attitudes? Could exposure to humor with positive stereotypes increase positive attitudes and exposure to humor with negative stereotypes increase negative attitudes? The research on this question is mixed. For example, Maio, Olson, and Bush (1997) examined jokes about Newfoundlanders. According to the researchers, the Canadian negative stereotype of Newfoundlanders is akin to American's stereotype of the country bumpkin. Participants from Western Ontario read aloud jokes as if doing a comedy routine and then rated adjective traits (e.g., clever) and made attitude ratings (e.g., worthless/valuable) of Newfoundlanders. Results showed that participants rated disparaging and nondisparaging jokes as equally funny. Attitude ratings were also similar. Most importantly, however, adjective ratings of Newfoundlanders showed

an influence of the humor. Participants selected more stereotyped adjectives following disparagement humor than nondisparagement humor. When disparagement humor focused on the negative stereotype, participants were less likely to select positive traits to describe Newfoundlanders than when the humor did not disparage Newfoundlanders.

Maio et al.'s (1997) results indicated that exposure to disparagement humor activated the stereotype (as shown in adjective selection), but it did not cause a change in expression of attitudes (as shown in ratings). They suspected that the stereotype of Newfoundlanders, though reinforced by disparagement humor, did not elicit negative attitudes because the stereotype itself includes inept but lovable. They predicted that when the stereotype does not contain positive attributes, participants might express more negative attitudes after exposure to disparagement humor, as when negative stereotypes of lawyers as greedy and arrogant primed participants' negative attitudes (Hobden & Olson, 1994). However, in a later study, Olson, Maio, and Hobden (1999) conducted 83 analyses on data from three experiments that examined disparagement humor of men or of lawyers and found that exposure to these stereotypes jokes did not affect attitudes.

On the other hand, Ford, Boxer, Armstrong, and Edel (2008) found that exposure to racist or sexist jokes increased racial or sexist discrimination on a subsequent task. That is, behavior showed a negative effect on the task after exposure to negative humor. After watching a sexist comedy skit, male participants who already held hostile sexist attitudes recommended more funding cuts to a women's organization than those holding such attitudes who watched a neutral comedy skit.

How could humor have this power? Ford (2016) suggested that stereotyped humor provides a context that expands the limits of acceptable behavior (see Figure 4.2) so that it provides a freedom to express attitudes that would not be acceptable in society's norms under literal, nonfunny conditions. Rather than a change in attitude, humor provides a change in

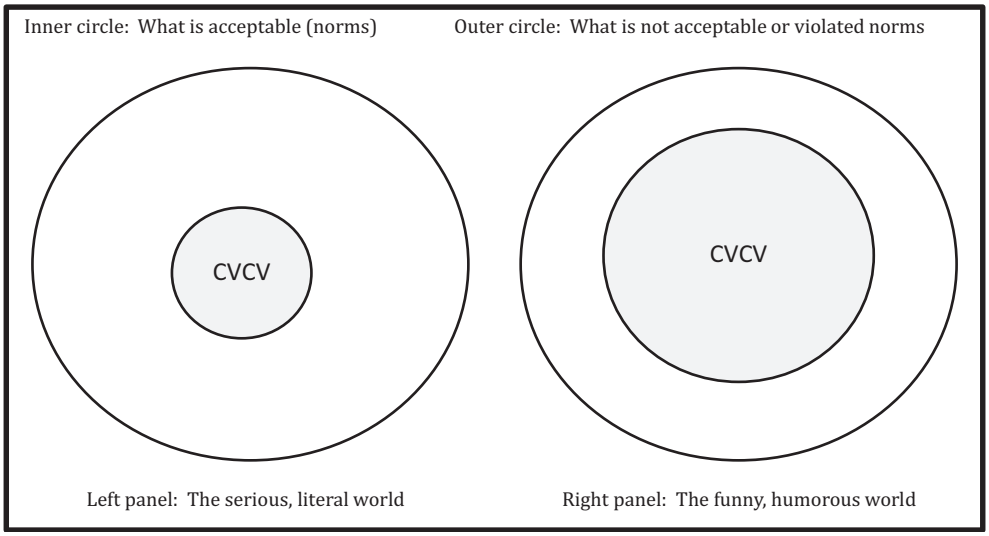

Figure 4.2 Euler diagram illustrating how humor expands the boundaries of acceptable behavior.

freedom to express our attitudes. We see this pattern in a study of sexist humor, where Ford, Woodzicka, Triplett, and Kochersberger (2013) found that, following the reading of sexist jokes, men who held hostile attitudes toward women and held cavalier humor beliefs were more likely to accept social devaluations of women. Similarly, exposure to disparagement humor did not increase negative attitudes toward the disparaged group but instead, changed the expression of prejudice toward the group (Ford, Richardson, & Petit, 2015). In essence, when we hear others in our ingroup make negatively stereotyped jokes about outgroup members, we may relax personal restrictions on expressing prejudices we already have. In this view, humor allows us to conceal or express prejudices that we might normally not express because we know literal expression is inappropriate.

Exposure to stereotyped humor may not affect our attitudes when the humor is disliked. Pariera (2017) studied mothers' attitudes toward having "the sex talk" with their adolescent children. Videos designed to inform mothers of questions their child might ask showed children's misconceptions about sex with either a nonserious (e.g., *Do I really need to use a condom?*) or a humorous (e.g., *Do I need one? I don't know how to make balloon animals*.) tone. She found that, in general, though mothers rated the humorous video as funnier and reported feeling higher amusement than the serious video, they did not like the humorous video as much nor did it influence their fear or embarrassment about having the sex talk (i.e., it was ineffective). Only those mothers who really liked the funny video's humor showed an improved positive attitude about having the sex talk. It is possible that because humor made the information in the video appear less credible or relevant, and undermined the importance of its message of questions/myths to discuss with their children. This issue of humorous messages being taken seriously is discussed with advertising in Chapter 10 "Applied Psychology" and applies to our next topic: subversive humor.

Subversive humor

Subversive humor describes disparagement humor expressed to highlight the absurdity of prejudice in hopes of undermining it. By making jokes about our implicit attitudes and stereotypes, we draw explicit attention to them, provide opportunities for discussion, and effect social change (e.g., Banjo, 2009; Strain et al., 2016). Sharpe and Hynes (2016), for example, noted that racist jokes may provide a means for us to discuss our discomfort with racism. In another view, when something is extremely important, we do not joke about it. So, when we do joke about racism, we demote its importance and are open to weakening our beliefs in sustaining a racist attitude. When this happens, our values and norms shift to diminish our racist attitudes.

The teller of subversive jokes, who intends to expose or ridicule racism, takes a risk, however, because the listener may not see that intent but instead may interpret the humor as expressing the joker's negative attitudes. To raise awareness, the audience must discern the intention of the joker and recognize the absurdity of the stereotype. Otherwise, we perceive the humor as racist rather than as functioning to correct our own racist attitudes (Saucier, O'Dea, & Strain, 2016). In one study, Saucier, Strain, Miller, O'Dea, and Till (2018) compared subversive (*What do you call a Black guy that flies a plane? A pilot you fucking racist*.), disparagement (*Where do you hide your money from a Black thief? A: In your books*.), and neutral

(*Have you heard about corduroy pillows? They're making headlines*.) humor. Participants considered subversive humor funniest of the three kinds, but most participants identified the subversive joker's intention was to disparage Blacks, not to challenge prejudice. Equally notable, after exposure to both disparaging and subversive humor, participants expressed more prejudice by selecting negative stereotyped adjectives of Black people.

Supporting Saucier and colleagues, other researcher showed that prejudiced individuals are not likely to see the absurdity in subversive humor. For example, Vidmar and Rokeach (1974) studied viewers of *All in the Family*. This early 1970s television show used ethnic and racial jokes as "a weapon against prejudice" (Vidmar & Rokeach, 1974, p. 36). Their survey found that many viewers who found the show entertaining identified with the Archie Bunker character and agreed with his use of racial slurs. Those viewers high in prejudice were more likely to admire this character and were less likely to see the show as poking fun at bigotry. In sum, viewers' attitudes predicted what they saw and liked about the show's humor.

Such findings do not support the view that listeners of racist humor see the absurdity of their racial attitudes. Instead it supports the disposition theory of humor, which states that individuals who have negative attitudes about a group of people either tend to like humor that puts the group down (Zillman & Cantor, 1972) or it establishes social norms where the expression of their prejudice is acceptable (e.g., Ford et al., 2015).

Political humor

> I never lack material for my humor column when Congress is in session.
>
> – Will Rogers (as cited in Esar, 1949, p. 169)

We see attitudes and stereotypes manifested in political jokes. Whether we belong to a political group defined as liberal or conservative, republican or democrat, or the group in power or in the minority, we likely belong to both a political ingroup and someone else's outgroup. Braun and Preiser (2013) showed how our group membership influences our liking of political humor. The more we dislike the leader of the outgroup, the funnier the joke. In the following example (based on a German political figure), when you substitute the given name with a political leader from our ingroup and a leader from an outgroup, you likely can notably discern the humor increase for the outgroup leader version.

> *Roland Koch visits a farm and invites the press to go with him. A photographer takes a photo of him in the pigpen, whereupon Koch says to the photographer: "Just don't entitle that picture with something stupid like Koch and the pigs!" "No, no, of course not", the photographer replies. The next day the photo is in the newspaper and is entitled: "Roland Koch (3rd from left)"*.

The study of political humor concerns both the humor expressed in political cartoons and preferences for political humor. Political cartoons often use symbols to convey background information, such as elephant and donkey for American political parties of republican and democrat. Conners (2017) reported that themes expressed in political cartoons during the 2016 presidential campaigns reflected attitudes of the political parties, such as the animals showing reluctant endorsement of their candidate or agreeing with an issue.

However, agreement with the themes may not be why someone likes political humor. A number of variables are involved beyond the actual content of the humor. Preference for political humor may depend on whether one is conservative or liberal, has a high tolerance for ambiguity and high Need for Cognition, in addition to their sense of humor. Young, Bagozzi, Goldring, Poulsen, and Drouin (2017) found that, when using materials that were not political in nature, conservatives' humor preferences were explained by a lower Need for Cognition (they prefer simple to complex ambiguity) and lower sense of humor as measured on Thorson and Powell's (1993) Sense of Humor scale. These differences may explain why liberals use humor more than conservatives to express their attitudes.

Political affiliation and political engagement are two important characteristics of potential voters (Baumgartner & Lockerbie, 2018). Researchers Baumgartner and Lockerbie (2018) distinguished between political comedy and satire. Comedy tends to make fun about political figures (e.g., monologues of David Letterman), whereas satire makes fun of political issues or policies (e.g., The Colbert Report). They asked participants how frequently they watched certain programs as well as approval ratings. Concerning the 2012 presidential election, they found that exposure to satire affected viewer's political engagement (e.g., voting) or attitudes (e.g., approval of president's handling of economy) but exposure to comedy did not. Further research is needed to know whether exposure to political satire can cause political attitude to change or does our attitude cause us to watch or not watch political satire.

For students interested in studying political humor, Holbert et al. (2013) developed the Affinity for Political Humor scale to measure preferences for political humor. Examples of the 11 items include *I appreciate political humor because it can reveal the weaknesses of our political leaders and institutions*, *I appreciate political humor because it can help me express my political opinions*, and *I appreciate political humor because it can reduce the anxiety I feel toward politics*.

Sexist humor

Sexist humor disparages genders by using negative stereotypes, demeaning individuals, or objectifying them. Much research on sexist humor focuses on jokes where women are the target. An example of an aggressive, sexist joke that demeans women:

> *A woman walks into a bar with a duck on a leash. Bartender says, "Where'd you find the pig?" Woman says, "This isn't a pig, you idiot, it's a duck". Bartender says, "I was talking to the duck".*

When sexist humor occurs, the offended individuals are often unclear about the intentions of the joker (Malett, Ford, & Woodzicka, 2016). Are they poking fun at the stereotype or expressing a prejudiced attitude? Thus, because they are unclear, women are less likely to confront the teller of the sexist joke even though they would confront the speaker if a sexist remark was stated seriously. By not confronting, they show a willingness to tolerate sexist humor (Malett et al., 2016). This is important because tolerance helps establish the social norm that telling sexists jokes is okay. Further, when jokers hold a cavalier belief that a joke is just a joke, they fail to appreciate the harm of their humor on women and instead believe they were perceived by listeners as funny instead of offensive.

Thomae and Pina (2015) examined sexist humor through the lens of two social theories. First, **social identity theory** says that group membership informs our sense of who we are. Humor functions to maintain and uphold a positive identity for the group. It may build community (Banjo, 2009). Accordingly, disparaging others helps make dominant groups (e.g., men) feel superior or nondominant groups (e.g., women) cope with their lower status. Ford et al. (2013) found that men with hostile attitudes toward women used sexist humor to maintain their status. Second, **self-categorization theory** contributes to ingroup cohesion by helping members see outgroup members less as individuals and more as the general stereotype. The stereotype is easier to think about, even though it is a generalization and does not apply to all members.

Thomae and Pina (2015) found support for both theories to explain the function of sexist humor. Sexist humor enhanced the cohesion of male groups. It also contributed to the availability of victim blaming of rape. That is, when women were disparaged in jokes, this information likely brought to mind negative views of women that suggested the woman caused rape to happen.

Other researchers found that men who have a hostile attitude toward women are more influenced by sexist humor than men who do not hold such an attitude. For example, those with a hostile attitude were more likely to score higher on a rape proclivity scale after exposure to sexist humor than those who held a benevolent sexist attitude (Romero-Sanchez, Duran, Carretero-Dios, Megias, & Moya, 2010). Those who disliked sexist humor were even less likely to agree that they would act in a similar way as the rapist in the scenarios. Such an interaction is important to keep in mind when summarizing the effect of sexist humor. It is an error to conclude that sexist humor must lead to rape proclivity. Rather, predisposition of the audience needs to be considered.

It is also important to remember that humor that uses stereotypes can function to engender closeness or good feelings, as in correcting disparagement. *Never laugh at your wife's choices. You are one of them*.

Attributions

When someone tells a joke, the listener forms an impression of the joker. Derks and Berkowitz (1989) studied how gender affected judgments about the joker. Eight hundred undergraduates read a story about someone telling a joke to a group. The researchers manipulated whether a) the characters in the story were friends or strangers, b) they were at a party or at work, c) the joker was either a man or a woman, d) the joker told either a dirty or cute joke, and e) whether no one in the story laughed or everyone did. After reading the story, participants stated a conclusion of what happened next and chose adjectives (e.g., obnoxious) from a list to describe the joker.

Concerning liking and adjective ratings, Derks and Berkowitz (1989) found that participants rated the joker as sincere when telling a cute joke instead of a dirty joke. Laughter lowered sincerity ratings. Specifically, if no one laughed, then the joker in the friends-at-a-party scenario received higher sincerity ratings, and women participants gave higher sincerity ratings for at work. As we might expect, the teller of dirty jokes was rated as less friendly and

less intelligent than of cute jokes, and jokers that got a laugh was rated as more popular. In general, participants rated jokers as more attractive when the group laughed. An interesting gender difference emerged: male participants rated the joker are more intelligent when they got a laugh at work, but female participants rated the joker as more intelligent when not getting a laugh at work.

Concerning story completions, Derks and Berkowitz's (1989) scored these as either affiliative (e.g., *we went back to work happy*), aggressive (e.g., *everyone thought he was stupid*), or neutral (e.g., *it was time for lunch*). They found that of 593 completions, 298 were affiliative, 218 aggressive, and 77 neutral. Stories that contained a cute joke or a laughter response had the most affiliative endings. The setting of work or party made no difference.

Interestingly, the researchers found that stories with the female joker were the least completed. That is, when participants left the completion question blank, it happened more times when the joker in the story was female. They proposed that participants did not take female jokers seriously enough to require a completion to the story even though the adjective selections did not differ for male and female joke tellers. Keep in mind that experimenters cannot know why someone leaves a question unanswered. But it does suggest participants treated the question differently or found it took more effort to generate a completion and so left it blank. Further research is needed to know why participants did not write as many completions to the story with female jokers even though they completed equivalent adjective checklists.

Research on attributions of the joker includes examination of attributional styles and humor styles. In one such study, Hugelshofer, Kwon, Reff, and Olson (2006) measured correlations between attributional style and humor style in 418 college students. Attributional style was defined as internal or external. Humor styles were measured on the HSQ (see Chapter 3 "Personality Psychology"). They found that men reported having an aggressive humor style and an external attributional style more than women had. In other words, men explained their behavior as being caused by the situation more than women did. Interested in correlates of depression, Hugelshofer et al.'s (2006) found that lower depression scores were associated with holding affiliative and self-enhancing humor styles. Most importantly, when participants held an internal attributional style, having an affiliative humor style reduced depression scores for men only. Their research shows that, indeed, the relationship between attributional style and mood may be understood with knowledge of our humor style. We need further research to understand why humor style may help men more than women buffer injurious effects of attributional style on depression.

Relationships

If starting a conversation with a stranger, would you begin with a joke? Humor serves to break the ice and allows strangers to get to know each other. Fraley and Aron (2004) asked whether strangers who share a humorous experience would feel closer than strangers who shared a nonhumorous experience. They paired strangers of the same gender who worked together to complete five tasks (e.g., speak while holding a straw between their teeth). In one condition, they instructed pairs to make these experiences humorous and playful. In the

other condition, they instructed pairs to take the tasks seriously. Fraley and Aron (2004) found that afterwards strangers in the humor condition reported feeling closer than those in the serious condition. Further, Beike, Brandon, and Cole (2016) reported that groups who shared such humorous experiences were more likely to share autobiographical information about each other, thus supporting the idea that humor facilitates disclosure and getting to know each other.

When strangers meet, humor used in the initial conversation can increase liking of each other and leave a positive impression of the meeting. Treger, Sprecher, and Erber (2013) collected ratings of liking and perceived reciprocal liking (i.e., did the other person like you?). The researchers hypothesized that laughter in response to another person's humor signals acceptance, interest, and connectedness.

In the first experiment, after participants filled out a set of questionnaires, they were randomly assigned to a person of the opposite sex, and the pair completed two 12-minute social interaction tasks that took place over Skype. Across the two tasks, order of self-disclosure was balanced so that partner A self-disclosed on the first task and partner B self-disclosed on the second task. Afterwards, each person answered questions about the interactions. Treger et al.'s (2013) data revealed that the partner's humor use increased liking for partners and feeling close to them. Humor also increased perceptions that the partner liked and felt close to them in return. Thus, enjoyment of the interaction and whether there was perceived reciprocal liking mediated liking the partner. The researchers also reported that men and women equally used humor in their interactions.

In their second study, the opposite-sex pairs completed four tasks: self-disclosure, ball tossing, dance instruction, and charades. Each of these included a humorous and nonhumorous manipulation similar to that of Fraley and Aron (2004) mentioned earlier. For example, in the self-disclosure task, provided questions for the partner to ask were neutral (e.g., *Why did you choose your major*?) or sought a funny response (e.g., *What is your favorite joke*?). As expected, participants in the humorous condition expressed more liking, romantic desire, and perceived reciprocal liking than those in the nonhumorous condition. As in the first experiment, Treger et al. (2013) found no differences between men and women in humor use.

Friendships

Many students report that finding friends on campus is very important to them. Would we expect that friends have similar humor styles? Hunter, Fox, and Jones (2016) reported on humor styles and friendships of young adolescents (aged 11–13) at school. They collected data early in the fall semester and later the following spring. They took measures that included naming their best friend or merely friends from a list of students in the class. When both students named each other as best friend, experimenters classified them as reciprocal friends.

Hunter et al. (2016) asked two questions: do reciprocal best friends share humor styles? Do their styles influence each other? Their questionnaire results indicated that best friends do not share the same humor style when they formed the friendship, but by spring they were more likely to share an affiliative style. None of the other three styles became shared. Recall that affiliative style involves using humor to make others feel good, suggesting that best friends increased using humor to enhance their relationship.

Romantic relationships

Is humor an aphrodisiac for love (see Figure 4.3)? Does the couple that laughs together stay together? Research indicates that humor helps create intimacy, generates playful emotions, mitigates conflict, and expresses affection. A good sense of humor is one of the most sought-out characteristics in a romantic partner (Bressler & Balshine, 2006; Cann, Calhoun, & Banks, 1997). In one study, 92% of husbands and wives said humor contributed significantly to married life (Ziv, 1988).

Individuals who use positive, adaptive humor styles (affiliative and self-enhancing) report feeling secure in their relationships (Cann & Etzel, 2008). Positive humor styles may be preferred for long-term relationships because they encourage warmth and intimacy (Didonato, Bedminster, & Machel, 2013). One reason humor styles matter in relationships concerns conflict styles. Couples need to not only like each other but handle disagreements that arise. Caird and Martin (2014) reported that those with maladaptive humor styles (aggressive and self-defeating) tended to be aggressive and dominant in how they handled conflicts. Campbell, Martin, and Ward (2008) found that couples report feeling more satisfaction with the relationship and with conflict resolution when humor occurred in discussions of their problems. They also found that an aggressive humor style diminished feelings of closeness.

"Our next guest is here with his formula for the perfect marriage."

Figure 4.3 There may be no formula for a happy marriage, but humor certainly contributes.
Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

To provide more details, Caird and Martin (2014) studied individuals in a relationship for three weeks to capture changes over time, with a follow-up assessment five months later. The couples completed a structured diary-like questionnaire about their humor use as well as their satisfaction with the relationship. The researchers found that an affiliative humor style positively correlated with satisfaction in the relationship. On days when individuals reported sharing enjoyable humor with their partner, they rated their relationship positively. The same was true on days when they used humor to cope with life events. Using humor to cope positively correlated with relationship satisfaction. Aggressive humor style negatively correlated with relationship satisfaction in general. Day-to-day entries, however, did not show this association. In other words, if someone noted that their partner teased them that day, then it did not necessarily lower their relationship satisfaction rating that day, but the pattern emerged in the long-run.

The expression *Opposites attract* might lead us to wonder if married couples have different humor styles, and if so, how this might matter to their ability to work together to solve problems. Murphy (2015) conducted his dissertation on 83 married couples' humor and problem solving. He found that each partner's sense of humor (as measured on the MSHS) influenced their problem-solving ability (as measured on the Social Problem-Solving Inventory—Revised), but that the wife's sense of humor did not influence the husband's problem solving as much as the husband's sense of humor influenced her problem solving. In other words, knowing one's sense of humor skill predicted one's own problem-solving abilities, knowing a husband's sense of humor predicted the wife's problem-solving abilities, but knowing the wife's sense of humor did not predict the husband's problem-solving abilities. Such data suggest that their sense of humor may play an important role in reducing difficulties when couples work together to solve problems.

Humor enjoyment matters in maintaining satisfaction. Expanding a tad beyond humor styles, Hall (2013) looked at humor functions, such as apologizing, coping, or affection in addition to humor styles and relationship satisfaction. He argued that humor serves to make the relationship pleasant and socially rewarding. Results indicated that the when humor's function was enjoyment, then satisfaction correlated with affiliative humor. When the function was to apologize or cope with stress, they found no relationship between affiliative style and relationship satisfaction. Hall (2013) found that the relationship between affiliative style and satisfaction was mostly true only for men.

What about offensive jokes? We might expect the situation depends on whether both individuals in the relationship enjoy offensive jokes or one dislikes them. Cann, Cann, and Jordan (2016) found that if women were embarrassed by their partner's use of aggressive humor, then humor did not strengthen their relationship. It might also matter whether the jokes were told in private or public. Hall and Sereno (2010) examined the role of offensive jokes in 123 long-term heterosexual relationships for racist, sexist, religion demeaning, dirty, and disability-insensitive jokes in addition to nonoffensive humor. They report that using positive, nonoffensive humor did increase relationship satisfaction but found no influence of offensive humor on relationship satisfaction. However, when both partners shared a similar use of offensive humor, men rated humor as important to their relationship. For women, they were satisfied when their partner used the same amount of offensive humor as they did. They found that men used offensive humor more than women did, whether in public or private.

Individual differences

Social intelligence

The construct of social intelligence concerns the ability to interact comfortably in a variety of social situations, listen well, be perceptive to social cues, and understand people. One model of social intelligence, derived from a 21-item scale that Silvera, Martinussen, and Dahl (2001) constructed, consists of three factors: social information processing (*I can predict other people's behavior*), social skills (*I am good at getting on good terms with new people*), and social awareness (*People often surprise me with the things they do* [this item is reversed scored]). The scale ranges from 1 to 7 where a higher value indicates higher social intelligence. Telling jokes is used both to increase interpersonal connections as well as appreciating how well others receive them, and therefore we would expect to find a relation between social intelligence and humor.

Gibson et al. (2017) collected measures on Silvera et al.'s (2001) social intelligence scale and on several scales concerning humor namely, HUMOR, Cheerfulness (STCI), Need for Humor (see Chapter 3 "Personality Psychology" for these three scales), and the VIA-IS humor subscale (see Chapter 8 "Positive Psychology"). We found that social intelligence was correlated with both humor and cognition scales. For example, those with higher scores on the social information factor reported significantly higher scores on the VIA-IS, cheerfulness, and Need for Humor external factor. Individuals reporting higher social skills scores had higher scores on cheerfulness and the VIA-IS. The social awareness factor significantly correlated with Need for Humor external. Further, Yip and Martin (2006) examined associations between social competence and humor styles. They found that the positive humor styles–affiliative and self-enhancing–significantly correlated with social skills and with using humor for self-disclosure. Social skills scores significantly correlated with cheerfulness and self-disclosure.

Research findings on humor and social intelligence may help address social isolation. Hampes (2005) studied the association between humor styles, loneliness, shyness, and social skills. He hypothesized that lonely individuals, due to their lack of social skills for bringing about intimacy and strengthening relationships with other people, might not use an affiliative humor style but instead might use a self-defeating humor style to encourage others to at least laugh with them. He correlated scores from over 100 undergraduates on the HSQ (see Chapter 3 "Personality Psychology") and a loneliness scale. He found that loneliness was negatively correlated with affiliative humor style and self-enhancing humor, and positively correlated with self-defeating humor. Loneliness and aggressive style did not correlate. Thus, the lonelier individuals felt, the less likely they were to use affiliative and self-enhancing humor, and the more likely they were to use self-defeating behavior. These results suggest that training individuals to use affiliative humor as they practice social skills could result in reducing loneliness.

Race

Does race of the joker matter to having a sense of humor? Thorson, Powell, and Samuel (2001) asked this question in a study of 116 black students from Grambling State University and 357 white students from the University of Nebraska at Omaha. All participants completed the MSHS. Results showed very similar responses by race (i.e., race did not matter) with a few exceptions. It is important to note that they used the 0.01 level of significance to determine differences between races, given their large sample. In other words, it is very

unlikely that the exceptions Thorson et al. (2001) found were due to chance alone because the odds were only 1 in 1,000 of finding a difference between racial groups by chance alone.

Of the 24 MSHS items, black women responded more frequently to items *Sometimes I think up jokes and funny stories* and *I'm confident that I can make other people laugh*. White women scored higher on *I appreciate those who generate humor* and *Uses of humor help to put me at ease*. Ignoring gender, black participants reported more *Uses of humor help to put me at ease*. These data suggest that further studies on race with gender in mind may support the pattern that black women produce humor more, whereas white women appreciate humor more. Further research may reveal whether race as an individual difference explains the use of humor in various situational contexts and comfort in the social roles we play.

Gender

Do the genders show humor differences?

According to evolutionary psychology (see Chapter 2 "Biological Psychology"), gender differences may be expected in humor. In alignment with survival of the funniest, men produce humor and women appreciate it. A review of the literature supports this gender difference. Wilbur and Campbell (2011) examined women's evaluation of men's humor in a dating context. In their first study, they found that men used humor to attract a romantic partner. They collected evaluations of 22 strategies provided by participants, and factor analyzed them. They found three factors: production (e.g., *I would try to make him/her laugh*.), evaluation (e.g., *I would look to see if other people find him/her funny*.), and appreciation (e.g., *I would tell him/her that she is funny*.). Men produced humor more than the women did, and women evaluated and appreciated the humor in a prospective partner more than men did.

In their second study, they examined online dating profiles for humor language in self-descriptions or humor sought in a desirable match. In support of previous findings, men advertised humor production more than women did (about 30% men vs. 20% women), and women requested humor production more than men did (about 17% men vs. 27% women). Interestingly, the researchers reported that there was no association between those offering humor and those requesting humor. Both genders equally requested someone with a good sense of humor (not defined as production or appreciation).

In their third study, Wilbur and Campbell (2011) examined whether a joke that began a dating profile affected the adjectives viewers gave. An example of a one-liner was *Sign in a restaurant window: Eat now, pay waiter*. Men and women read the same profile description that either began with a joke or did not. Ratings of romantic interest in the person in the profile revealed a gender x profile interaction. Men were not much influenced by the joke. They rated both profiles similarly, with a slightly higher rating for the one with the joke. Women, however, were strongly influenced by humor; they gave higher ratings for humor present than absent.

Concerning dark humor (see Chapter 3 "Personality Psychology"), men tend to like dark humor more than women. Aillaud and Piolat (2012) found showed that women found dark humor less comprehensible (*I don't get it*) and less funny than nondark humor. The researchers noted that the literature on gender differences finds that men tend to prefer aggressive, sexual-themed humor, whereas women tend to prefer nonsense humor.

Do the genders use humor differently? What functions do their humor serve?

Humor styles may reflect or predict gender differences in preferences for humor types. For example, men's preference for sexual or aggressive humor allows them to show their superiority, and women's preference for affiliative humor allows them to gain intimacy. Empirical evidence supports these predictions, some of which is presented next.

According to Wu, Lin, and Chen (2016), women do show empathy for others more than men. Hampes (2001) reported that empathy correlated with humor measured on the CHS, MSHS, and SHRQ (see Chapter 3 "Personality Psychology" descriptions of these scales). These correlations were strongest for those high in emotional intelligence. In Wu et al.'s (2016) study, men reported having an aggressive humor style and self-enhancing humor more than women. Women reported more empathic concern and perspective-taking ability. Empathic concern correlated with all styles but self-defeating (and negatively correlated with aggressive humor), whereas perspective taking correlated with all styles (a negative correlation for aggressive humor style). Wu et al.'s (2016) analyses suggested that a lack of empathy motivates aggressive humor; we do not attack others when we empathize with them. Empathy mediated the role of gender differences and humor styles: women may not use an aggressive humor style because they empathize with others. Men low in empathy are more likely to use an aggressive humor style.

Salavera et al. (2018) found that men scored higher than women on all four humor styles on the HSQ. The researchers examined the social skills needed for effective interactions as well as being able to behave for rewards and avoid punishments. They noted that one in three men and two in three women in their sample reported difficulties in managing their humor styles and social skills. These difficulties speak to a need for education to help individuals express disapproval, say no, make requests, or defend self-rights. Salavera et al. (2018) also found that men did better at regulating their emotion more than women.

Regulating emotions is important to health. As will be covered in more detail in Chapter 7 "Health Psychology", humor can function to buffer stress. Researchers report that this buffering effect might interact with gender. For example, Abel (1998) gave participants the MSHS (see Chapter 3 "Personality Psychology") along with stress and anxiety scales to examine the buffering effect of humor on stress. In addition to finding that humor helped buffer stress, Abel (1998) found humor helped men more than women for reducing anxiety. Both genders reduced physical symptoms of stress with humor. Why might gender matter? One suggestion of why humor may help men more than women with anxiety might be in how the two genders use humor. Men tend to use humor to express their emotions (rather than talk about them outside of humor), whereas women tend to express their emotions outside of humor. However, both genders may similarly use humor to reduce tension with physical stressors.

Lastly, gender differences may interact with age. Martin and Kuiper (1999) asked participants to record experiences throughout the day that made them laugh. Older women did not laugh as frequently as younger women did. Age did not matter to the frequency of laughter in men. Ignoring age, their data showed no significant gender differences in laughter frequency.

Is one gender funnier than the other?

Surveys suggest that people think men are funnier than women in everyday humor usage. But is there evidence to support this assumption? Brodzinsky and Rubien (1976) asked men and women to write captions to cartoons that either had an aggressive, sexual, or neutral theme. Raters of these captions found men's captions funnier for aggressive and sexual cartoons but found both genders equally funny for neutral cartoons. The difference between men and women was greatest for sexual-themed cartoons. However, mean ratings for all conditions were below the scal.'s midpoint, which indicates these captions, though perhaps funnier, were not perceived as all that funny.

Mickes, Walker, Parris, Mankoff, and Christenfeld (2012) asked men and women participants to write captions to *New Yorker* cartoons, and then asked others who were blind to the gender of the writer to rate these captions for funniness. Participants rated men's captions as funnier. This finding supports the belief that men are funnier than women. In a second study, participants studied the gender, caption, and cartoon for a subsequent memory test. Mickes et al. (2012) found that participants recognized captions defined by the judges in study 1 as funny better than nonfunny ones, and gender of funny captions was remembered better than nonfunny ones (a humor effect, see Chapter 1). Most interesting, when errors for memory of gender occurred, participants more often mistakenly remembered funny captions as written by men and falsely attributed nonfunny captions to women.

Research by Hooper, Sharpe, and Roberts (2016) found the influence of the "men are funnier" stereotype on humor ratings. They collected data from Britain, Canada, and Australia. Ignoring cultural comparisons for the present discussion (see Chapter 5 "Cross-Cultural Psychology"), two-thirds of their participants believed men were funnier than women, close to one-third thought the two genders were equal, and only 4% thought women were funnier. Moreover, both participant genders supported the men-are-funnier belief. Unlike previous research, however, participants rated the set of captions written by women as funnier than those written by men, but still the top funniest captions still were attributed to men. Participants were slightly better than chance at guessing the gender of the captions.

Hooper et al. (2016) suggested **stereotype threat** as a mechanism for why women fail to produce captions that are as funny as men's. If women believe the stereotype that men are funnier, then they consume cognitive resources during caption production to defend this threat, which lowers their cognitive resources needed to actually produce strong humor. Thus, their captions are less funny than men's, who were empowered by their positive stereotype for funniness and did not use up cognitive resources defending the threat during humor production.

Recap

Humor has many social functions, ranging from putting groups at ease, reinforcing commonalities to help increase group cohesion, and creating social cues for how to think and behave with others. Laughing provides external cues we use to interpret social situations. Much research conducted on romantic relationships, for example, indicates that humor can help broach difficult subjects, express difficult feelings, or reduce conflict.

Humor's social functions interact with humor styles. Humor that disparages based on group identity, as in racist and sexist jokes, may both harm and benefit us. The benefits include raising awareness of the ridiculousness of the stereotype or providing a coping mechanism. The harm caused by disparagement is sometimes buffered by preexisting attitudes and beliefs of the audience. A key point to its effect is whether the audience interprets the intention of the joker correctly, which is often difficult to do.

Suggested readings

Ford, T. E., Teeter, S. R., Richardson, K., & Woodzicka, J. A. (2017). Putting the brakes on prejudice rebound effects: An ironic effect of disparagement humor. *Journal of Social Psychology*, *157*, 458–473. doi:10.1080/00224545.2016.1229254

Juni, S., & Katz, B. (2001). Self-effacing wit as a response to oppression: Dynamics in ethnic humor. *Journal of General Psychology*, *128*, 119–142.

Wilbur, C. J., & Campbell, L. (2011). Humor in romantic contexts: Do men participate and women evaluate? *Personality and Social Psychology Bulletin*, *37*, 918–929.

Suggested class activities

Activity 4.1. Situational norms

Individually, rate whether you consider humor appropriate in the following situations and state in a sentence your reason: a) funeral/wake, b) class oral presentation, c) in time-pressured situation, d) when called to the principal's office, e) parent reprimanding a child, f) courtroom, and g) dental checkup. Discuss your ideas in small groups, and form an appreciation of the similarities and differences of opinions. Reflect on ideas concerning social norms and their influence on judgments. a) Identify when social norms had their strongest influence. b) Is it easy to violate these norms? c) What contexts and reasons did members give when acting differently than the group's consensus?

Activity 4.2. Evidence of laughter from student journals

Using your humor journals (or memories), gather evidence on social laughter. Record how many times laughter at humor occurred when alone or in groups and whether groups were intimate or an assembly (e.g., movie theater or class). In small groups, share your data to create a larger set of observations.

	Alone	*Intimate Group Close Friends*	*Intimate Group Acquaintances*	*Assembly*
Number of Entries:				

Activity 4.3. Humor styles and bullying

Write a proposal to conduct a study in your local school system that could result in educating students on laughter and humor in efforts to reduce bullying. For example, propose a study that examines whether training students to a particular humor style leads to effective social relationships, especially for students who have low status. In your proposal: a) provide a

compelling rationale that humor is a serious factor in social relations, b) identify how you would educate children on humor styles, and c) illustrate how you would assess the effectiveness of the training.

Activity 4.4. Power and stereotypes

Individuals with personal power have resources such as money and intelligence to get what they want, and individuals with social power have resources to influence others to get what they want (see Lammers, Stoker, & Stapel, 2009). Individuals high in personal power tend to stereotype because they do not need resources of others, but those high in social power tend not to stereotype because they want others to follow them. Apply this pattern to humor that uses stereotypes. Generate examples and make predictions. Which group would likely find jokes with stereotypes funny or tell such jokes about outgroups?

Activity 4.5. Psychiatry and psychology of humor stereotypes

a. Read Parker's (2013) short article about *New Yorker* cartoons concerning psychiatry. Why is it funny to make jokes about psychiatrists? In small groups, discuss and identify the psychiatrist stereotype. Apply research on humor, stereotypes, and attitudes to humor concerning psychoanalysis and therapies. Discern how the stereotype might be used to amuse (*How many psychiatrists does it take to change a lightbulb? One, but the lightbulb has to want to change*) or to express negative attitudes (*A happy pill a day takes the need for therapy away*).
b. Students of psychology of humor may have encountered others' attitudes and stereotypes about psychology of humor research. Perhaps they expected course material or papers to be funny and not serious science. a) What have you encountered when you shared this course information with others? b) How might the stereotype of humorous people or humorous behavior affect researchers, as in preventing, biasing, or influencing their study of humor?

Activity 4.6. Definitions of humor

Humor researchers vigorously debate the definition of humor. Consider difficulties participants must have as well when judging whether a sense of humor in their partner is highly valued. As a measurement issue, what happens when participants use different criteria to evaluate their partner's sense of humor? Discuss problems of participants using different ideas of humor to say whether humor in their partner matters. Discuss ways researchers might help participants identify and clarify what they mean by a sense of humor.

Activity 4.7. Social skill training with humor styles

Hampes (2005) suggested that lonely individuals might not use affiliative humor style due to a lack of social skills that prevent them from strengthening their social relationships. Discuss the behaviors of an affiliative humor style or particular social skills that individuals could practice that would reduce their loneliness.

Activity 4.8. Looking at stereotypes and incongruity resolution

Bring in and examine jokes or cartoons that do and do not focus on stereotypes, such as gender, race, nationality, or occupation (e.g., lawyer jokes). Rate on a scale of 1 to 5 how funny these are (1 = not funny and 5 = very funny). Share and discuss your ratings. Are jokes with stereotypes funnier than those without them? Does liking stereotype jokes mean that you believe the stereotype, or does it happen due to an exaggeration of the incongruity (greater distance from reality)?

Activity 4.9. Humor in friendships

Discuss how you use humor with your friends. Is this different from the way you use humor with your family? Why might social roles matter to how we use humor (in terms of content, frequency, how we respond to it, or requesting it/needing it in interactions)?

Activity 4.10. Organize and evaluate research

Racism and sexism are sensitive subjects that arouse strong emotions and might prevent you from organizing and critically evaluating the research. In small groups, discuss and summarize research findings and conclusions covered in this chapter. Clarify when disparagement humor, observed in racist and sexist jokes, has its most negative effects, and identify factors that might buffer these effects or even cause positive outcomes.

Study guide

Concepts and theories

Attitudes
Attributions
Cavalier beliefs
Confederates
Dominance
Laugh tracks
Norms
Social cues
Social intelligence
Stereotypes
Stereotype threat
Subversive humor

Review questions

1. Describe how humor functions within a group and provide examples. How might humor be used for a) maintaining hierarchy, b) making alliances, and c) helping a group form an identity?
2. Argue whether you agree that men produce more and women appreciate more humor. Cite evidence.
3. Apply the concept of stereotype threat to humor production. When might it enhance or decrease it?
4. Laugh tracks are part of comedy TV shows but not comedy movies. Why?
    a. Many TV shows are watched alone, whereas most movies are watched in a group audience.
    b. No one would pay for movies if laugh tracks were added to them.
    c. TV shows are shorter than movies.
    d. Many families watch TV together, but most people go to the movies alone.

5. What is a cavalier humor belief?
    a. Humor does not belong in the workplace.
    b. Jokes are just a joke and not to be taken seriously.
    c. Humor reflects your attitudes.
    d. Jokes that disparage do so to maintain status.
6. Which humor style predicts cyberbullying?
    a. affiliative
    b. self-enhancing
    c. self-defeating
    d. aggressive
7. Which of the following is an example of an external attributional style?
    a. I'm funny because I'm intelligent.
    b. She's funny because she's attractive.
    c. I'm funny because I can produce and appreciate humor.
    d. She's funny because others were in a good mood and laughed.
8. Why might humor help maintain marital satisfaction?
    a. It helps each partner to clarify what is serious and important from what is not.
    b. It helps to escape the reality of the unhappiness of marriage.
    c. It opens the communication channels between partners.
    d. It encourages positive attributions even if illusory.

Answers to multiple choice: 4a, 5b, 6d, 7d, 8c

5 Cross-cultural psychology

Learning objectives

1. Appreciate the value in comparing behavior across cultures.
2. Appreciate how cultural differences may provide insights into the psychology of humor.
3. Identify several cultural universals and several cultural differences concerning humor.
4. Appreciate challenges in studying humor across cultures.

Assumptions of the field

1. Comparisons across cultures enhance our explanations and predictions of behavior.
2. Biases in language, cultural practices, and expectations of both participants and experimenters influence the collection and interpretation of cross-cultural data.

Cross-cultural perspective and principles

Culture encompasses attitudes, behaviors, and symbols of a group of people. It includes beliefs, languages, and practices that identify the group. The cross-cultural psychology perspective is not a study of culture per se but rather a study of comparisons between cultures. It draws on theories based on evolutionary psychology (e.g., comparing practices developed within cultures to increase procreation chances), socio-ecological factors (e.g., adapting to land, space, politics, and economics), and responses to mixing of cultures over time (e.g., increasing individualism or changes of power) (Shiraev & Levy, 2016).

Theory drives the majority of cross-cultural comparisons. Interestingly, for the most part it is a western culture that generates humor theories (Flaskerud, 2017). Specific cultures may be compared because they have differing cultural attitudes, such as humor usage in public,

and we want to know how the particular attitude affects humor appreciation or production. Through these comparisons, researchers shape their humor theories to account for similar and different influences of cultural factors on the experience of humor.

Core concepts

Cultural comparisons of humor reveal similarities and differences in what people find funny or how they express humor. Cultural universals are processes that affect behavior similarly across cultures. These universals may include biological processes, personality traits, or stages of our cognitive development. Humor is ubiquitous, meaning it is universally experienced around the world. Cultural relativism refers to processes and behaviors that differ across cultures. For example, social norms, which differ across cultures, influence what we perceive as funny. Thus, although humor appears in all cultures, preferences and factors that affect the quality and quantity of our humor experience may differ.

Researchers in anthropology, sociology, or social psychology help us identify how beliefs and norms may differ across cultures. Humor researchers clarify how these cultural beliefs and norms may affect people's humor. Specifically, humor researchers examine how cultural attitudes may encourage or discourage humor use in particular settings (e.g., professional activities), whether cultures prefer particular humor styles (e.g., affiliative or use of irony), and may influence different responses to laughter (e.g., suspiciousness or perceived lower status).

The study of humor is particularly challenging when making cultural comparisons. Do translated expressions in different languages share the exact meaning? That is, do cultural practices activate similar schemas with similar ambiguities and expectations? Do cultures share similar emotional expressions so that even when they share similar humor experiences, they similarly express them? Researchers attempt to identify, control, and statistically take into account known cultural differences that might confound measures of humor appreciation and production.

When all participants in a study come from one culture, as often happens in research driven by the other psychology perspectives, we do not know with certainty whether participants from another culture would behave similarly. Cross-cultural comparisons reduce this sampling bias and allow us to determine whether findings generalize to other cultures and operate universally. Yet, when comparing multiple cultures, we introduce other possible biases including errors in language translation and misunderstanding cultural practices. Researchers can deal somewhat with this problem by collaborating with researchers from the cultures of interest, preferably native language speakers, to help create similar materials or design similar procedures.

Questions humor researchers ask from the cross-cultural perspective include: how do beliefs and norms influence what is perceived as funny across cultures? How do cultures differ in the frequency or type of humor (e.g., irony) produced? How might culture change social interactions of humor?

Methodological approaches in cross-cultural comparisons

Psychologists use several approaches to study the influences of culture on behavior. The etic approach involves taking a theory about behavior and examining whether it applies to

another culture. Using the etic approach, for example, we could take the cognitive theory of incongruity resolution and examine whether people in other cultures find such humor funny. The emic approach involves taking a theory developed for one culture and identifying the cultural factors that influence behavior in that culture. Using the emic approach, we could examine individuals from an American minority, say inner-city African American youth, and identify cultural practices that influence their humor usage in friendships. A third approach, the cultural lens approach, integrates these two approaches and attempts to move beyond mere comparisons (Hardin, Robitschek, Flores, Navarro, & Ashton, 2014). This approach uses experimental methods of the various psychological perspectives, follows a series of steps (shown in Table 5.1), and examines evidence on operational definitions when variables are experimentally manipulated. In this way we learn which aspects of theories are generalizable or universal, and which are manifested differently due to culture.

In their paper, Hardin et al. (2014) illustrated how to use the cultural lens approach to study positive psychology (see Chapter 8), with a focus on personal growth. If we substitute growth with humor, in using a cultural lens approach, humor researchers would begin by articulating how humor is defined by their theoretical perspective, attend to the populations used in relevant past research, identify the cultural contexts of these populations, evaluate the humor construct in the context of broader cultural knowledge, and ask specific research questions to help test specific hypotheses generated by this new evaluation. This blended approach provides cultural validity to theoretical ideas about humor and at the same time enables researchers to catch biases or assumptions about theory and culture (Hardin et al., 2014). Humor is a multi-faceted construct, and psychologists are interested in many aspects of humor–detection, comprehension, appreciation, and production; cross-cultural studies help identify the different ways individuals belonging to different cultures may behave when they perceive humor, express a mirth response, or playfully communicate.

The Internet is a great methodological tool to reach people from many cultures. A number of studies use it for collecting examples of humorous material or funniness judgments of materials from individuals from many cultures. For example, Wiseman, starting in 2001, collected 40,000 jokes, and by 2007 over 350,000 individuals from 70 countries provided around 1.5 million funniness ratings (Wiseman, 2007; www.richardwiseman.com/LaughLab/home.html). He reported that, across jokes, Canadians gave the lowest humor ratings and Germans gave the highest.

The funniest joke across all cultures was

> *Two hunters are out in the woods when one of them collapses. He doesn't seem to be breathing and his eyes are glazed. The other guy whips out his phone and calls the emer-*

Table 5.1 Steps of the Cultural Lens Approach (Hardin et al., 2014)

Step 1	Articulate the operational definitions of the central constructs.
Step 2	Identify the participants that gave evidence for those operational definitions.
Step 3	Identify the relevant dimensions underlying the variability in the data.
Step 4	Evaluate the constructs with broader cultural contexts.
Step 5	Generate research questions that will link underlying dimensions of culture to behavioral outcomes.

> *gency services. He gasps, "My friend is dead! What can I do?". The operator says "Calm down. I can help. First, let's make sure he's dead". There is a silence, then a shot is heard. Back on the phone, the guy says "OK, now what?"*

Sometimes this joke appears on the Internet with wording changes that invoke a stereotype of the hunters, such as calling them *redneck hunters from Oklahoma*. A negative stereotype helps increase amusement resulting from surprise and incongruity resolution. Stereotypes of an outgroup may also help increase feelings of superiority in the listener (see Freud's theory in Chapter 9 "Clinical Psychology") and strengthen their identity as belonging to the dominant group with superior intelligence (see dominance in Chapter 4 "Social Psychology"). All of these elements–surprise, incongruity resolution, and amusement–contribute to the perceived humor of this joke across cultures.

Internet users provide ratings on standard humor and personality scales, and various demographic (e.g., age, gender) questions, Translations of rating scales allow for ease of comparison with other behavioral measures, and, therefore, a number of studies in the cross-cultural study of humor compare factor structures of a scale and correlate them to known outcomes to validate their measure of the translated scal.'s construct. Just to name a few, Jose, Parreira, Thorson, and Allwardt (2007) validated in Portuguese the MSHS (Thorson & Powell, 1993), and Chen, Ruch, and Yan-Na (2017) validated in Chinese the German STCI (Ruch et al., 1996). Impressively, Martin and Kuiper (2016) noted that their HSQ has been translated into 30 languages.

In addition to using rating scales and individual jokes or cartoons to study humor, Davies (1998) advocated a sociological approach to study the influence of cultural values on humor. In this approach, we study jokes as a set or cluster of instances rather than examining ratings of individual jokes. The set's presence or absence reflects a societal value or practice. This method has two consequences: 1) the joke sets inform us about social norms, and 2) the social norms inform us about the types of jokes the culture finds funny without actually testing research participants. For example, Davies (1998) noted that in jokes, Americans frequently describe ethnic groups as dirty or unclean. Such jokes are more common in North America than in Western Europe. Davies (1998) argued that the explanation concerns the cultural value of cleanliness. He measured the frequency of purchases of soap, hair dyes, and deodorants in the two continents. Based on this consumption, North Americans are more concerned about being clean than Western Europeans. Thus, jokes in America are likely funnier when the clean ethnic majority creates more incongruity by describing the ethnic minority as unclean.

In a similar vein, when humor researchers compared the type of humor they observed on television, they observed that comedies in the United Kingdom favored sarcasm, dry humor, irony, and the use of puns, whereas in the United States they favored more incongruity-based, affiliative humor (Baughman, Giammarco, Veselka, Schermer, & Martin, 2012). These differences reflect cultural values in humor preferences.

Specific topics in cross-cultural comparisons of humor

This section describes research related to cultural values (uncertainty avoidance), norms (gelotophobia), practices (laughter), and social roles (gender usage).

Uncertainty avoidance

One cultural difference relevant to humor researchers concerns uncertainty avoidance. Cultures high in uncertainty avoidance have a low tolerance for ambiguity and a strong preference for safety and predictability (Shiraev & Levy, 2016). Individuals living in high uncertainty-avoidance cultures might be more likely than others to dislike humor based on ambiguous meanings because ambiguity might raise anxiety feelings or threaten them in some way, especially when there is a risk of not getting the joke. Recall from Chapter 1 that resolution must occur with positive feelings for the joke to be perceived as funny. These negative feelings from disliking uncertainty prevent feelings of mirth in response to incongruity-based humor.

Cultures with high uncertainty avoidance may find wordplay or short jokes that quickly resolve incongruity more enjoyable than jokes that require more effort or time to get its meaning. *I wondered why the frisbee was getting closer, and then it hit me*. Greece, Italy, Russia, and Germany have high uncertainty avoidance, and the United States, Britain, India, and China have low uncertainty avoidance (Ryan et al., 2017).

In his study in search of worldwide funny jokes, Wiseman (www.intenseexperiences.com/funniest-jokes-by-country.html) reported Americans' and Germans' funniest joke. Looking at these two jokes, we gain a glimpse of how they differ by degree of uncertainty.

Americans' favorite joke: *A man and a friend are playing golf one day at their local golf course. One of the guys is about to chip onto the green when he sees a long funeral procession on the road next to the course. He stops in mid-swing, takes off his golf cap, closes his eyes, and bows down in prayer. His friend says, "Wow, that is the most thoughtful and touching thing I have ever seen. You truly are a kind man". The man then replies, "Yeah, well, we were married 35 years"*.

Germans' favorite joke: *A general noticed one of his soldiers behaving oddly. The soldier would pick up any piece of paper he found, frown and say, "That's not it", and put it down again. This went on for some time, until the general arranged to have the soldier psychologically tested. The psychologist concluded that the soldier was deranged and wrote out his discharge from the army. The soldier picked it up, smiled and said, "That's it"*.

In both jokes, uncertainty of how the joke will end is present as the joke begins, but a soldier wanting a discharge is more predictable than is a man playing golf instead of attending his wife's funeral. Because Americans have low uncertainty avoidance, they are not bothered as much as Germans by the high degree of uncertainty and waiting for the surprise ending. In the German joke, each sentence follows in predictable fashion of the situation and maintains positive feelings. We see this closure on ambiguity in another joke Wiseman reported Germans rated as very funny: *why is a television show called a medium? Because it is neither rare nor well done* (Wiseman, 2007, p. 221).

Gelotophobia

Gelotophobia is the fear of being laughed at. Several studies have compared this fear across countries. For example, Lundquist (2013) reported that 2% of Danes report fear of being laughed at compared to 11% Germans and Britains, and 16% East Asians. In an in-depth study,

Proyer et al. (2009) sampled 73 countries to examine this fear. Such a study required two pages to list all the authors! They reported that 17% of those sampled in a previous study believed the fear of being laughed out surpassed the act of laughing with others, and only 5% believed gelotophobia was not characteristic of their culture or country. Proyer et al. (2009) translated a 15-item questionnaire (GELOPH) on the fear into 42 languages and obtained 93 samples, most of which consisted of over 100 men and 100 women. Using multidimensional scaling that clusters countries by similar responses, they found that gelotophobia concerned 1) insecure vs. avoidant-restrictive behaviors (e.g., *It is difficult for me to hold eye contact because I fear to be sassed in a disparaging way*.) and 2) suspicious views of others' laughter (e.g., *When they laugh in my presence, I get suspicious*.).

Countries with the highest scores on insecure reactions to laughter were Cambodia, Norway, and Turkmenistan, and those with avoidant-restrictive reactions were Egypt, Iraq, and Jordan. On the suspiciousness factor, Burkina, Ethiopia, Faso, and Romania showed the highest suspiciousness, and Cambodia, Scotland, and Ukraine showed lowest suspiciousness. Proyer et al. (2009) found that agreement with statements varied greatly across counties. For example, 80% of responses from Thailand agreed that suspiciousness occurred if others laughed in their presence but only 8.5% agreed from Finland.

The vast range of scores on the GELOPH suggest that gelotophobia, while universal, varies in degree by culture. Some data suggested regional variation within one country. Thus, future studies need to consider sampling methods and cultural variables that may affect the degree of gelotophobia found. As Proyer et al. (2009) suggested, cultural values of shame or social control may help explain some observed variance. Also worthy of investigation is how the fear affects people's behavior beyond limited humor production (e.g., social withdrawal or feeling of belonging).

Laughter among friends

In Chapter 4, we saw that humor is used to facilitate social relationships. Laughter is a social cue that signals we are in agreement with the message conveyed in the humor (Bell, 2007). Laughter may also convey that we like the other person and engenders intimacy. Is laughter a universal social cue? Recall from Chapter 2 that the brain discriminates true and fake laughter (McGettigan, 2014). Can we tell whether pairs who laugh are friends or strangers? Can people of various cultures identify just from hearing a laugh whether friends or strangers share the laugh?

Bryant et al. (2016) examined participants from 24 cultures (spread across North and South America, Europe, Africa, Asia, and New Zealand). The researchers recorded naturally occurring laughter between two friends or two new acquaintances; these dyads were composed of either both males, both females, or one male and one female. With the use of technology, the researchers omitted language and culture information from the audio sample and selected only the laughter expressed by each person. Listeners from these 24 cultures judged (on a scale from 1 to 7) the social relationship of the pair: 1) whether they thought they were friends or strangers and 2) whether they thought these people liked each other.

Results showed that participants correctly judged the status of friends or strangers 61% of the time, which is significantly above chance (50%). All cultures identified laughter of

female friends better than that of male friends, and most cultures identified laughter of male strangers better than of female strangers. Regarding judgments of whether the members of the pair liked each other, all cultures gave higher ratings for paired friends than for paired strangers and higher ratings for female-female pairs. Culture did not account for the variance observed across cultures, meaning that the patterns observed were more or less the same across cultures. Such data suggest that laughter is a universal social cue for expressing affiliation between friends, particularly between two women.

Gender usage of humor

Do men and women across cultures use humor with similar frequencies? Research suggests that men produce more humor than women across countries (Apte, 1985, as cited in Weisfeld et al., 2011; Martin & Sullivan, 2013). Weisfeld et al. (2011), for example, asked married couples from China, Russia, Turkey, United Kingdom, and United States how often their spouse made the respondent laugh. The scale included 1 = never, 2 = hardly ever, 3 = sometimes, 4 = fairly often, and 5 = very often. As shown in Figure 5.1, both husbands and wives reported their spouse made them laugh between sometimes (3) and fairly often (4). All but Russians found the pattern that wives said their husbands made them laugh more than husbands said their wives made them laugh.

Weisfeld et al. (2011) found strong correlations for each culture and for each spouse between frequency and marital satisfaction. That is, if the participant rated their spouse as making him or her laugh, then the participant reported more marital satisfaction. Wives showed stronger correlations between satisfaction and spousal humor frequency than

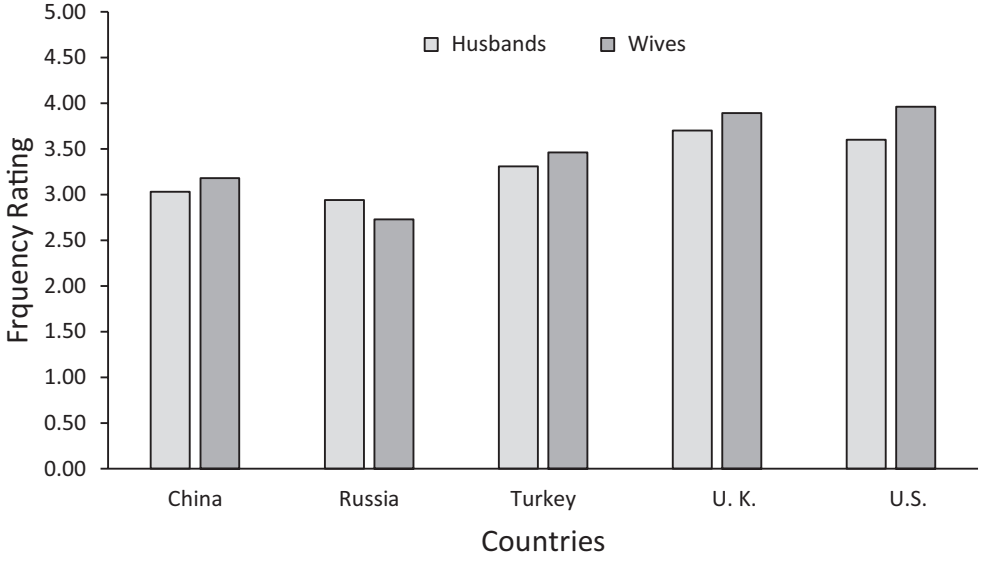

Figure 5.1 Frequencies of ratings for how often "My spouse makes me laugh" on a scale where 1 = never, 2 = hardly ever, 3 = sometimes, 4 = fairly often, and 5 = very often.

Source: Weisfeld et al., 2011.

husbands did in Turkey, United Kingdom, and United States. The researchers noted that even in arranged marriages, humor frequency correlated with marital satisfaction. These correlations show that though males might produce humor more often across cultures (Apte, 1985), the higher the frequency of humor produced by the wife the higher the husband's marital satisfaction ratings.

In Chapter 4, we discussed the common perception that men are funnier than women. Might this perception be shared across cultures? Nevo, Nevo, and Yin (2001) asked their participants from Singapore, Israel, and United States to describe three people they found funny. Most of the time, the descriptions were of men, suggesting that men came to mind when searching memory for funny people. This availability of male examples may cause the perception that men are funnier than women.

Also discussed in Chapter 4, empirical evidence contradicts the perception that men are funnier than women. Specifically, humorous picture captions produced by women were judged funnier than men when the gender of the writer was not known by judges. Do these judgments vary across cultures? In their cross-cultural study, Hooper et al. (2016) examined a) who-is-funnier beliefs of students from Canadian, British, and Australian colleges and b) funniness ratings of *New Yorker* picture captions when the writer's gender was unknown (on a rating scale where 1 = not funny at all and 5 = very funny). They found that Canadian and British students believed that men were funnier, but Australian students believed the genders were equally funny. They also found that Australian, Britain, and Canadian participants rated captions written by women as funny or funnier than those written by men. Thus, although many students held the belief that men are funnier than women, the evidence supported that they judged women as funny if not funnier than men.

Specific cultural comparisons

Q: If a person who speaks three languages is called "trilingual", and a person who speaks two languages is called "bilingual", what do you call a person who only speaks one language?

A: American!

We may hold stereotypes of particular cultures, which may add to humor about people in those cultures (also see Figure 5.2). However, researchers compare humor between cultures to examine differences in how their members appreciate or use humor. This section presents a sample of studies in the psychology of humor literature to illustrate some research questions and methodologies used to study humor from the cross-cultural perspective.

Denmark and France

We find differences between the Danish and French in their cultural expectations and humor use. Lundquist (2013) reported that the French, being more reserved, consider humor a non-professional behavior, whereas the Danish frequently use humor in the workplace and are more relaxed in including taboo subjects in their humor. Further, the French prefer humor that involves wordplay, whereas the Danish are heavy users of irony and satire. This clash in humor attitude causes a culture clash when individuals from one country work in the other country.

"Don't misunderstand: I'm not putting down the Swiss. It's just that, compared with some other groups, they don't strike me as being very ethnic."

Figure 5.2 Humorous expressions concerning people of other cultures are frequently based on stereotypes we hold of them.

Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

According to Lundquist (2013), who interviewed French and Danish participants, the French do not understand the Dane's ironic humor; when they hear it, they are either insulted, hurt, or confused. She provided an example of an exchange between a Frenchman and Dane. After the Frenchman complained to a Danish office clerk about his wife making him late, the Dane remarked, *Perhaps you should divorce your wife*. Would you be insulted or amused? To complicate matters, the Danish typically do not use any linguistic markers or facial expressions to differentiate their humor from literal, serious statements. Without these markers, the French have difficulty differentiating literal statements from intended funny ones. Further, the Danish report a very low level of gelotophobia, which may contribute to their direct and blunt humor expressions. Although she did not report percentages for the French, Lundquist (2013) noted that in France, for those in authority, to be laughed at results in losing status.

Germany, France, and Italy

Recall from Chapter 3 that Ruch's 3 WD humor test, derived with German participants, found three humor components preferences: incongruity, nonsense, and sexual themes. The test measures both responses of funniness (positive affect including appreciation of the joke's cleverness) and aversiveness (negative affect including indignation). Ruch, Ott, Accoce, and Bariaud

(1991) compared responses from 139 French and 115 German students on the 3 WD humor test. In addition to replicating the factor structure of the 3 WD test, showing similarity across cultures, they also replicated the fact that those high in authoritarianism were less likely to like nonsense humor. Uncertainty avoidance showed no correlation with nonsense humor. French participants gave lower funniness ratings for incongruity resolution and nonsense humor than German participants. Worthy to note, differences in lower humor for French participants was not due to translation; ratings remained lower for cartoons without captions, free of language. French and Germans showed comparable liking and aversiveness ratings for sexual humor.

In another comparison, Ruch and Forabosco (1996) collected data from 148 Italians. They found 52 of the 60 items on the 3 WD test loaded on the same factors as found with Germans, supporting the classification of humor by content (incongruity, nonsense, and sexual themes). The fact that so many similar items loaded on the same factors shows strong similarity across cultures. However, Ruch and Forabosco (1996) noted that both cultures showed large variability on responses to sexual jokes, with these jokes showing more of an aversive response than other two kinds of humor. Germans showed more aversiveness to sexual humor than Italians did. As noted in another study by Forabosco and Ruch (1994), the personality characteristics of toughmindedness and disinhibition predicted appreciation of sexual jokes by Italians. Ruch and Forabosco (1996) found that mood and attitude also mattered to Italians' liking a joke.

Spain and the United States

This comparison concerns the function of humor. Using the MSHS (see Chapter 3), Carbelo-Baquero, Alonso-Rodriquez, Valero-Garces, and Thorson (2006) compared Spanish and American adults' use of coping humor. Would both cultures use humor to cope with stress? Do both prefer to produce humor to cope? Carbelo-Baquero et al. (2006) found that Spanish participants valued coping by exposing themselves to other's humor more than by creating it. They valued humor in others and were more likely to hold a positive attitude toward humorous people. American participants, on the other hand, valued producing humor to cope with stress. Further, it was important to American participants to be able to amuse other people.

Western (individualist) and eastern (collectivist) cultures

The concept of individualist and collectivist culture addresses the influences of a world view or philosophy on humor preference, appreciation, or production. The culture clash here is whether humor is perceived to make yourself feel better or to make others feel better. Using humor to show you are clever, draw attention to yourself, or put down others to make yourself look good goes against a collectivist philosophy.

Do humor style preferences vary between collective and individualistic cultures? Kuiper, Kazarian, Sine, and Bassil (2010) compared humor styles from Canadians and Lebanese students (both English speaking and Arabic speaking). Participants reported their reactions to stressful scenarios where characters expressed a self-enhancing, affiliative, self-defeating, or aggressive humor style. Participants rated how the scenario made them feel (1 = happy to 5 = sad) and how much they would be like to interact with the character (1 = not at all to 5 = very much).

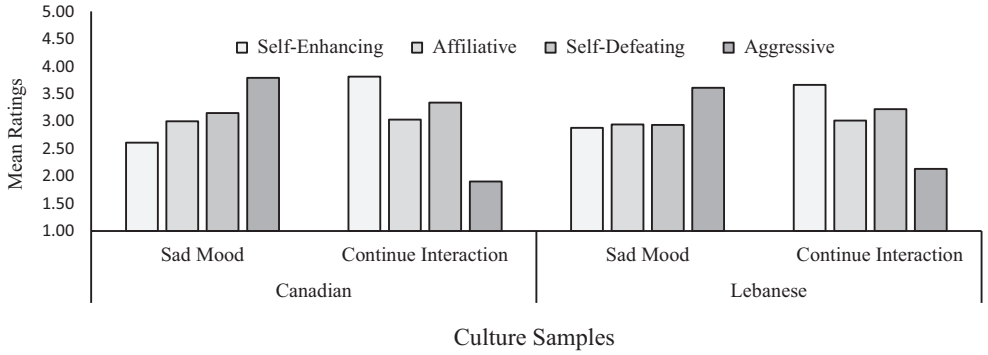

Figure 5.3 Mean ratings for sad feelings and willingness to interact with the character after reading the scenario depicting one of four humor styles for Canadian and Lebanese samples.

Source: Kuiper et al., 2010.

Figure 5.3 shows the mean responses for the English-speaking participants. Respondents in both cultures showed a sad mood response to aggressive humor. However, Canadians showed differentiated mood responses to the other three styles, namely less sad mood to self-enhancing humor, then self-defeating, and affiliative, whereas Lebanese participants did not differentiate their mood response between these three styles. Kuiper et al. (2010) suggest the collectivist culture make the distinction of self vs. others less sharp and therefore they show no differentiation of affect for these humor styles. Participants in both cultures, however, compare similarly for willingness to interact with characters across the four humor styles, with aggressive humor being the least and affiliative the most attractive.

In an examination of western vs eastern influence on Chinese residents who are exposed to both cultures, Yue (2011) reviewed the importance of culture and tradition in Chinese humor. Tao influence encourages humor appreciation and interacting with others in peace and harmony. Confucius, however, framed humor as immoral and shallow. These two traditions create an ambiguity about humor within Chinese individuals. Surveys of students by Yue (2011) in China and Hong Kong revealed this ambiguity. Respondents reported they value humor as important in everyday interactions but self-report themselves to be low in producing humor. Whereas 95% of Americans reported in other studies being humorous, only 3% in Yue's study did so. Yue (2011) also noted that the Chinese prefer jokes with "wise and conservative content" (p. 465), consistent with the observation that the Chinese may prefer to use humor to teach a point (Nevo et al., 2001).

Eastern and Western cultures differ in tolerance for humor, like how French and Danish differ. Both Eastern and French cultures, for example, do not expect humor in professional settings. In the United States and Denmark, however, humorous people are more tolerated, and individuals who express humor are viewed positively.

If it is true that Western cultures frame humor as a positive attribute and Eastern cultures frame it as a negative one, might ambivalent Chinese participants' response to humor be manipulated by exposure to one of these cultures beforehand? Consider that students in Hong Kong are exposed daily to both Eastern and Western social values. Yue, Jiang, Lu, and Hiranandani (2016)

asked, Would a humorous person be described less positively when the participants' schemas of Eastern cultures were activated compared to when their schemas of Western cultures were activated? In their study, they primed Chinese participants from Hong Kong with pictures of either Eastern (e.g., the Great Wall) or Western (e.g., Mickey Mouse) culture prior to collecting humor data. After viewing the primes, participants rated the degree to which adjectives (20 negative, 20 positive) described a humorous person (on a scale from 1 to 5). Those primed with Western culture pictures gave statistically significant higher positive ratings than those primed with Eastern culture pictures, in accord with humor values of the respective cultures.

Yue et al. (2016) conducted a second study with Chinese and Canadian participants with a sense of humor questionnaire that captured production, appreciation, tolerance, and coping with humor. As expected, Canadians self-reported being more humorous, reported higher humor production, and noted higher humor use to cope than the Chinese, but both cultures did not statistically significantly differ in tolerating humor (although means were higher for Canadians).

Eastern and Western cultures show differences in their liking of humor content. Castell and Goldstein (1976) noted that American participants preferred sexual and aggressive content in humor, but participants from Belgium and Hong Kong did not. Further, Nevo et al. (2001) reported that in Singapore, where pornography is forbidden, sexual humor was not liked. They noted that this finding a) supported the idea that humor preferences follow cultural norms and b) showed lack of support for the idea that jokes allow us to enjoy repressed feelings (i.e., Freud's concept of catharsis, see Chapter 9 "Clinical Psychology"), a point also argued by Nevo (1984, 1985) with Middle Eastern cultures.

Is the incongruity-resolution theory of humor supported universally in Western and Eastern cultures? Alden, Hoyer, and Lee (1993) surveyed television advertisements in Western cultures of Germany and United States, and Eastern cultures of South Korea and Thailand. They coded the advertisement for 1) use of incongruity, 2) number of people in the ad, where one or two people were coded as "individualism" and more than three people were coded as "collectivism", and 3) power relationships among characters in the ad, specifically whether actors had equal or unequal status in terms of age, education, general knowledge, or wealth.

Results indicated that incongruity-based humor was visible in all four countries' ads, supporting the universal application of incongruity-resolution humor. As expected, ads deemed collectivist appeared more often in South Korea and Thailand (69% and 80%, respectively) and those deemed individualistic appeared more often in ads from Germany and the United States (75% and 73%, respectively). Power relations varied by culture. Ads featured equality more often in Germany and the United States (85% and 58%, respectively), and they featured inequality more often in South Korea and Thailand (65% and 61%, respectively).

Majority vs. minorities or oppressed groups

Yo mama's so stupid.... When they said it was chilly outside, she grabbed a bowl.

Humor researchers may examine subcultures within a country or geographic region. (See Activity 5.5 to explore ethnic humor in Americans.) Subcultures may differ in language, cultural practices, or consequences of their status compared to other subcultures. These

differences may influence humor preference or use within the subculture. For example, living in Israel, Arabs and Jews have their separate language and cultural practices. Arabs are the minority. Nevo (1984, 1985) found that Jews preferred aggressive humor (where Arabs were the butt of jokes). Otherwise, both groups showed similar preferences for jokes. Further, in examining racial humor of minority black residents of Mexico and Peru, Sue and Golash-Boza (2013) found their humor mirrors findings on racial humor conducted in the United States (see Chapter 4). Namely, racial humor served to strengthen the identity of the dominant group, helped members of the minority cope with their disadvantaged status, and helped all express a racist attitude without confronting the seriousness of it with others.

Holmes and Hay (1997) studied humor functions in ethnic groups in New Zealand: the Pakeha, derived from Great Britain and who dominate society, and the Maori, the indigenous people. The researchers measured 20 spontaneous conversations with Maori women, aged 16–34. They focused on three humor functions: maintaining solidarity, emphasizing power, and self-protection or coping. Findings showed that Maori used affiliative humor styles to maintain connections with others and acknowledge their shared ideas. Holmes and Hay (1997) also found that Maori used humor to emphasize their amusement at ethnic boundaries. Thus, this ethnic humor might not be as appreciated in mixed ethnic pairs, because Maori and Pakeha do not share the same cultural knowledge that Maori used to understand their jokes.

Recap

Cross-cultural studies help extend findings found in one culture as well as challenge and deepen our understanding of humor. This research is not easy to do, as psychologists must be careful about bringing their own cultural biases, including language and examples of humor, to such research. Nonetheless, the study of the psychology of humor is a global one. Our brief review of the literature finds similarities and differences in humor appreciation and production across cultures. We found universal support for the cognitive incongruity-resolution theory across cultures. Cultural comparisons showed a universal dislike for an aggressive humor style relative to the other humor styles. However, Americans reported liking humor with aggressive content more than other countries. In addition, researchers found a universal high variability in liking of sexual humor compared to other kinds of humor; this variability shows similar disagreement across individuals within a culture for liking jokes with sexual content.

Differences across cultures included frequency of humor types and attitudes concerning appropriateness of humor in the workplace or serious conversations. Cultural norms influenced liking of humor. For example, if the culture was high in gelotophobia, we found avoidance and suspiciousness when others express humor. If the culture valued cleanliness, then jokers described the target of disparaging jokes as dirty. If cultural traditions viewed humor as shallow, we found lower ratings in appreciation or production of humor.

The cultural lens approach sets goals for humor researchers to focus on the operational constructs of humor and generate research questions that will help increase our knowledge about the humor experiences and behavior of individuals across cultures. Research questions

pursued by cross-cultural humor researchers focused on whether a) degree of uncertainty avoidance affects humor preferences, b) rates of gelotophobia affect humor production, and c) genders produce and appreciate humor differently. Further research in each of these areas can shed insight into cultural influences on humor appreciation and production, which further aid our understanding of which aspects of humor are universal and which are relative.

Suggested readings

Hardin, E. E., Robitschek, C., Flores, L. Y., Navarro, R. L., & Ashton, M. W. (2014). The cultural lens approach to evaluating cultural validity of psychology theory. *American Psychologist*, *69*, 656–668.

Hatzithomas, L., Zotos, Y., & Boutsouki, C. (2011). Humor and cultural values in print advertising: A cross-cultural study. *International Marketing Review*, *28*, 57–80.

Lee, Y. H., & Lim, E. A. C. (2008). What's funny and what's not: The moderating role of cultural orientation in ad humor. *Journal of Advertising*, *37*, 71–84.

McGraw, P., & Warner, J. (2014). The humor code: A global search for what makes things funny. New York: Simon & Schuster.

Suggested class activities

Activity 5.1. Reducing biases in cross-cultural studies

a. Discuss the biases that researchers bring to cross-cultural research when conducting research outside of their culture. For these biases, create a checklist of strategies researchers may use to reduce these problems. Some of these may include the same ones we use when conducting research within a single culture, and some might be specific to comparing across cultures. Identify manipulation checks that help researchers test for possible biases.
b. Discuss strategies to meet the requirements for doing cross-cultural research. a) You need to find collaborators, b) devise procedures that operate similarly in the respective cultures, c) obtain Institutional Review Board (IRB) approval for all sites that addresses possible differential risks concerning potential aversive responses, and d) design materials that avoid biases and confounds. How could you assess that the materials are well translated across languages?

Activity 5.2. Discussion of uncertainty avoidance

a. In small groups, discuss potential implications if uncertainty avoidance lowers understanding or enjoyment of humor. For example, might uncertainty avoidance decrease practice in resolving humor's incongruities? Could it increase rewards (positive feelings) when such incongruities are resolved? Could it suggest to others that those with uncertainty avoidance lack a sense of humor?
b. The field of advertising conducts a good deal of cross-cultural research to know when humor in ads encourages purchases (see Chapter 10 "Applied Psychology") in specific cultures. Read Hatzithomas, Zotos, and Boutsouki (2011) and/or Lee and Lim (2008). Discuss and evaluate how they compared cultures high and low in uncertainty avoidance for liking the advertisements' humor and effectiveness.

Activity 5.3. The diverse classroom

Students in your classroom may present different cultural perspectives for the study of humor. Identify cultures or subcultures represented in your class. Discuss agreements and disagreements with the research reviewed in this chapter based on your experiences. Add insights you have from personal interactions on how your culture may influence your use or response to humor in your social interactions with individuals from other cultures.

Activity 5.4. Research your own interests

Go to PsycInfo (and maybe *Sociological Abstracts*) to look up research conducted on cultures you would like to compare, perhaps focusing on issues in humor studies that you found interesting from other chapters. Develop your thinking to include a rationale for why it may be informative to compare these cultures–how it helps to understand the cultures, how it helps see cultural influences on humor processes, or how it helps modify humor theories. Find something interesting? Consider giving a brief oral presentation to the class on your findings.

Activity 5.5. Comparison of cultural humor within the United States

Ethnic humor within the United States illustrates differences across groups living within the same country. Read a selection from one of these books, and discuss similarities and differences in the psychology of humor within ethnic groups.

- One of the 22 short stories from "The Lone Ranger and Tonto Fistfight in Heaven", by Sherman Alexie 1993, reprinted 2003) on Native Americans and White American identities.
- "The Dozens: A History of Rap's Mama" by Elijah Wald (2012) on insult humor games of African American youth.
- "Humor Me: An Anthology of Humor by Writers of Color", by John McNally (2002), which includes fiction, nonfiction, and cartoons.

Study guide

Concepts and theories

Collectivist cultures
Cultural lens approach
Emic and etic approaches
Experimenter biases
Gelotophobia
Individualist cultures
Relativism
Uncertainty avoidance
Universals

Review questions

1. Provide examples of how cultural norms influence people's humor preferences.
2. Describe Yue et al.'s (2016) priming study on participants' descriptions of humorous people. Provide the theoretical rationale for why cultural primes would influence positive and negative descriptions given by students from Hong Kong. Add a critical evaluation of the study or questions you have for testing implications of the findings.

3. Gender roles vary across cultures. Discuss what we know about the belief that men are funnier than women from humor studies of various cultures.
4. Gelotophobia, the fear of being laughed at, varies across cultures. In Proyer et al.'s (2009) study that used multidimensional scaling of countries' scores of gelotophobia, which two dimensions help cluster responses?
   a. 1) affiliative and self-enhancing humor and 2) self-defeating and aggressive humor
   b. 1) insecure-avoidant-restrictive behavior and 2) suspicious view of others' laughter
   c. 1) universal and 2) relativism
   d. 1) wordplay and 2) irony
5. One of the functions of humor is to help cope with everyday stresses (also see Chapter 7). A study by Carbelo-Baquero et al. (2006) examined humor functions in Spain and the United States. They found, based on the MSHS
   a. Spaniards did not use humor to cope very much, whereas Americans did.
   b. Spaniards created humor to help cope, whereas Americans did not.
   c. Both Spaniards and Americans reported creating humor to cope with stress.
   d. Spaniards coped by appreciating humor, whereas Americans coped by creating humor to amuse others.
6. An important point from research on sexual humor in countries where sexual freedoms are repressed (e.g., illegal pornography) is
   a. Sexual humor is not liked; that is, sexual humor is not a release valve for repressed sexual expressions.
   b. Sexual humor is liked more than incongruity-resolution humor; that is, sexual humor allows for a freedom that society restricts.
   c. Sexual humor cannot be studied because it is unethical to include it in research studies.
   d. Sexual humor is produced more than it is appreciated.
7. Hooper et al. (2016) asked respondents from five countries to name the gender they thought was funniest. Their data showed that
   a. Respondents from most countries believed that men are funnier than women.
   b. Respondents from the United States believed men are funnier, but most other nations believed women are funnier.
   c. The myth that men are perceived as funnier was not replicated in their participants.
   d. The belief that men are funnier was only supported when respondents judged the funniness of captions.
8. Weisfeld et al. (2011) measured responses from married couples from China, Russia, Turkey, United Kingdom, and the United States to "how often my spouse makes me laugh" and found that for all countries except Russia,
   a. Husbands reported that their wives made them laugh rarely.
   b. Wives and husbands reported that they never or rarely made their spouse laugh.
   c. Husbands made their wives laugh more than wives made their husbands laugh.
   d. Laughter frequency of both spouses was equal.

Answers to multiple choice: 4) b, 5) d, 6) a, 7) a, 8) c

6 Developmental psychology

Learning objectives

1. Understand the developmental perspective of psychology.
2. Apply stage theories of cognitive development to humor.
3. Appreciate the role of Theory of Mind in humor appreciation.
4. Identify changes to comprehension, appreciation, and production of humor across the lifespan.

Assumptions of the field

1. Change over time is goal-driven (maturity/old age/death).
2. Both nature (genetics) and nurture (environment) influence development.
3. As an intradisciplinary field, developmental borrows assumptions from behavioral, cognitive, physiological, social, and clinical psychology.

Developmental perspective and principles

Developmental psychologists study development beginning in the womb through old age, though a considerable amount of attention is given to childhood. Are we the same person as we age? Are many changes that come with age transformative? Not only do developmental psychologists study behavior across the entire lifespan, they examine cognitive, physical, personality, social, health, and emotional changes. This breadth involves describing and explaining specific changes in the acquisition and development of language, in attachment in relationships, and in patterns in typical development, all of which relate to the development of humor processes.

Core concepts

Change. Changes over the lifespan are normal and purposeful. They depend on complex, dynamic processes which are hardwired by genes and shaped by our environment. Physical, cognitive, and social changes occur across our entire lifespan, whether these changes are quantitative or qualitive, noticeable or subtle, and strengthening or weakening our abilities. Developmental psychologists are interested in patterns of changes to our development. For example, comprehension typically precedes performance, as in children can understand sentences before they can speak them. We expect to find that children understand humor before they produce it.

Developmental psychologists use various measures to assess competence. They measure whether children smile or laugh soon after a funny event occurs. **Habituation**, the stopped responding to repeated or expected stimuli, reflects processing of the environment: for example, infants will look longer at funny (nonsense) stimuli, like a red clown nose put on a person's face, and then at nonfunny stimuli. RT latency, how long after an event infants respond, suggests the complexity of processing needed for the responses. For example, if children do not have the competence to detect incongruity, they might respond right away because they did not do any resolution processing. If they have some competence but do not have the efficiency or skill to resolve it, they might take a very long time to respond. Moreover, if they have the ability to resolve incongruity, they might respond in a time similar to that of older children or adults.

Theory of Mind, an important concept that concerns the awareness that other people have minds, develops in children typically by three to four years of age. To have Theory of Mind is to be able to mentally represent the intentions and viewpoints of others, to explain their behavior by what they are thinking, and to understand and empathize with their mental states. Figure 6.1 illustrates humor enhanced by Theory of Mind. By age three or four, development in the right-hemisphere frontal lobe allows for children to develop Theory of Mind (see Chapter 2 "Biological Psychology"). Concerning humor, Theory of Mind involves empathizing with characters in jokes and members of our audience. For example, the genie and stranded-on-the-deserted-island joke from Chapter 1 is not only funny because of the outcome (back on the island), but because of our imagining what his friends were thinking upon their forced return. Additionally, Theory of Mind involves empathizing with joke tellers, when we share their thoughts and feelings. Sharing the beliefs and thoughts of others enhances the pleasure of the social interaction of hearing and telling jokes.

Nature vs. nurture

Developmental psychologists have long debated whether nature (e.g., genes, brain organization, and hormones) or nurture (e.g., parental care, schooling, and culture) most strongly influences our development. One current view is a 100% contribution of each in a dynamic systems view (e.g., Raeff, 2016). Developmental researchers focused on the issue of nature

"Slow down, Clyde - I saw a blue flashing light."

Figure 6.1 Theory of Mind in humor allows us to appreciate the perspectives of others.
Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

vs. nurture frequently compare twins, siblings, parents, friends, and strangers to statistically separate the genetic and environmental components to responses. As described later, humor has both genetic and environmental components (e.g., Vrticka, Neely, Shelly, Black, & Reiss, 2013).

Cross-sectional and longitudinal designs provide insight into change that occurs throughout our lifespan. Cross-sectional designs compare the behavior of different age groups simultaneously, whereas longitudinal designs compare the behavior of the same individuals at different periods in their lives. For example, if we examine humor in 4-, 6-, and 8-year-olds, we could randomly select a sample of each group now to test in a cross-sectional design or we could randomly select a sample of 4-year-olds and test them again in two years when they are 6 and again when 8 years old in a longitudinal design. **Cross-sequential designs** allow for both cross-sectional and longitudinal comparisons; they collect data from several age groups as if doing a cross-sectional study and then bring these same participants in when they are older. For example, 4-, 6-, and 8-year-olds studied today (initially compared as a cross-sectional design) could be brought back in two years, and we could compare 6-, 8-, and 10-year-olds both as a second cross-sectional comparison as well as a longitudinal comparison to performance two years ago. The choice of design often depends on pragmatics (funding, availability, and willingness of participants and experimenters to commit to the project over time, which could be weeks, months, or decades). It also depends

on the research question: are we most interested in changes within a person (longitudinal) or in changes across ages (cross-sectional)? Ideally, converging evidence from all designs provides the best description of change. Unfortunately, humor studies using cross-sequential designs are rare.

Developmental psychologists face numerous challenges when testing different age groups. Comparisons across ages must deal with **cohort and history effects**. When comparing 5-year-olds to 75-year-olds, age is not the only difference. Each age group belongs to a cohort of shared experiences that form their identity and choice of behaviors. Five-year-olds today form a cohort that differs from the 5-year-olds of a generation ago. Typically, in a study, the same stimuli are used for all participants, but is it realistic to expect older adults to like today's humor or young adults to like yesterday's humor? These differences may have little to do with psychological changes. Further, with historical changes in technology or social practices, jokes that were funny 40 years ago may not be funny today or even understood by any age group. Relatedly, jokes lose their humor with repetition, causing further concerns. Odds favor that older participants are more likely than younger participants to have heard a particular joke before.

In addition, developmental researchers need to consider a variety of issues. For instance, young children may not provide (appropriate) responses upon request; researchers must determine what are age-appropriate materials or tasks; individuals of different ages differ in ability to follow complex directions, and individuals outside of school ages may be unused to a testing environment. Further, despite the strengths of longitudinal designs, data analyses are problematic when participants do not stay in the study. **Attrition** might be random, such as the family moved away, or it might be related to the constructs being measured, as in the child didn't like the humor being tested, lost interest, and no longer wanted to remain in the study; we would then lose data on the low preference side of the scale, which would skew results.

Humor researchers working from a developmental perspective ask such questions as how early do we see humor understood and produced? Where does our sense of humor come from, nature or nurture? How does our humor processing change as we age?

Theories of humor development

Many psychology theories apply to humor development. These include Piaget's developmental stages, Freud's personality development, Skinner's principles of operant conditioning, and Bandura's social modeling. Piaget (1951) considered play important to children's everyday learning experiences. His stages of cognitive development (see Table 6.1) illustrate changes in how children think and mentally represent the world. As our brains grow and we experience the world around us, we increase our knowledge and ability to process and mentally represent the complex world.

In the first stage, **sensory-motor stage**, we begin to mentally represent the physical world around us. We learn to manipulate linguistic representations and to understand and produce language. After two years of age, we enter the **preoperational thinking** stage and begin to reason logically. We learn conservation of mass and liquid, and acquire Theory of Mind. In the third stage, **concrete operational**, we develop our reasoning skills to

Table 6.1 Piaget's Stages of Cognitive Development

Stage	*Descriptive ability*
Sensory-Motor 0–2 years	Process the physical world we experience. Learn through the senses. Learn object permanence.
Preoperational 2–6 years	Process the physical world based on reality. Perspective is egocentric. Develop Theory of Mind.
Concrete Operational 6–14 years	Process relationships between things we know exist. Have conservation. Form hierarchical goals (A->B->C), handle multiple possibilities as long as they are based in reality.
Formal Operational 14+ years	Process the hypothetical. Reason by holding what is true. Abstract and hypothetical reasoning, as in imagining possibilities not yet experienced.

Table 6.2 McGhee's Developmental Stages of Humor

Stage description		*Example*
Stage 1 2.5 yrs.	Incongruous actions of objects	Plays with a rock as if it could walk.
Stage 2 3 yrs.	Incongruous labeling of objects; verbal play	Changes the name of a rock to *daddy* or calling a cat a dinosaur. Likes making up silly rhymes or nonsense words.
Stage 3 3.5 yrs.	Conceptual incongruities	While playing with a cat, the child says moo instead of meow. Likes to joke about a skill just mastered, as in scatological humor.
Stage 4 7 yrs. +.	Multiple meanings	*Why tiptoe past the medicine cabinet? So as not to wake up the sleeping pills*. Likes puns and satire.

handle complex relationships required for mathematics and planning. In the fourth stage, **formal operational thinking**, our logic handles hypothetical situations and abstract concepts.

Influenced by Piaget's theory, McGhee (1971a, 1979) developed a stage theory of humor (see Table 6.2) that hypothesized four stages that young children pass through by age seven. These changes parallel children's cognitive development which enable the processing of incongruity. Just as we do not see abstract thinking before concrete thinking in Piaget's stage theory of cognitive development, in McGhee's theory, we don't see play with semantic incongruities before we see play with linguistic incongruities, which occurs after play with physical incongruities. McGhee believed that children in the sensorimotor stage of development did not yet have the cognitive abilities to detect incongruity, which is why the first stage begins after age 2, though others have argued that younger children can show surprise and laughter at situations where incongruity is present (e.g., Southam, 2005; see Table 6.2), indicating that they can detect it before age 2.

According to McGhee's theory, children's humor reflects their cognitive development and skills they have mastered. In the first stage, humor typically concerns physical actions, such as teasing and clowning (Airenti, 2016). In the second stage, children use language to express

humor (and still enjoy physical humor). By the third stage, incongruity focuses on the real world and enjoyment of jokes on body functions. After age 7, humor based on satire or irony appears.

In support of his theory, McGhee (1971a) compared children between the ages of 5 and 9 years for a change in their ability to understand incongruity. He compared their understanding of two types of humor, novelty humor (violated expectations) and incongruity humor (violated expectations and had double-meanings). For example, a novelty cartoon showed a dog returning to his backyard doghouse carrying an automobile in its mouth. An incongruity cartoon showed a woman being restrained by firefighters outside her burning home with the caption, *The phone is ringing, Let me go. I have to answer the phone*. Children were asked why the cartoon was a joke and not just a regular picture, and what they could change to make it not funny anymore.

McGhee (1971a) found that 5-year-olds were unable to remove the funny element in the incongruity humor, whereas the 9-year-olds could. Seven-year-olds were inconsistent, sometimes being able to do it and sometimes not. This pattern captures the emergence of representing incongruity; 5-year-olds can't do it, but some of the 7-year-olds can, and all the 9-year-olds can. McGhee's humor was based on perceptual information, which the 5-year-old children could handle, but incongruity humor required reasoning with abstract meanings, which they could not handle, as they were not yet in the concrete-operational stage for handling such mental representations. In another study, McGhee (1971b) noted that older children gave more interpretative answers to why the cartoon was funny, whereas younger children gave more descriptive explanations focused on the perceptual information in the cartoon.

For changes in humor appreciation, Shultz and Horibe (1974) examined children aged 6 through 12 for funniness ratings of jokes which were either original, had the incongruity removed, or had the resolution removed, and they examined verbal jokes with lexical, phonological, surface structures, or deep structure ambiguity (see Chapter 1). For example, a joke with lexical ambiguity was altered like this:

Original joke:	*Order! Order! Order in the court!*
	Ham and cheese on rye, please your honor.
Resolution removed:	Silence! Silence in the court!
	Ham and cheese on rye, please your honor.
Incongruity removed:	*Order! Order! Order in the court!*
	I only want to tell truth, your honor.

Funniness ratings showed that 6-year-olds could appreciate incongruity, as they found the original and resolution-removed jokes equally funny and funnier than the incongruity-removed forms. Funniness ratings for the original form of jokes improved with age, whereas the ratings for the other two forms decreased with age. Further, by age 8, children appreciated all types of incongruity. Comprehension improved with age, with 12-year-olds being able to explain all types of incongruity in the joke forms.

In another stage theory of child development, Freud wrote extensively about personality development influenced by sexual tensions through childhood. Most students still encounter

his stage theory: oral, anal, phallic, latency, and genital of psychosexual development. In each stage, children learn to resolve psychosexual conflicts between wanting to satisfy their sexual impulses, behaving correctly, and dealing with reality. For example, children might want to have an exclusive relationship with their opposite-sex parent. Freud saw early humor as play and gaining pleasures through their cognitive development to process incongruities. However, as children age, if sexual tensions were not resolved appropriately, they remain fixated in that stage even into adulthood, and their humor would manifest this unresolved conflict. For example, a fixation in the oral stage could result in enjoying biting sarcasm (*Jealously is a disease… get well soon!*). In addition to fixated expressions, Freud suggested that humor may be one way to allow expression of sexual pleasures or hostility to release psychic tensions (*A woman told her friend, "For 18 years my husband and I were the happiest people in the world! Then we met".*). See Chapter 9 "Clinical Psychology" for a discussion on using humor to release tension within the unconscious system.

Similarly, in Freudian theory, children use humor to relieve frustrations or to deal with feelings of guilt and shame. For example, in the anal stage, as children learn to control their muscles for urination and defecation, they cope with guilt and shame of accidents. Scatological humor is one means for children to manifest their feelings about these biological functions. Preschoolers start to show a preference for bathroom (scatological) humor (Krogh, 1985). *Why did the elephant take toilet paper to the party? Because he was a party pooper*. Because children's humor often is focused on skills they are mastering, it is understandable that preschoolers start enjoying bathroom humor as they master toilet training. Older children and adults may also enjoy scatological humor because it violates social norms to not talk about these processes or products in polite conversation.

In addition to discontinuous change depicted in stage theories covered so far, continuous development results from interactions with the environment. We learn and practice social skills as we develop. Operant conditioning, through rewards (e.g., coming from shared laughter) and punishments (e.g., target of teasing), influences humor development. We find smiles rewarding, for example, and our smiles and the smiles of others (or lack thereof) in response to humor increases (or decreases) the probability of using humor in the future. If humor is rewarding, we would expect it to facilitate learning (increasing R in presence of S). Such data were observed with adolescents with autism spectrum disorder who learned to respond positively to pictures of people socially interacting when they appeared in cartoons (but not photographs) (Silva, Da Fonseca, Esteves, & Deruelle, 2015). Humor reinforced approach behaviors required to make the cartoons bigger on the screen and taught the children to respond with approach behaviors instead of withdrawal behaviors in response to social stimuli.

Additionally, social learning theory (Bandura, 1973) explains the role of modeling or watching others on our behavior. Humor is a vehicle for social interaction, and children learn social skills as well as humor skills by sharing jokes (Southam, 2005). They learn appropriate ways to produce and respond to humor, how to use social cues to determine when someone is telling a joke, and how the social situation guides humor use. **Social referencing** is one example of how children understand the world. In social referencing, the child looks to another person and infers from their behavior whether the ambiguous situation is scary, a threat, or

funny. This process helps researchers infer how young children understand humor in their early social interactions.

Children's understanding of humor

Early social interactions

Research suggests that we understand humor very early in life. Smiling and laughing occur in early social interactions between babies and caregivers. Mireault et al. (2015) reported that social smiling occurs between 4 and 9 weeks of age, laughing when tickled by 3 months, and laughing in social games by 5 months. When caregivers laugh with 6-month old infants, they respond in kind, suggesting that laughter is social communication (Airenti, 2016).

As we age, smiling and laughing take on more social functions. Younger children (4-year-olds) smiled more when alone than did older children (6-year-olds), and 6-year-olds smiled more in groups than 4-year-olds did (Kosslyn & Henker, 1970). In a second study, Kosslyn and Henker (1970) found that 6-year-olds laughed more than 4-year-olds when they watched videos containing laugh tracks, indicating that 6-year-olds were using social cues more than 4-year-olds to express their humor appreciation. Enjoyment of humor increases throughout childhood and peaks in adolescence, specifically 15 to 16 years of age (Ziv, 1984).

Of course, humor processing involves more than smiling and laughing. Infants need to form expectations of how others will behave and learn to discriminate reasons for why others violate these expectations (i.e., Were expectations wrong? Was it meant to be funny or did others make a mistake?). By around 5–6 months of age, children are able to differentiate funny stimuli from ordinary behavior (Mireault et al, 2014, 2015). For example, Mireault et al. (2014) found that 6-month-olds stared longer at an actor who put a red ball on her nose (funny) than who tossed the ball (not funny). Longer gazes imply the funny faces were perceived as different from regular faces.

Of course, infants will look longer at novel events, even when they are not funny. How can we be sure that they are discriminating humor from nonhumor and not novelty from non-novel stimuli? One answer comes from using social referencing, where children use the cues of parents to influence their responses under uncertainty or threatening situations. Mireault et al. (2014) paired the humorous event with a parent who either kept a neutral face or who smiled/laughed. Many children laughed regardless of the parent's behavior. However, they found that 6-month-olds who did not laugh initially when they saw the humorous event engaged in social referencing; they looked at the parent and used the parent's face to inform their reaction. Moreover, when comparing 6-month-olds with their behavior six months later, the researchers found that when social referencing occurred, 6-month-olds smiled back at the funny parent (but not at the event) but at 12-months, they smiled at the event. These data suggest that by 12 months of age children use social referencing to aid their humor processing of funny events.

Mireault et al. (2015) followed up with an improved design where the experimenter did the funny actions rather than another actor. Even at 6-months, children attended to the experimenter and used his or her facial cues to help interpret the situation. The researchers studied 5-, 6-, and 7-month old infants and measured frequency, duration, and time lapsed

until they responded (latency) following the funny event, and the parent either maintained a neutral face or made a funny face with the event. Results of this study showed infants used the parent's response to influence the timing and length of their own laughter response. Concerning the duration of laughter, when parents signaled the event was funny, 7-month-olds laughed longer than 4-month-olds. When parents kept a straight face, there was no difference by age in duration. Concerning latency, 7-month-old infants laughed about two seconds sooner than 5-month-olds when the parents signaled the event was funny, but there was no difference if parents kept a neutral face. Thus, the cues provided by parents were referenced and used by the older child. Notably, both age groups laughed or smiled at events regardless of the parent's cue; children used their parents to edit their experience, not as permission to have the humor response.

Theory of Mind and complex mental representations

Theory of Mind is often needed to understand humor because often the incongruity in a situation is based on what people are thinking or feeling. To understand a situation, we form mental representations of it, and the more abstract or complex the information in the situation, the more complex the mental representation. In trying to understand the cognitive processes young children need to comprehend humor, researchers typically use cartoons to remove additional burdens on the cognitive system of language processing. Single-framed picture cartoons without captions provide an ideal context to examine changes in young children's mental representations of complex situations. They require activation of social and cultural schemas while avoiding children's difficulties with language and story skills needed with multiple-frame comic strips. Researchers can manipulate the content of cartoons to control the complexity of children's mental representations.

Puche-Navarro (2004) identified three humor types conveyed in single-framed cartoons: mentalistic, substitution, and complex. Each involves successively more complex mental representations to understand the humor. **Mentalistic jokes** require processing intention and shifting from representing what is physically present to what characters might be thinking (thought is typically illustrated in cartoons in a bubble drawn near the head). In her stimuli, a mentalistic cartoon depicted a scene where a boy points to a puddle on the street and his mother imagines deep-water swimming. **Substitution jokes** replace a literal fragment with something funny or imaginative. Her example depicted Superman with wings instead of a cape. **Complex jokes** require representing relationships among the elements in the picture. Her example depicted a pregnant mother doing aerobics and her baby in the womb is exercising, too.

Rather than just looking at pictures on the test, children interacted with them. Similar to the Colorforms® game, children saw the base picture on transparencies and added or peeled off cutout elements. For example, a flying Superman (base picture) could add one of three elements: a bat, a cape, or wings. After children saw the pictures they made with each of these elements, they stated which was funniest. Puche-Navarro (2004) observed changes in 2-, 3-, and 4-year-old children's funniness judgments. The percentage of children at each age selecting the picture with the funny element (e.g., Superman's wings) is depicted in Figure 6.2.

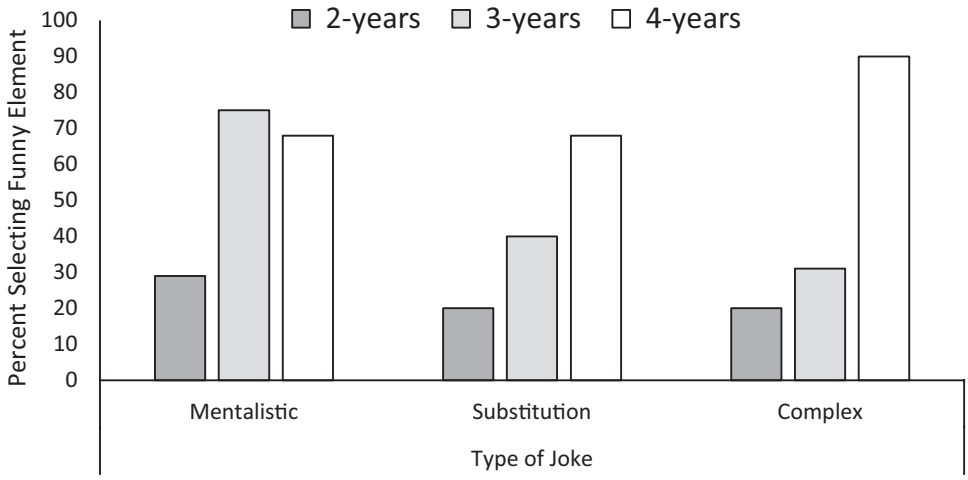

Figure 6.2 Percentage of children in age group selecting the funny picture for mentalistic, substitution, and complex cartoons.

Source: Puche-Navarro, 2004.

As expected, 2-year-olds (the first bar in each triplet) were not discriminating humor from the other two nonfunny options, as they selected the funny ones nearly 30% of the time for all types of jokes. By age three (the middle bars of each triplet), however, when Theory of Mind is developing, and they are in the preoperational stage, children were better able to appreciate the incongruity between what characters are thinking and physical reality (the mentalistic pictures). They also have some improvement in substitution and complex pictures relative to the 2-year-olds. At four years of age (the right bar of each triplet), they were better able to handle the substitution humor than younger children and clearly appreciated humor drawn on the complex relationships among characters. In a second study, Puche-Navarro (2004) found further support that 4-year-olds understand complex relations in humor. Seventy-five percent of them could explain the humor displayed in a picture of an adult coming home to find a mess with characters (e.g., dog and cat) pointing at each other.

Although Theory of Mind appears around age 3–4, as children age, their ability to mentally represent the mental states of others continues to develop. Bosacki (2013) found improvement in 10-year-olds from when they were 8-year-olds on measures of Theory of Mind and humor in a longitudinal study. These children continued to develop their ability to reason and apply cognitive and emotional perceptions to complex humorous situations, as needed to understand, for example, embarrassment that others might be feeling. For this reason, Bosacki (2013) cautioned educators of middle school-aged children on using humor in the classroom because they may not yet have the cognitive skills needed to handle the complexities of language, social cognition, emotions and imagined ideas of what others think about them. Many of them may either miss the point or misunderstand it.

In developmental psychology, age-appropriate materials are key to reducing confounds. Aykan and Nalçaci (2018) reported that adults frequently find children's Theory of Mind tasks too easy, and ceiling effects for adult participants reduce the ability to study the effects of

variables on task performance. They created a test, ToM-HCAT, for examining Theory of Mind and humor comprehension in adults. This test measures both reaction time and accuracy to select the funny interpretation of single-panel cartoons, 27 of which required Theory of Mind and 13 which did not. Cartoons that required Theory of Mind required the participant to mentally represent characters' thoughts and feelings. For instance, one cartoon showed Red Riding Hood finding the wolf sleeping soundly next to the grandmother in her bed while the grandmother was motioning to Red to be quiet (her finger pressed against her lips). The choices were a) the grandmother did not want the sleeping wolf to wake up, b) didn't want Red to tell anyone else about the wolf, c) she wanted Red to go away, or d) the cartoon was meaningless. Aykan and Nalçaci (2018) found that adults with low autistic traits had higher accuracy scores for Theory of Mind cartoons than those adults with high autistic traits, but on cartoons that did not require Theory of Mind, scores were nearly identical for the two groups. Thus, this test revealed more difficulties in Theory of Mind in the high autistic trait group. Reaction times did not differ for cartoons for type of cartoon. Interestingly, funniness ratings did not differ by Theory of Mind condition or participant groups, supporting the idea that adults can find cartoons funny even when they construct different meanings or Theory of Mind is impaired (Aykan & Nalçaci, 2018; Ruch & Hehl, 1998).

Joker's intentions

Understanding others' intentions require both cognitive and social development, including Theory of Mind. As children acquire language, they need to discriminate when statements they hear are literal and truthful or an intended joke. *Have you heard about the man who drank 5 gallons of tea? He drowned in his teepee*. This statement is to amuse, not to inform. Typically, only literal information is added to our general knowledge. The emergence of play shows that children know there is a difference between pretending and reality.

Children consider the intention of the speaker to tell the difference between jokes and true statements. They remember and use their recent past experience with the speaker to help determine whether the speaker is reliable. Hoicka, Butcher, Malla, and Harris (2017) studied whether 3-, 4-, and 5-year-olds trust the information coming from a joker. Children saw actors, one who mislabeled novel objects and laughed saying "I'm being silly" and one who gave a sincere, correct answer. Afterwards, children saw pictures of these actors, were told what each actor called a novel object, and were asked to decide what to name it. Hoicka et al. (2017) found that 3-year-olds were as likely as 5-year-olds not to trust the jokers to convey accurate information about the name, but they trusted sincere actors. About 90% of the children used the label of the sincere actor; this level compares to 70% who never saw the initial exchange.

Riddles

Once children acquire language, we typically find they enjoy listening and telling riddles. Though not all riddles are funny, many of them contain ambiguity or require incongruity resolution. The study of children's ability to laugh at or tell riddles informs us about the processes involved in understanding (detecting and resolving incongruity) and producing this

form of humor. Riddles have a fixed structure, usually in the form of questions and answers; usually, both are supplied by the riddler, though the listener may try to guess the answer. *What has four wheels and flies? A garbage truck*. Children aged 2–4 years laugh at riddles without understanding what is required to make them funny (Prentice & Fathman, 1975). When they create their own riddles, they may use the correct structure but leave out the double-meaning element. For example, they may say, *What has two wings and flies? An airplane*! to which they laugh as much as they did after hearing the proper riddle. If asked to explain why it was funny, children younger than 7 typically cannot point to the incongruity (Bergen, 2009); instead, they might say it is funny because others laughed. These riddles are not funny to older children or adults, but the child who told the riddle can be rolling on the floor laughing heartily afterwards nonetheless.

Riddles are a bit like sneezing; they are contagious. We hear a riddle, and we want to tell one, too. (Jokes are the same way.) Young children typically learn how to behave in a riddling session–how to respond after hearing one, and how to tell one in proper format (complete with intonation and facial expressions) before they learn how to include incongruous elements that add humor. Their behavior indicates that incongruity was not a necessary element for why they found the riddles enjoyable or funny but, as described next, within a few years, they master the repertoire of riddle forms.

Children's riddling exemplifies Piaget's and McGhee's developmental stages. Table 6.3 summarizes the patterns found by researchers. Park (1977) observed riddles told by groups of children beginning in kindergarten (about age 5) through eighth grade (about age 13). The frequency of types of riddles answered with "because" reflected age changes in their development, becoming more abstract. **Causal riddles** answer with a cause-effect relationship: *Why did the stick break? Because it was stuck*. **Logical-relations riddles** answer with rational reasons: *Why was the pie cut into eight slices? Because 4 + 4 does not equal 9*. **Motive riddles** answer with reasons why: *Why did the chicken cross the road? Because it wanted to*.

Table 6.3 Development Pattern in Riddle Production

Dominant age	*Park (1977)*		*Yalisove (1978)*
6–8 years old (second grade)	**Causal riddles** *Q: Why did the stick break?* *A: Because it was stuck.*	**Concrete relationships** *Q: What did the father say to the hot dog?* *A: Munch, munch, gobble, gobble.*	**Realistic links** *Q: How many balls of string would it take to reach the moon?* *A: One but it would have to be a big one.*
	Logical-relations riddles *Q: Why was the pie cut into eight slices?* *A: Because 4 + 4 does not equal 9.*	**Content, especially definitions** *Q: What kind of elephant weighs only two pounds?* *A: A very thin one.*	**Linguistic links** *Q: Where do you always find money?* *A: In a dictionary.*
12–14 (seventh grade)	**Motive riddles** *Q: Why did the chicken cross the road?* *A: Because it wanted to.*	**Sexual and aggressive content** *Q: Why did the boy bubble chase the girl bubble?* *A: Because he wanted to see her bust.*	**Absurdity links** *Q: How can you fit six elephants into a VW?* *A: Three in front and three in back.*

Park (1977) found that younger children told more causal riddles and older children told more motive riddles. Further, she reported that early on, riddles describe concrete relationships (e.g., *What did the father say to the hot dog? Munch, munch, gobble, gobble*). By second grade, they emphasized content, especially definitions (e.g., *What kind of elephant weighs only two pounds? A very thin one*.). By seventh and eighth grade, riddles contained sexual and aggressive content (e.g., *Why did the boy bubble chase the girl bubble? Because he wanted to see her bust*), reflecting social and cultural influences on their development.

Yalisove (1978) supported Park's (1977) findings but classified riddles slightly differently. Riddles with **realistic links** are focused on the perceptual world. *How many balls of string would it take to reach the moon? One, but it would have to be a big one*. Those with **linguistic links** require metalinguistic skills for detecting resolving word meaning ambiguities: *Where do you always find money? In a dictionary*. Riddles with **absurdity links** require formal operational thinking where we use language to refer to nonreal-world situations. *How can you fit six elephants into a Volkswagen? Three in front and three in back*. Based on these classifications, riddles children produce reveal their mastery of skills required. We would expect older children to be more skillful than younger children.

Yalisove (1978) asked children to submit riddles they knew and thought were funny. First graders primarily told realistic (49%) and language ambiguity (45%) riddles and rarely provided riddles with absurd links (6%). Eighth graders primarily provided riddles with absurd links (49%) and least often provided realistic links (14%). Further, when asked to pick the funniest answer on a multiple-choice test (e.g., *What is red inside? A book* (funny)*, a watermelon* (realistic), *a peach* (irrelevant), or *a galloping wristwatch* (absurd), first graders most frequently selected realistic link answers (59%) and chose irrelevant answers 16% of the time, whereas college students selected funny answers the most (31%), then realistic answers (27%), and gave irrelevant ones only 4% of the time.

Memory for answers to riddles we just heard also improves with age. In parallel to the increased comprehension of riddles we see from age 6 to 10 (Prentice & Fathman, 1975), Yalisove (1978) reported that first graders (age 6) remembered 68% of riddles, third graders (age 8) 82%, sixth graders (age 11) 93%, and college students (age 19) 98%. Relatedly, Bowes (1981) studied 6- to 8-year-olds and 8- to 11-year-olds for their recall of riddles, fluency in telling them, and performance on a variety of cognitive tasks. They found that those who told riddles well had stronger cognitive abilities and scored higher on tests that measured detection of linguistic ambiguities.

Interestingly, when comparing riddles and problems (*Q; How can you tell an honest politician? A: Once he is bought, he stays bought*. vs. *Q: What is the least common multiple of 3, 8, 9, and 12? A: 72*) on Galvanic Skin Response (GSR), Goldstein, Harman, McGhee, and Karasik (1975) found an interaction in the minimum conductance compared to the maximum baseline conductance. When the answer appeared, there was a significant reduction in GSR for riddles but not for problems. The interaction supports the idea that riddles are not processed the same as problems despite having the same format. Further, in support of arousal theory (see Chapter 2 "Biological Psychology"), Goldstein et al. (1975) found humor appreciation in riddles was highest when arousal moderately increased from question to answer and lowest when arousal increased very little or a lot (i.e., the curvilinear relationship between arousal and liking responses).

Children's humor production

You may know the idiom, *Out of the mouths of babes oft times come gems* (McGraw-Hill, 2002). Parents report that children copied their parent's humor before their first birthday (Hoicka & Akhtar, 2012), showing that humor can be learned through imitation. Moreover, young children produce novel humor, although not as much in their first two years (Hoicka & Akhtar 2012). Children appear to produce both copied and novel humor primarily to cause a humor response in others.

Early humor takes the forms of teasing and clowning, starting about nine months of age (Airenti, 2016). Although 1-year-olds may not have yet developed Theory of Mind, they have expectations of how their parents or caretakers will behave. Infants manipulate these expectations, as in offering to show them a toy and then taking it away to cause surprise in the receiver. Airenti (2016) suggested that young children begin using humor as playing games with other people's expectations. Infants engage in these behaviors for the purposes of amusement, that is, to regulate emotions by acting in funny ways that cause humor responses in others (Airenti, 2016; Hoicka & Akhtar, 2012).

Children (aged 30–36 months) include intentions of speakers to understand whether actions of others are intended or not, and whether they were meant sincerely, humorously, or unintentionally in error. They learn that humor is an intended mistake. In experiments conducted by Hoicka and Akhtar (2012) and Hoicka, Butcher, Malla, and Harris (2017), an actor either made an error when mislabeling an object and laughed while doing so or made an error but did not laugh. Children were more likely to subsequently mislabel an object after viewing the humorous mislabeling, but, most importantly, they copied the game but not the exact error; they often provided a different mislabel. Further, if the actor did not speak English and made a labeling mistake (English-speaking) children did not play along, indicating they knew the error was unintentional. Lastly, Hoicka et al. (2017) showed that when actors taught them new information, children used labels of a sincere speaker but not a humorous one. In these studies, children by age three show they understand the humorous context (especially when signaled by laughter) by inferring the intentions of speakers.

As children age, the content of jokes that they tell reflects their social development. Five-year-olds pretty much live in the here and now, and their focus is **egocentric**. They see the world from their own perspective. Their humor often starts with their own actions. As they mature, they learn and attend to social norms and conventions. We see 7- to 10-year-olds enjoying humor that deviates from these norms, such as generating bathroom humor. Teenagers are more focused on social relationships and trying to define their identity. Teenagers and adults show more enjoyment of hostile and sexually focused humor than younger children. Teenagers and adults in the formal operational stage of Piaget's stage theory have the cognitive flexibility to accept the lack of closure in jokes high in ambiguity to find them funny (Couturier, Mansfield, & McCarthy Gallagher, 1981).

How children use humor–that is, their humor style–may help inform researchers about their psychosocial adjustment. Fox, Hunter, and Jones (2016) examined adolescents, aged 11–13 years. They collected measures on depression, loneliness, and self-esteem. They modified the HSQ (see Chapter 3) to make it age appropriate. Using cluster analysis, they created profiles, which they called types, based on patterns in humor style preferences, listed in Table 6.4.

Table 6.4 Types of Humor Styles Observed in Adolescents by Fox et al. (2016)

Type	*Description of HSQ scores*
Interpersonal	High on aggressive and affiliative styles, low on self-defeating and self-enhancing styles
Self-Defeaters	High on self-defeating style, low on the other three styles
Humor Endorsers	High on all four styles of humor
Adaptive Humorists	High on self-enhancing and affiliative styles, low on aggressive and self-defeating styles

Fox et al. (2016) found that self-defeaters scored highest on maladjustment: they were highest on depression and loneliness, and lowest in self-esteem. In reporting on gender differences with each type, they found no differences in numbers of boys and girls for interpersonal and self-defeater styles, but more boys were humor endorsers and more girls were adaptive humorists.

What do children have to say about their humor use? Using focus-group methodology, Dowling (2014) asked children aged 7 to 12 years of age questions such as "What does humor mean to you?" "How do you make others laugh?" and "Tell me a joke you know". Jokes told by these participants supported findings from experiments described earlier, showing that younger children's humor was less complex, but by 12 years of age was more likely based on semantic incongruities.

Dowling (2014) also reported that children laughed at the misfortunes of others (i.e., liking aggressive humor) but they used affiliative humor the most. They often laughed at themselves. They made others laugh by making funny faces and by laughing at the antics of others. They reported using humor to help cope with stress, and they recalled memories that made them laugh again, suggesting funny events are well-stored in memory. Lastly, they appreciated the randomness of humor ("it just happens", p. 127).

Creativity and cognitive development

Formal operational thinking is associated with humor and creativity (Couturier et al., 1981), as this highest level of reasoning provides the cognitive flexibility needed for children to handle the lack of closure in humor's incongruities. Couturier et al. (1981) tested two kinds of humor, wordplay, and incongruity resolution in 117 eighth graders (mean age was 13.3 years) on a multiple-choice test. An example of a wordplay humor test item: choices for the word *wig* were *a) a falsehood, b) woman's fear of death, c) a rib roast, and d) a hairpiece*, where option a is a play on *falsehood*. An example of an incongruity-resolution humor test item: choices for *Ernie: My grandfather can play the piano by ear. Fred: That's nothing . . .* were *a) so can my brother, b) my grandfather fiddles with his whiskers, c) lots of people can, and d) I used to be able to do the same thing*., where option b holds the double meaning of playing a fiddle with whiskers and using his fingers to pull his whiskers. The researchers measured formal operational thinking in a test of analogical reasoning: for example, participants circled the underlined choice in *LEATHER is to (SOFT, SHOE, HIDE) as (HARD, CLAY, HOUSE) is to BRICK*.

Lastly, they measured creativity on the high school level of the Remote Associates Test (RAT, where participants identified words related to sets of three words; see Chapter 1) and used IQ scores from school records for about half of their participants.

Couturier et al. (1981) found that children's ability to select the correct punchline for resolving incongruity jokes significantly correlated with RAT scores, whereas wordplay jokes did not. In other words, the higher the creativity scores on the RAT, the better the scores on the incongruity-resolution test, but this pattern did occur as strongly with wordplay scores. Lastly, scores of analogical reasoning and IQ correlated with incongruity resolution, wordplay, and RAT scores, as did IQ scores, suggesting that cognitive skill and creativity are related and used to detect incongruity-based humor.

Nature vs. nurture

> *I have all these great genes, but they're recessive*.
>
> – Bill Watterson (1998, p. 8)

Studies of twins provide evidence on how much of our sense of humor or ways in which we express humor is genetically determined or environmentally influenced. Monozygotic twins develop from one embryo, whereas dizygotic twins develop from two sperms and two eggs. Thus, monozygotic twins have the closest genetic makeup. If research finds that monozygotic twins are more similar in humor than dizygotic twins, we have good evidence of a genetic influence. The next set of studies describe findings that suggest genetics accounts for the humor we like and use.

Weber, Ruch, Riemann, Spinath, and Angleitner (2013) collected funniness and aversiveness ratings using Ruch's (1992) 3 WD humor test from 135 monozygotic twins and 60 dizygotic twins. Recall that this test measures incongruity resolution, nonsense, and sexual humor. Weber et al. (2013) found funniness and aversiveness of incongruity resolution or nonsense humor showed primarily environmental influences, whereas liking of sexual content jokes showed genetics influence.

Mackay (1998) tested the mothers, siblings, and friends of adopted and nonadopted adolescents on the HUMOR (see Chapter 3) scale. She found that nonadopted siblings' scores correlated more than did adopted siblings, nonadopted child and mother correlated more than did adopted child and mother, but there was no difference of friends and adopted vs. nonadopted children. These analyses support a significant genetic component for the shared humor of parents and siblings and of an environmental influence for humor similarity with friends.

In another study, researchers examined humor styles for genetic components. Veselka, Schermer, Martin, and Vernon (2016) studied 152 monozygotic and 49 dizygotic twins on the HSQ(see Chapter 3). They included a test of mental toughness (e.g., liking a challenge, having strong emotional control, or having confidence in your abilities), as mental toughness causes less of an aversive response to humor. Veselka et al. (2016) hypothesized that genetic and environmental influences on humor styles would show similar patterns on mental toughness. Correlations were higher for monozygotic twins than dizygotic for affiliative, self-enhancing, and aggressive styles, but rather similar for the self-defeating style. Scores on mental toughness showed strong correlations for monozygotic twins but weak correlations for dizygotic twins. Positive humor styles (affiliative and self-enhancing) correlated

with mental toughness, and negative style (self-defeating and aggressive) showed negative correlations. Veselka et al. (2016) concluded that there is a strong genetic component to both humor styles and mental toughness, and that negative humor styles may reflect individual differences in learned (environmental) experiences.

Genetics was also implicated in humor appreciation in an fMRI study of adolescents. Not only did they show adult patterns, indicating that children's brain processing of humor is similar to adults, but siblings showed greater similarity in activation of the reward network in response to humor than they did to all participants (Vrticka, Neely et al., 2013).

Special populations

Psychologists study humor in particular groups known to have cognitive, social, or emotional challenges. These include children with intellectual disabilities or hearing loss, second language speakers, and older adults.

Children with intellectual disabilities

Because humor development parallels cognitive and social development, would we expect children with intellectual disabilities could have problems with humor appreciation or production? Degabriele and Walsh (2010) noted that prior studies do show that children with intellectual disabilities show humor comprehension problems. They may do less well in selecting the funniest endings of jokes on a multiple-choice test compared to typical developing, age-matched children. Furthermore, research finds that children with intellectual abilities may have deficits in their social development as well, and this social impairment can contribute to their impairment in humor development.

Degabriele and Walsh (2010) studied nine children with intellectual disabilities, age 7 to 11. They showed the children cartoon snippets of SpongeBob Squarepants, a cartoon familiar to them. They manipulated humor type–physical, visual, and phonological, as in slipping on a banana, changes in size or color, and verbal jokes, respectively. Children pointed at smiley faces that expressed very funny, funny, not funny, and not funny at all, and their laughter was recorded. Results showed that these children rated physical (85%) and visual (84%) humor funnier than verbal humor (77%). Degabriele and Walsh (2010) did not include a control group of typically developing children, but they did include videos of nonfunny segments, and their participants rated these as less funny (74%).

To further study children's humor comprehension, Degabriele and Walsh (2010) created videos where age-appropriate verbal jokes were told with or without visual supports such as gestures, acting with a prop, and matching pictures. Verbal jokes used phonological, lexical, and semantic incongruity. After reading a joke, participants chose the best answer of two alternative explanations. For example, *What's the best day to go to the beach? Sunday*. Is it funny because a) *Sunday sounds like "sunny day"* or b) *Sunday is the last day of the week?* Degabriele and Walsh (2010) noted that children understood all three types of incongruity, but they performed best when jokes were supported with visual aids. Specifically, gestures greatly aided comprehension. Degabriele and Walsh (2010) suggested that gestures may be effective support for humor comprehension because these cues are used in real-world social communication.

Research on children with Down's syndrome (Southam, 2005) showed that humor serves a strong social function, where it was used as communication and having fun with their

caregivers; their children both initiated and responded to incongruity-based humor. See Chapter 10 "Clinical Psychology" for a discussion of humor and individuals with autism spectrum disorder.

Gifted children

Gifted children are identified as being advanced in their cognitive, social, and emotional development. Gifted children have a wider humor repertoire (i.e., they know more jokes) and advanced abilities to process incongruity (Bergen, 2009), and are in advanced stages of humor appreciation and comprehension compared to their same age peers. For example, a gifted child at age 5 may already be in McGhee's stage 4 of humor development, whereas the nongifted children 5-year-olds are in stage 3. Bergen (2009) gave the example of a 5-year-old child who said, "I can play the piano by ear" and then puts her ear on the keyboard. Gifted 5-year-olds may already like the content of older children; in Bergen's (2009) study, both younger (aged 7–9) and older (10–12) gifted children liked similar humor, whereas other studies with nongifted children typically show a difference in humor types these two age groups enjoy. Further, because gifted children appreciate humor across all media types (TV, movies, books, visual, and verbal), Bergen (2009) suggested their teachers should include more varied types of humor (e.g., political cartoons or satire in drama episodes) to challenge their humor processing skills.

Gifted children may also have a more developed sense of humor compared to peers. Shade (1991) measured a mirth response in fourth, sixth, and eighth graders to auditory-presented jokes. These mirth responses were coded by degree as a grimace, blank stare (no response), slight smile, full smile, or laugh. The gifted children scored higher on mirth responses than average children, suggesting that gifted children have a stronger sense of humor. There were no gender differences. Comprehension of the jokes was also measured on a three-point scale. As expected, gifted children scored higher, with older children understanding jokes more than younger children.

How might nongifted peers perceive the humor of gifted children? Ziv and Gadish (1990) studied the humor of gifted adolescents. Students in classes that had at least one gifted student rated all classmates' sense of humor. As with many traits, ratings of nongifted adolescents' sense of humor were normally distributed, but a bimodal distribution was found for ratings of gifted students. That is, peers saw the gifted adolescents as either having little or no sense of humor or a very good sense of humor. Interviews found that gifted children with a low sense of humor noted they tended not to use humor because they were too busy (working at a college physics lab after school) or when they made attempts to be humorous their peers didn't understand it. Gifted children who were rated as having a strong sense of humor tended to be extroverted and enjoyed the approval of their peers. As Ziv and Gadish (1990) noted, adolescence is a developmental period where humor strongly functions to influence social relationships, but for some gifted adolescents, their social interactions are impacted by their intellectual activities that distances them from their peers.

Children with hearing loss

Children with hearing loss may be challenged to process verbal humor. Hearing loss can slow the development of language skills and reduce social competence. Nwokah, Burnette, and

Graves (2013) studied humor production in children with and without hearing loss between the ages of 5 and 8. They tested the children in their homes. Participants completed several tasks: 1) they told a joke, 2) they made up a funny story, and 3) they provided a description of a funny movie they remembered. Results showed that children with hearing loss produced shorter and less complex jokes than those without hearing difficulties. They told more knock-knock jokes than children with normal hearing, and these jokes tended to be short in form. These findings support an impairment in linguistic skills needed to process verbal humor. However, the (nonfunny) story-telling task did not show differences in linguistic ability. Thus, it is more likely that producing humor with language taxed the cognitive system of those with hearing loss. Notably, both groups of children found physical humor funny.

Other interesting findings from Nwokah et al.'s (2013) data are worth mentioning. The first concerns the content of the jokes the children produced. Those without hearing loss tended to include bathroom humor when they made up a joke or story, whereas those with hearing loss did not. Nwokah et al. (2013) noted that bathroom humor in the real world of young children is rather common; we find it in children's literature, nicknames, playgrounds, and in other social settings. That children with hearing loss were not using bathroom humor implies they were unable to appreciate incongruity created by playing with social norms.

The second interesting finding in Nwokah et al.'s (2013) data was that jokes produced by their children with hearing loss would not be considered funny by adults (e.g., *Knock, knock! Who's there? Light! Light who? I don't need any light*). Telling nonfunny jokes reveals a deficit in processes needed for mastering humor or perhaps having immature cognitive schemas. If we refer back to research on riddling, jokes with the correct form but missing the funny element appear early in humor development. Both of these interesting findings support the conclusion that children with hearing loss are behind in their development of humor skills.

Second language speakers

Second language (L2) learners (of any age) need to understand and produce humor when interacting with native speakers. Demand on cognitive resources is high for both processing humor and the nonnative language. Humorous expressions require proficiency of grammatical, lexical, and culture knowledge in addition to speedy processing. L2 speakers need to master their own speed of delivery, facial expressions, or loudness that other cultures use for humor. Especially, L2 learners need to recognize incongruity tied to specific words and cultural expressions.

Because humor strengthens social connections (see Chapter 4) and expresses our personality (see Chapter 3), L2 learners benefit if they can use humor to facilitate their immersion in L2 environments. Shively (2013) noted that using humor while learning the foreign language helps because it creates a relaxed, enjoyable learning environment and benefits memory for conversational expressions. Further, humor in the L2 classroom can help create a safe place to laugh at production mistakes (Pomerantz & Bell, 2011) and encourage taking risks trying new L2 productions.

Shively (2013) reported a case study of a college student's off-campus study experience in Spain. He collected audiotapes of interactions with his host family and peer students throughout the semester. These interactions showed slow humor development over the ten

weeks as his friendships developed with native speakers (interestingly, conversations with the family involved little humor). She noted that the student's initial attempts, mostly deadpan humor, changed to creative paraphrases ("revoicing") of humorous expressions as he observed humor spoken by native Spanish.

Nonnative speakers of a language likely experience lower levels of humor appreciation in the nonnative language compared to their native language. In a comparison of humor appreciation of Turkish and English jokes that did not require cultural specific knowledge by Turkish students, Ayçiçeği-Dinn, Şişman-Bal, and Caldwell-Harris (2018) proposed a proficiency x investment theory to explain the interaction between proficiency in the nonnative language and effort needed to resolve incongruity. They noted that just as children's humor is not as funny to adults as it is to children because the humor is too simple, jokes in a foreign language may not be perceived as funny because too much effort is needed, which reduces the positive emotional response. However, when the effort pays off, the feeling of mastering the complexity of understanding humor in a nonnative language may enhance the pleasure and amusement, resulting in nonnative language jokes perceived as funnier than when native language jokes.

Ayçiçeği-Dinn et al. (2018) found that the Turkish students who were English majors (heavy investment in processing English) gave higher funniness ratings to English jokes than to Turkish jokes when their English proficiency was strong. When it was not strong, their ratings were similar for jokes in both languages. Students who majored in other subjects besides English and did not have strong English proficiency rated the Turkish jokes funnier than the English jokes. Such findings speak to the complexity of humor appreciation–it is likely formed by cognitive, emotional, motivational, and social processes interacting all at once. And we engage in these processes rapidly so that we know/feel/respond nearly immediately whether we like the humor or not.

Older adults

> Old age isn't so bad when you consider the alternative.
>
> – Maurice Chevalier (as cited in Shapiro, 2006, p.149)

Reaching old age implies a lifetime of experiences, diverse opportunities to meet a lifetime of goals (job, family, retirement), and achieving social and cognitive development needed for acquiring wisdom. Humor may be a form of wisdom, as in knowing how to deal with problems encountered in life (Lee, 2018). However, older adults face many challenges, too, from possible declines in physical, cognitive, or social development, not to mention economic security and threats to basic needs. These changes might affect how older adults experience humor. For example, some find that laughter frequency declines with age (Martin & Kuiper, 1999; Proyer, Ruch, & Müller, 2010). This decrease suggests that older adults appreciate humor less. Martin and Kuiper (1999) found that older adults laughed least in the evening, especially for women. However, this could be due to social isolation more than optimal time of day effects (Greengross, 2013).

Evidence concerning aging and declines in humor processing is mixed. A number of studies show no difference between younger and older adults in their sense of humor (Proyer

et al., 2010) or in their humor appreciation. In fact, a number of studies show that older adults rate jokes funnier than younger adults (Greengross, 2013). Additionally, older adults may be motivated to use humor to regulate their emotions if typical physical activities have been reduced (Harm, Vieillard, & Didierjean, 2014). Not only does humor give them positive feelings but also it helps them cope with negative feelings. As older adults deal with personal losses of friends, family, physical health, or changes in lifestyle, humor provides relief. Further, Strick, Holland, van Baaren, and van Knippenberg (2010b) suggested that cognitive resources needed to resolve incongruity in humor distract them from dwelling on negative feelings.

Older adults may appreciate incongruity-based humor more than nonsense humor, and nonsense humor may be appreciated less compared to younger adults (Forabosco & Ruch, 1994; Ruch, McGhee, & Hehl, 1990). The gender of older adults may also matter to how they perceive humor. Vitulli and Parman (1996) gave older adults statements such as, *Humor is an important part of my life*, as well as gender-based statements such as, *Humor is more important for a male to show than a female*. And *A joke will be laughed at differently depending on whether it is told by a male or female*. Both genders agreed that humor was important to life, yet men thought humor was not important for women to show, whereas women rated humor as having high importance for women. Vitulli and Parman (1996) commented that men may have followed a stereotype that women don't have a sense of humor (see Chapter 4 "Social Psychology") and older women may find their expression of humor suppressed by this stereotype. Being able to express humor and to laugh at one's self, are important for sustaining positive social relationships, especially in retirement communities (Damianakis & Marziali, 2011). Such research suggests implications of humor beliefs on older adults' social interactions.

Understanding jokes relies on working memory capacity and control functions (see Chapter 1 "Cognitive Psychology"). Due to possible declines tied to aging, older adults may not have the cognitive resources needed to create multiple representations, to detect incongruity, or to inhibit the first activated one (Shammi & Stuss, 2003). In a number of studies, older adults show more errors than younger adults on selecting the funny joke ending that resolves incongruity (e.g., Mak & Carpenter, 2007; Shammi & Stuss, 2003). However, when older adults succeed in their efforts to do these things, they typically show greater appreciation of the joke than younger adults do (Shammi & Stuss, 2003) and report greater life satisfaction than those who do not see what is funny (Ruch, Proyer, & Weber, 2010).

Possible cognitive declines in aging may also reduce the ability to resolve incongruity. For example, Mak and Carpenter (2007) tested both verbal jokes and four-panel cartoons in a multiple-choice test, where choices were either funny, straightforward, or non sequiturs. An example of a verbal test item:

> *A businessman is riding the subway after a hard day at the office. A young man sits down next to him and says, "Call me a doctor…call me a doctor". The businessman asks, "What's the matter, are you sick?"*
>
> **straightforward:** *Yes, I feel a little weak. Please help me.*
> **unrelated, non sequitur:** *My sister is a nurse.*

funny non sequitur: *The young man pulls out a water gun and squirts the businessman*.
funny: *I just graduated from medical school*.

Younger adults outperformed older adults, in a significant mean difference of about 1 to 2 jokes (out of 16). With verbal jokes, the range of errors for younger adults was very narrow (0–2), whereas for older adults it was very wide (0–13). When older adults did not choose the funny ending, they tended to select the straightforward (nonfunny) completion. Mak and Carpenter (2007) found that errors in selecting joke endings correlated with other cognitive tests (e.g., short-term memory, reasoning, and flexible thinking), which, on average, were impaired for older adults compared to younger adults.

Additionally, aging may affect the ability to maintain Theory of Mind. In addition to finding that weaknesses in older adults' central executive functioning impaired the ability to select funny endings to joke stems, Uekermann, Channon, and Daum (2006) studied older adults' understanding of jokes focused on Theory of Mind. They asked participants to explain what the person was thinking in the joke. Theory of Mind scores for their older adults were nearly half that for 20–39-year-old adults, supporting the claim that older adults had impaired Theory of Mind. Further, Theory of Mind scores for all participants correlated with funniness ratings and predicted picking the funny punchline (among nonsense, logical, or irrelevant joke endings).

In further investigations, researchers have studied verbal irony comprehension, which involves both Theory of Mind and executive processes. Gaudreau et al. (2013) compared individuals with mild cognitive impairment and healthy control older adults on various tasks including reading a story where the character makes a joke to cover up their embarrassment for being observed doing something wrong, like skipping work to go to a baseball game. As expected, healthy older adults outperformed those with mild cognitive impairment in understanding the nonliteral meaning of the character's statement. Impaired comprehension of verbal irony for patients with mild cognitive impairment was related to their Theory of Mind scores and executive functioning.

McGhee, Ruch, and Hehl (1990) noted that personality changes in aging correlate with humor appreciation. In particular, studies find that we tend to become more conservative as we age. Conservatism is associated with the dislike of uncertainty or high ambiguity (McGhee et al., 1990; Young et al., 2017), and is associated with being less open to experience, a personality factor highly correlated with humor appreciation (see Chapter 3 "Personality Psychology"). Older adults who are high in conservatism provide lower funniness ratings. Further, those high in conservatism tend to dislike nonsense humor, and we see decreased liking of nonsense humor in older adults (Greengross, 2013) when still also finding liking incongruity-resolution humor (Ruch, McGhee, & Hehl, 1990).

Humor styles may also change with aging. Stanley, Lohani, and Isaacowitz (2014) found that older adults did not use affiliative humor as much as middle-aged adults and used aggressive and self-defeating humor less than younger adults. These humor changes may be connected to how aging changes our views of socially inappropriate behavior. Younger adults view socially inappropriate behavior as more humorous than older adults do (Stanley et al., 2014). These include social gaffes, aggressive humor, and poking fun at the expense of others. Humor styles may help explain age differences.

In their study, Stanley et al. (2014) compared younger, middle, and older adults, and used video clips from television shows of the 1980s and 2000s to obtain humor that might appeal to the study's age groups and which illustrated neutral or social gaffes. Their findings showed a correlation between aggressive style and ratings of funniness of the inappropriate video clips for middle-aged and older adults but not for younger adults. The pattern of mean funniness ratings is shown in Figure 6.3. Though memory spans were shorter in older adults, memory performance did not account for the lower funniness ratings. On a side note, Stanley et al. (2014) measured both smiling and muscle movements of the face (facial electromyography) while participants viewed the clips. These movements matched the funniness ratings, suggesting that lower funniness ratings for older adults were not due to a lack of awareness of or memory for what they found funny.

Are there elements of a sense of humor that changes with aging? The MSHS measures a variety of elements of humor, including production, using humor to achieve social goals or to cope, and recognizing humor in yourself and others (see Chapter 3). Thorson and Powell (1996) compared 207 younger (< 25) and 88 older (> 65) adults' responses on the MDHS. They reported a few age differences. Namely, they noted that humor creativity increased with age, and older participants used humor to cope more than younger adults. Thorson and Powell (1996) also reported that older adults showed a more negative attitude toward humorous individuals but a slightly higher positive attitude toward using humor.

How might aging affect the content of jokes we produce? One way to answer this question is to examine jokes on the same theme that liked by individuals of different ages. For

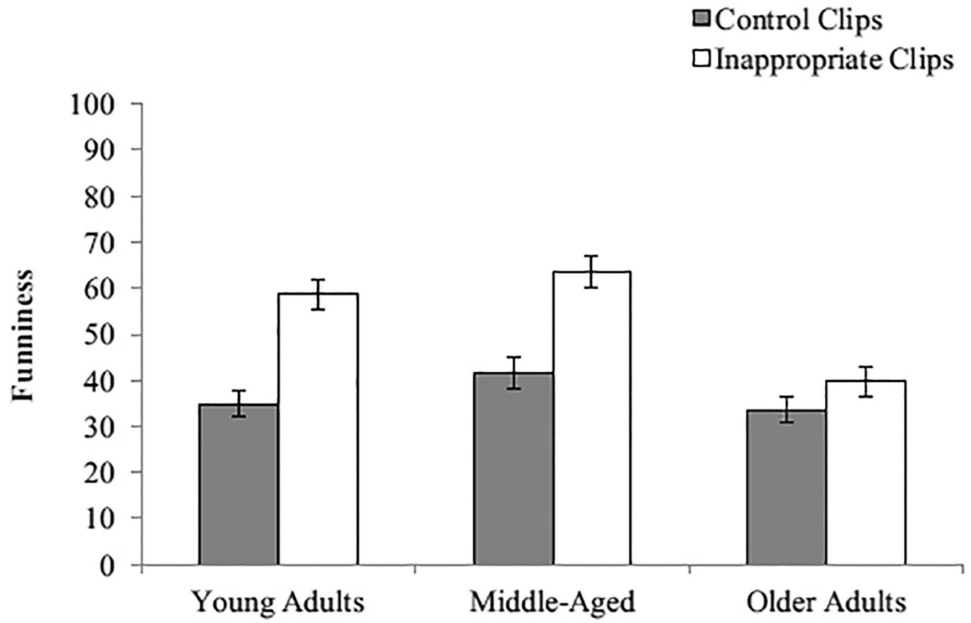

Figure 6.3 Mean funniness for control and socially inappropriate video clips. Stanley, J. T., Lohani, M., Isaacowitz, D. M. (2014). Age-related differences in judgments of inappropriate behavior are related to humor style preferences. *Psychology and Aging*, *29*, 528–541.

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instance, Thorson and Powell (1996, p.182) provided jokes favored by an older and a younger woman to argue that members of the same group (women) but different ages show differences when they joke about members of the outgroup (men):

> **Older:** *How did Jackie feel on her wedding night? She felt old age creeping up on her*. (A joke told by a man on the occasion of Jackie Kennedy marrying the older Onassis)
>
> **Younger:** *If it has tires or testicles, there's gonna be trouble with it*.

The last point to cover with aging concerns humor and mortality. Although longitudinal humor studies collecting data over the entire lifespan are rare, Greengross (2013) reported that the Terman life-cycle study (which followed gifted participants over many years) provides data on sense of humor and mortality. Findings were not good for having a strong sense of humor. Specifically, the study found that those individuals who as children were reported by parents and teachers as having a high sense of humor died at an earlier age than those reported as having a low sense of humor. Other studies of professional comedians report they have shorter lifespans when compared to noncomedian entertainers (see Chapter 7 "Health Psychology"). On the other hand, Romundstad, Svebak, Holen, and Holmen (2016) conducted a 15-year follow-up on a 55,000 Norwegians and found mortality was not associated with affective and social components of a sense of humor, but the cognitive component did show a negative correlation with mortality. They focused primarily on death caused by infections or cardiovascular diseases, as humor buffers stress and boosts the immune system (see Chapter 7 "Health Psychology"). They did note, however, that loss of sense of humor is often observed early in Alzheimer's disease.

Recap

Developmental researchers engage in a rich variety of methods to study change in humor over the lifespan. These include longitudinal and cross-sectional designs, habituation studies in nonverbal infants, and collecting behavioral and physiological data to acquire converging evidence. A review of the literature shows good agreement in finding that changes in humor comprehension and production parallel cognitive and social development.

Humor emerges early in life, at about the same time as children can mentally manipulate symbols such as language (6 months) and manipulate expectations of others. As with many other abilities, humor may progress through stages increasing in complexity. McGhee's (1979) stage theory describes the development of children processing physical-based to semantic-based incongruity. Social interaction is integrated with this development. Clowning appears first, then linguistic wordplay, and later humor on violations of social norms.

Children's humor appreciation is independent of their understanding, as evidenced in riddling. They learn format and behavior before they understand incongruity. Children tell riddles and jokes to make themselves and others laugh. They show an appreciation of the social power of humor–including using cues from others to understand when something is funny (social referencing) and knowing when to use new information from a joker and sincere informants–before they have the mature cognitive schemas for handling abstract semantic

cognitive processes. Our early humor processing is intertwined with our social, cognitive, and emotional development. Using humor contributes and reflects social attachment (closeness with caregivers), social referencing (using others' behavior to influence our behavior), and self-regulation (laughing to increase our mood). It can be an index of cognitive and linguistic competence as well.

Life experiences shape our humor, though genetics play a strong role in our humor styles and use in relationships. By old age, we may express humor less frequently and consider violations of social norms less funny, but humor remains valued and adds quality of life. One word of caution: students are advised to avoid stereotyping older adults as humorless.

Suggested readings

Bergen, D. (2009). Gifted children's humor preferences, sense of humor, and comprehension of riddles. *Humor*, *22*, 419–436.

Goldstein, J., & Ruch, W. (2018). Paul McGhee and humor research *Humor*, *31*, 169–181. https://doi.org/10.1515/humor-2018-0031

McDowell, J. H. (1979). *Children's riddling*. Bloomington, IN: Indiana University Press.

Nimrod, G., & Berdychevsky, L. (2018). Laughing off the stereotypes: Age and aging in seniors' online sex-related humor. *The Gerontologist*, *58*, 960–969. https://doi.org/10.1093/geront/gnx032

Suggested class activities

Activity 6.1. Research issues

Discuss issues concerning the testing of children and older adults who are not used to coming to a research laboratory. What strategies can a developmental psychologist use to help control the situation and yet allow children and older adults to act normally, spontaneously, and produce humor without editing it for a formal or scary situation?

Activity 6.2. Stage theories

Examine the changes across McGhee's four stages. In groups, discuss and explain why latter behaviors are not possible earlier. That is, identify some transformative changes that occur between 2 and 7 years (e.g., language development, schema representations, experiences, and schooling). Compare these abilities with Piaget's stages.

Activity 6.3. Ponder laughing at riddles

Discuss in small groups why you think young children are showing amusement and laughing at jokes or riddles that adults find as unfunny, irrelevant, and not capturing the needed element (often incongruity or ambiguity) of a funny riddle. Try creating your own riddles and compare them to the riddles younger children's riddle attempts.

Activity 6.4. Explore Theory of Mind in cartoons or jokes

Apply what you have learned. Bring in a) cartoons or jokes that you believe require Theory of Mind to be considered funny and b) cartoons or jokes that do not. In small groups, share your materials and discuss why Theory of Mind makes them funny. Explain your reasoning to

show how we can know whether the cartoons or jokes might be funny or not with or without the concept of Theory of Mind. Do the classifications of jokes or riddles in mentioned in this chapter help discern humor that is funniest with or without Theory of Mind? In your materials, do you think Theory of Mind interacts with content so that sometimes content matters more than Theory of Mind and vice versa?

Activity 6.5. Identify types of humor targeted for specific age groups

a. *SpongeBob Squarepants* and *The Simpsons* are cartoons noted in studies that children find funny. Adults find these cartoon shows funny, too. Together with classmates, make predictions of the kind of humor that young children will find funny. Identify content or type of humor that both age groups would find similarly funny or which you think would only be funny for one age group. Afterwards, test your predictions by watching a snippet of the cartoon.
b. Identify television programs (or online media) produced specifically for each age group: young children (< 5 years), older children (> 5 and < 10), older teenagers (15–18), and adults (> 18). Watch and select examples to support your predictions for why the targeted age group humor would appreciate the humor.
c. Children's literature provides wonderful examples of age-appropriate humor. At your local library, examine book titles targeted for preverbal children (picture books), young children (< 5 years), older children (> 5 and < 10), older teenagers (15–18), and adults (> 18). Note the use of funny expressions (e.g., rhymes or names), focus on bathroom humor or body functions (e.g., farting), and perhaps changing humor functions (e.g., making friends or coping with unpleasant events). Perhaps take a look at *Gashlycrumb Tinies* by Edward Gorey. If your library offers children book reading sessions, observe the responses to humorous readings across the ages. How does children's expression of humor change as they age?

Activity 6.6. Humor in L2

Chances are you and classmates have experience in using L2 with native speakers. Share your experiences, and discuss L2 humor. Identify challenges you and classmates faced either in understanding the humor of native speakers on in producing L2 humor. Did age play any role in misunderstandings that may have occurred?

Activity 6.7. Do field research

a. Make observations of humor used in real-world situations by people of different ages in your humor journal and bring them to class. These may be a) encountered spontaneously throughout your everyday activities, b) perhaps stake out a place where people of different ages gather and record their humor, or c) interview children or adults and record their humor. Analyze your observations for a) content (e.g., sexual, scatological, or stereotypes), b) structure (e.g., incongruity-based, puns), or c) function (e.g., affiliative, disparaging).

b. Ask family members to recall funny things you did as a young child, collecting as many details as you can about the context. Perhaps use your own memory to capture humorous things you did years ago. Reflect on whether you still find these things funny. If you find them still funny, explain why you think aging has not affected your perception of funniness. If perceptions have changed, identify specific cognitive or social changes in your life that could account for the change. If using a humor diary, consider how your recent humor is similar or different from your past humor.

Activity 6.8. Consider the construct of maturity

a. Discuss the notion of maturity, and compare it to age-appropriate behaviors observed in producing or appreciating humor. Sometimes people who say or do silly things are judged as immature, but is there a difference between silly immature and silly funny?
b. To aid our understanding of developmental processes in humor, consider how a psychologist would study these related concepts: immaturity, impulse control, self-regulation, social norm violations, and social intelligence.

Study guide

Concepts and theories

Change
Cohort effects
Cross-sectional designs
Egocentricism
Habituation
Longitudinal designs
McGhee's stages of humor
Nature vs. nurture
Piaget's stages
Scatological humor
Social referencing
Theory of Mind

Review questions

1. Identify several changes in developing young children that either cause or co-occur with changes in children's humor production. Connect theoretical explanations for cognitive, social, or physical changes with observed changes in humor.
2. Identify several differences between younger adults and older adults in their comprehension, appreciation, or production of humor. Discuss the benefits or challenges of aging that influence changes we see in older adults' humor.
3. Explain the concept of Theory of Mind. Provide examples of its role in humor comprehension, appreciation, and production.
4. Select the best example of discontinuous or transformative change:
   a. Growing in physical height
   b. Acquiring Theory of Mind
   c. Smiling more in response to humor
   d. Engaging in wordplay to produce humor
5. Children begin teasing behavior typically at which age?
   a. By 1 month
   b. By 1 year
   c. After 2 years of age
   d. After entering the concrete-operational age

6. Why might formal operational thinking be needed to maximize incongruity resolution?
    a. Children over the age of 12 are best suited to feel the complex emotions needed for a mirth response.
    b. Working memory interferes with the creative process.
    c. The interest in intimate social relationships during adolescence enriches the humor that violates social norms.
    d. Flexible thinking and considering remote associations to resolve incongruity are easier to do with formal operational thinking.
7. Why is social referencing important in children's humor processing?
    a. Young children cannot think for themselves and need others to tell them what is funny.
    b. Nonsense humor is scary, and young children need the comfort of others.
    c. Reactions of others inform children how to interpret ambiguous situations.
    d. Cognitive development drives humor processing.
8. In studies that examined whether humor styles are determined by genetics or the environment, the evidence suggests the following:
    a. All styles but aggressive have strong genetic components.
    b. We are likely to have the humor style of our biological family members.
    c. The environment controls most of our humor styles.
    d. The contributions of genetics and environment were equally present (100% each).

Answers to multiple choice: 4) b, 5) b, 6) d, 7) c, 8) a

7 Health psychology

Learning objectives

1. Understand the health psychology perspective of psychology.
2. Identify ways humor influences our health.
3. Understand how humor helps us cope with stress.
4. Understand how humor can be used to influence beliefs about health.

Assumptions of the field

1. Healthy is desirable, the norm.
2. Factors that affect our health affect our behavior.
3. The health of others affects our behavior.
4. Theories of health use biological, psychological, and social perspectives. As an intradisciplinary field, health psychology contains assumptions of the other psychology perspectives.

Health perspective and principles

A relatively new field (emerging in the 1980s), health psychology concerns preventing disease behaviors, promoting healthy behaviors, maintaining good health, and aiding public health policymakers to improve government/school policies that impact our health (Lyons & Chamberlain, 2006). These diverse concerns draw on many theories and methodologies of the other psychological perspectives.

Health psychologists endorse lifestyles which empirical data show are best for health. Their endorsements tend to result in many "should" or "should not" statements–we should not smoke, we should exercise, and we should get eight hours of sleep each night. The strengths of health psychology as a science are its descriptive, predictive, and explanatory powers. For example, psychologists working within this perspective describe strategies people use to

cope with stress and study their effectiveness. When participants name comedy at the top of their entertainment lists, health psychologists explore whether humor and other forms of positive entertainment can be self-medication for maintaining health (Goldstein, 2015). Health psychologists also study health people's beliefs and predict the likelihood that individuals will take action to change their unhealthy behaviors. They clarify the dynamic interplay of social, cognitive, and biological variables that impact our behavior.

Core concepts

Equilibrium, a concept found in many psychology perspectives, dictates that a healthy life is one in balance. Moderation is the key. To achieve equilibrium, we set goals, make plans, work on barriers, identify threats and avoid them, and use education to inform our lifestyle choices (e.g., know how many hours of sleep are best or which foods constitute a healthy diet). When life throws us off balance, humor may be one way to restore equilibrium.

Health psychology shares concepts with clinical psychology concerning the effects of treatments or interventions for improving health. Researchers need to consider **placebo effects** and **recidivism** rates. For placebo effects, individuals participating in health and humor studies may improve or change merely because they expect change to happen. These placebo effects can be as strong as 30% improvement. Change may also occur because of raised awareness of health problems due to information on recruitment or consent forms. That is, individuals might implicitly or explicitly change their behavior without directives or treatment from the experimenter. Thus, control groups are important in these studies. Health psychologists may use two control groups within one study, one group who gets a fake (placebo) treatment, as a measure of expectations, and one who gets no treatment to assess any improvement in health due to the passage of time or raised awareness from recruitment.

Recidivism is also important to consider when evaluating effects on health. This term refers to relapses after the experiment ends, such as going back to an unhealthy diet or stopping exercise. One goal in health psychology is to establish behavioral change that lasts past the experiment or intervention. To study the effectiveness of improvements to health, researchers may use longitudinal or repeated measures designs to examine the effects of humor over time or do a follow-up questionnaire to assess post-treatment health or any possible changes to their humor use.

Humor researchers working in the health perspective use health psychology models to frame their research questions. One model, the **biomedical model,** considers the body as separate from the mind and looks at health as a biological organism free of disease. Does humor help keep a body free of disease? The **biopsychosocial model** considers that we are biological organisms with a mind (thoughts and emotions) who live in social contexts. In this model, the study on humor's influence on health includes all three aspects–biological, psychological, and social–of our lives. Does sharing humor with others help maintain our health? Lastly, the **diathesis stress model** considers vulnerabilities and resistance to disease. Does humor help the most vulnerable build resistance or buffer effects of stress?

In this chapter, we will focus on humor's effect of a) preventing illness, particularly its effect on our immune system, b) reducing or managing health problems such as chronic pain and stress, and c) changing unhealthy beliefs and behaviors to healthy ones. The research

on happiness or subjective well-being, which often co-occurs with feeling healthy, will be discussed in Chapter 8 "Positive Psychology".

Health psychology researchers who study humor ask such questions as does humor help people to maintain or improve their health? How might humor buffer psychological and physical stress? Do those who enjoy humor enjoy better health?

Immunity and humor

A healthy body resists attacks. Our immune system is the body's defense to infections and disease. After exposure to humor, our immune system appears better prepared to handle attacks. Several biological indices of chemicals in our saliva or blood measure the immune system's health. These include immunoglobulin A and cortisol in our saliva, and glucocorticoids in our blood. Higher levels of immunoglobulin A in saliva or lower levels of glucocorticoids in the blood indicate a stronger immune system, whereas higher levels of cortisol in saliva indicate the system is stressed and fighting an attack.

Interestingly, soon after exposure to comedy, changes in levels of these chemicals occur. For example, Dillon, Minchoff, and Baker (1985) showed that participants who watched a comedy for 30 minutes had higher immunoglobulin A in their saliva compared to a group who watched a documentary. Other similar studies have replicated these findings, suggesting humor has an immediate effect on enhancing our immune system. However, some researchers criticize the use of saliva as an accurate measure of increased immune function (Bennett, Zeller, Rosenberg, & McCann, 2003) because saliva density varies greatly across individuals which can affect the accuracy measure of immunoglobulin A.

Instead of measuring immunoglobulin A in saliva, Bennett et al. (2003) sought to find effects of humor on levels of glucocorticoids in the blood, chemicals known to decrease natural killer cell activity. Because natural killer cell activity enhances our immune system's ability to defend against an attack, Bennett et al. (2003) reasoned that finding a decrease in glucocorticoids after viewing humor supports the inference that humor enhances the immune system. In addition to biological data, they also collected behavioral data, specifically participants' laughter. They found no difference in natural killer cell activity due to exposure to funny or nonfunny videos, but they did find a very strong relationship between laughter and the change in natural killer cell activity. Participants with higher laughter scores showed a decrease in glucocorticoids. Bennett et al. (2003) concluded that laughter, not just exposure to comedy, was key to reducing glucocorticoids and enhancing the immune system

Additional research examining saliva cortisol levels supports the role of laughter in helping the immune system. In one study, Chang, Tsai, and Hsieh (2013) took saliva cortisol samples from Chinese adolescents who completed the Chinese Humor Scale, a 30-item test that examined humor creativity, coping use, appreciation, and attitudes. Across eight sessions, participants practiced transforming negative emotions into positive ones by laughing for 20 minutes. The control group remained in study hall (where, not surprisingly, no laughter occurred). After eight weeks, cortisol levels significantly dropped in the laughing treatment group but not in the control group. Scores on the humor scale also increased for the laughing group. Notably, stress levels measured by blood pressure and heart rate did not change much after the eight-week intervention. Such mixed findings of laughter on body functioning

suggest that immune functions and stress measures do not always respond similarly to humor or laughter.

Pain and humor

> The secret source of Humor itself is not joy but sorrow.
>
> – Mark Twain (as cited by Shapiro, 2006, p. 779)

In this section, we will discuss how humor is therapeutic, acting as an analgesic or a buffer to keep pain away, and helps us cope with or tolerate physical and psychological pain. Studies find that humor and laughter reduce pain. This analgesic effect is likely due to the release of endorphins (Berk, Felten, Tan, Bittman, & Westengard, 2001). Endorphins do not pass through the blood/brain barrier and cannot be measured directly. We measure their influence by measuring our threshold of feeling pain. Pain thresholds measure how long we can tolerate pain before "we can't stand it anymore." A typical task involves putting your arm in a bucket of ice water until you cannot tolerate the painful coldness and pull it out. The longer you keep your arm in the bucket, the higher your pain threshold. Another way to measure pain is pressure discomfort, as when a blood pressure cuff is inflated on your arm, and the pressure gauge attached to the cuff quantifies this threshold as the point where you say "stop" as it is being inflated.

As with immune function studies, researchers found that participants who watched a short funny video had higher pain thresholds compared to those who watched nonfunny videos. For example, Cogan et al. (1987) compared participants who listened to a 20-minute audiotape that either induced laughter, relaxation, or boredom (a "dull narrative"). Cogan et al. (1987) also included a control group that did not listen to anything for 20 minutes. Measures taken before and after recorded the point where participants stated the cuff was uncomfortable.

Results indicated that humor raised average pressure tolerance for those in the laughter condition (169 Hg) relative to relaxation (130 Hg), dull narrative (85 Hg), and the control group (91 Hg). A second study compared a funny audiotape with an interesting-but-not-funny audiotape, an uninteresting one, a multiplication task, and a no-treatment condition. Pain tolerance increased for the funny condition (+21 Hg) but not for the interesting-but-not-funny video (+2 Hg). Students studying math take note: pressure tolerance decreased significantly for the multiplication task condition (+13 Hg).

Dunbar et al. (2012) further examined the importance of social context to elevating pain thresholds. In six experiments, they showed that laughter raised pain thresholds. They ruled out this effect happened just because participants were in social groups or had a positive affect experience. They found that increased tolerance required humor shared with others. In one experiment, they used a natural setting (an outdoor theater experience) to show that the benefits of laughter were not limited to watching prerecorded materials in a laboratory. Participants wore mini-recorders around their neck to record their laughter. Another strength of their experiments is that Dunbar et al. (2012) used several dependent measures to assess tolerance to pain, such as tolerating a frozen wrap, inflation of a blood pressure cuff, or holding a painful pose. Their results showed that humor increased pain tolerance when laughter

occurred with others. Dunbar et al. (2012) argued that laughter plays a role in social bonding, and that laughing when we are alone may not release endorphins for pain tolerance as much as when we are in social contexts.

In another study, Zillman, Rockwell, Schweitzer, and Sundar (1993) found that both comedy (inducing laughter) and tragedy (inducing crying) increased pain tolerance. Their participants viewed either a situation comedy (*Married with Children)*, stand-up comedy (*A Night at the Improv*), instructional programming (*The Frugal Gourmet*), or tragedy (*Terms of Endearment*). Participants rated the video for perceived funniness, low arousal, or sadness. Thresholds of tolerating inflation of a blood pressure cuff after watching the stand-up comedy and tragedy videos increased about 12 degrees, the situation comedy increased 9.5 degrees, and drama and instruction videos decreased tolerance about 7 to 11 degrees, respectively. Zillman et al. (1993) suggested that viewing tragedy and comedy films increased pain tolerance because these strong emotional responses release catecholamines that help us tolerate pain. Weisenberg, Tepper, and Schwarzwald (1995) also found that viewing seven minutes of a horror film resulted in similar levels of increased pain tolerance from cold as viewing humor did.

These and many other studies support that laughter releases endorphins and thereby raises our physical pain thresholds. But what about psychological pain? Consider the discomfort resulting from frustration that occurs with our inability to complete a task. Persistence on a frustrating task shows we continue despite the discomfort of doing it. Could humor help individuals persist in a task that generates frustration while working on it?

Cheng and Wang (2015) explored this possibility. Now, persistence is a behavior often studied in the context of self-control, focus on goals, and regulating your behavior to avoid distractions and other temptations. Cheng and Wang (2015) connected this research to the importance of persistence and humor in the business world. (Humor in the workplace is discussed in Chapter 10 "Applied Psychology"). The first experiment involved tedious office work for business participants to complete, with the option that they could stop whenever they wanted. In a second experiment, participants attempted a long, tedious series of math problems. Cheng and Wang (2015) found in both studies that experiencing humor beforehand helped persistence–participants worked nearly twice as long and on twice as many math problems as those who, instead of a comedy, watched dolphins (contentment video) or neutral (business management lecture) videos.

In addition, in their second study, Cheng and Wang (2015) examined humor styles, specifically affiliative humor. They found that those who used an affiliative humor style were more likely to persist on the task after watching a comedy than those who did not use this style. With help of statistical analyses that enabled them to factor out the benefits of emotion (positive affect) and liking the task (e.g., math is fun), they found that experiencing humor in the video increased persistence, and, interestingly, an affiliative humor style moderated this effect. Feelings of amusement (from humor) contributed to persistence uniquely from that of feeling positive emotions.

Why would humor help participants to persist in a task longer than when not exposed to it? Cheng and Wang (2015) hypothesized that humor replenishes mental resources that are drained by tasks we find frustrating. They argued that humor is physically and mentally energizing. These resources help us not give up before reaching our goals. As such, laughter is a medicine that supports our effort to do what we need to do to heal (see Figure 7.1).

"He firmly believes laughter is the best medicine."

Figure 7.1 Whether the best medicine or not, laughter helps the healing process.
Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

Stress and coping with humor

> It's not the load that breaks you down, it's the way you carry it.
>
> – Lena Horne (as cited by Newman, 1998, p. 346)

The definition of stress is as complex as the definition of humor. Stress may also be as pervasive in our daily lives as humor. Additionally, stressors come in many shapes and forms. There are physical stressors (e.g., headache), emotional stressors (e.g., anxiety), environmental stressors (e.g., noise), and social stressors (e.g., romantic breakups). Stress may be framed as a threat to our health. Too much stress feels bad. It is undesirable and not the norm; feeling good is the norm. Further, chronic stress harms the body. It causes the hippocampus to release the hormone cortisol, and high levels of cortisol caused by chronic stress can result in damage to hippocampal neurons. The hippocampus is the area of the brain critical for short-term memory and consolidation of memories for long-term storage.

Health psychologists investigate ways we buffer stress. Buffering keeps threats at bay or allows us to employ coping strategies that mitigate their effect. Coping strategies may help restore energy depleted by stress and allow us to sustain resistance to it. Indeed, many studies find that humor helps buffer stress and is an effective coping strategy, supporting many anecdotal reports of how humor helped individuals get through tough times. In the suggested reading, see Cousins' (1979) account of using humor to overcome serious illness and Frankl's (1959) account of World War II concentration camp

survivors using humor to overcome the horror. Recently, Linge-Dahl, Heintz, Ruch, and Radbruch (2018) examined 13 studies published on the use of humor in patients in palliative care, such as those suffering from dementia or cancer. They reported that humor helped patients, relatives, and caregivers during this time of pain, sadness, and fear. The benefits ranged from relaxation and happiness to increased social relationships and distancing themselves from death.

Health psychologists sort coping strategies into various categories, which are not mutually exclusive. Problem-focused strategies attempt to deal with stressors. For example, when you have too many pages to study, you cope by breaking the task into small sets of pages at a time, as small tasks are more manageable and less stressful. Alternatively, emotion-focused strategies deal with unpleasant feelings of stress. We comfort ourselves without removing the stressor. For example, we may play our favorite music or munch on chocolate as we study. Functional strategies help reduce the stressor and maintain health (e.g., listening to fast music to keep alert while studying), and dysfunctional strategies sustain stress while ignoring it and negatively impact health (e.g., watching TV instead of studying) (Freese, Ott, Rood, Reisner, & Pantalone, 2017). Humor can fall into any of these categories.

Abel (1998) suggested that having a sense of humor allows you to use it as an effective coping mechanism; not having a strong sense of humor means you find other ways to cope with stress. Martin and Lefcourt (1983) developed the CHS to measure the degree we use humor to cope with stress. The CHS consists of seven items, such as *I usually look for something comical to say when I am in a tense situation*, and *I often lose my sense of humor when I'm having problems* (reversed scored). CHS scores correlate with liking humor and having a sense of humor (as measured on the SHRQ, see Chapter 3), with self-esteem and optimism (Martin, 1996), and personality traits of extroversion and emotional stability (Korotkov & Hannah, 1994).

Perhaps humor is an effective coping mechanism because it is difficult to feel happy and sad at the same time. Martin and Lefcourt (1983) examined whether having coping humor (as measured on the CHS) enabled individuals to avoid feeling pervasive negative moods such as depression or anxiety that often results from stress. They found that those with high CHS scores who experienced negative life events, such as loss of job or a loved one showed lower negative moods than those with low CHS scores. Because enduring negative moods are unhealthy, Martin and Lefcourt's (1983) results can be paraphrased as finding that individuals who use humor to cope with negative life events experience better psychological health.

From the diathesis stress model perspective, these results suggest that experiencing negative life events makes us vulnerable to anxiety and depression, but if we use humor to cope, we lessen these negative moods. In other words, coping humor moderates the relationship between stress and moods. However, when not experiencing negative life events, some respondents, regardless of their CHS scores, reported low negative moods, as negative life events are not the only source of depression or anxiety. When life stress is high, using humor can help us to feel less depression or anxiety, but when stress is low, using humor as a coping strategy is unrelated to how much depression or anxiety we experience.

Support for the effectiveness of humor as a coping strategy comes from finding that the body's cortisol levels are lower when coping humor is high. Lai et al. (2010) found that cortisol levels were lower in older men who had high coping humor. This was especially true upon awakening. Cortisol levels in response to awakening is a biomarker of hypothalamic-pituitary-adrenal functioning (Lai et al., 2010); lower cortisol levels indicate lower stress on this system. In their study on healthy aging, Lai et al. (2010) adapted a Chinese version of Martin and Lefcourt's (1983) CHS to measure coping humor. They collected saliva samples upon waking four times on two days from 45 older men. Figure 7.2 shows mean cortisol levels averaged across the two days upon awakening for those respondents with high and low coping humor scores. Those low in coping humor have higher cortisol levels at all time periods, and the difference between high and low CHS groups was largest upon awakening (zero minutes), suggesting those with low coping humor began the day more stressed. In their analyses, Lai et al. (2010) found that humor coping scores significantly accounted for the variance in cortisol levels above and beyond age, socioeconomic status, and self-esteem scores. It is worth noting that having high coping humor did not prevent the body's response to stress from increasing within the hour.

McGhee (1999) published a layperson's book on multiple ways to reduce stress with humor. He strongly endorsed the claims that humor improved our physical and mental health. Much of the material focused on humor's benefit to dealing with stress at home and at work. He presented an eight-step program that encouraged people to surround themselves with humor every day, to reflect on their own humor and develop it, and to actively use their sense of humor to cope with the stressors of life. These steps, shown in Table 7.1, focus on attitude (be playful), activity (keep a humor diary, do exercises), and acumen (know your preferences, humor style, and skill level). His program has applications beyond health;

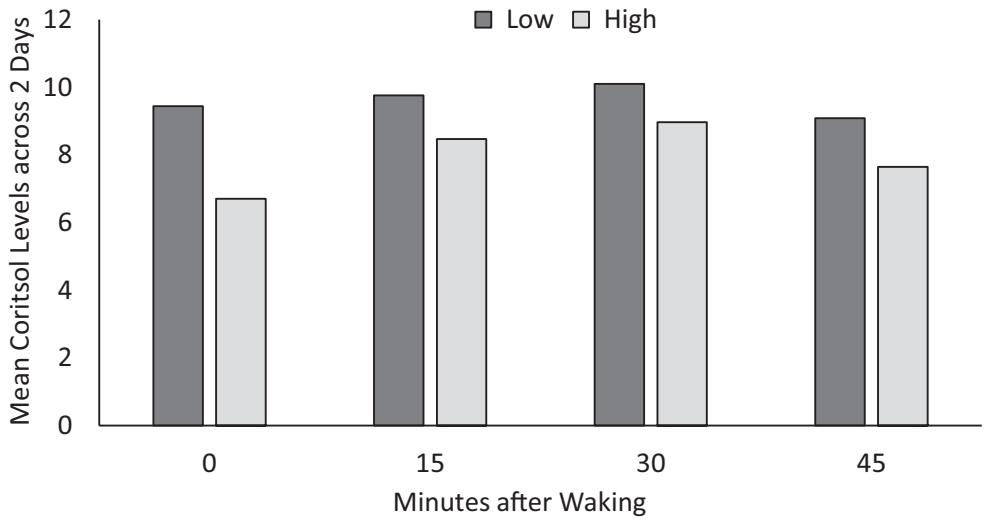

Figure 7.2 Mean cortisol levels averaged across two days upon awakening and at three 15-minute intervals thereafter as a function of low or high coping humor scores.

Source: Lai et al., 2010.

Table 7.1 McGhee's (1999) Application of Humor to Buffer Daily Stress

Step	*Goal*	*Way to achieve goal*
1	Surround self with humor	Experience humor daily from books or other media
2	Have a playful attitude	Lighten up
3	Laugh more often	Share jokes with others
4	Use humor in language	Work on puns and forms of incongruity
5	Find humor in daily life	Look for coincidences or break the routine habits
6	Laugh at self	Take on other perspectives besides your own
7	Find humor in stress	Focus on the positive; relax norms
8	Integrate the earlier steps	Do "homeplay" activities to practice your sense of humor

see Chapter 8 "Positive Psychology" for examples of these steps being used to increase life satisfaction and well-being and Chapter 9 "Clinical Psychology" for skill learning for individuals with mental disorders.

Individual differences in coping with stress with humor

Upon closer inspection, we find humor may help us cope with stress for different reasons. Humor serves different functions by healthy and unhealthy people (Boyle & Joss-Reid, 2004). For example, patients with chronic pain use humor to tolerate it, students use humor to reduce the anxiety of coursework, and healthy populations use humor to maintain energy and emotional wellness.

Research on gender differences suggests that men and women use humor to cope differently. Men and women report using humor to cope equally often, but men may prefer to use humor to express their emotions, whereas women may use humor to gain emotional support (Labott & Martin, 1990; Saxon et al., 2017). Both humor functions help them cope with stress. Women, more than men, also cried to cope with stress. In other research, Lefcourt, Davidson, Prkachin, et al. (1997) examined gender differences and coping humor on several stressful or painful tasks (e.g., arm in ice water). They found that males low in coping humor had increased blood pressure after the task. However, no such moderator effect of humor was found for females. Abel (1998) found that humor moderated the effects of perceived stress for both genders, but it only moderated the effects of symptoms of anxiety for males. Kelly (2002) found that anxiety and worry negatively correlated with a sense of humor, suggesting that worriers are less likely to take social risks in producing humor.

A second individual difference involves personality classifications. Researchers who study cardiovascular health made an association between Type A personalities and vulnerability to cardiovascular disease. The idea is that those driven to succeed (Type A) anger quickly in their self-imposed pressure to do many things, and this chronic stress harms the cardiovascular system. Type B personalities individuals are usually more relaxed and less stressed about deadlines and other stresses. Some researchers frame laughter as a cardiovascular exercise (Fry, 1987), good for heart health. Goldstein, Mantell, Pope, and Derks (1988) asked whether the stressful personality style (Type A) mattered to the appreciation of hostile humor. They chose jokes from a database that were either aggressive or not and which had been rated

as having moderate levels of funniness, thus allowing personality to increase or decrease humor ratings. They found that Type A patients with cardiovascular disease liked aggressive humor more than benign humor, whereas Type B patients liked benign humor more. Notably, they did not find this pattern in individuals without heart disease.

Martin and Kuiper (1999) studied Type A personality and laughter. They asked 80 individuals to keep a journal of incidents of laughter, noting the situation (e.g., whether they were alone or not, and what time during the day the event occurred). They found that men with Type A personality laughed more than women with Type A personality. Coping humor was correlated with laughter frequency for men but not for women. By the way, this study reported that on average individuals laughed 18 times a day, and its occurrence increased throughout the day. Interestingly, only 11% of laughter was caused by jokes.

A third individual difference concerns whether the occupation carries high stress and health risks. Firefighters deal with chronic stress as an occupational hazard. Sliter, Kale, and Yuan (2014) measured coping humor (on CHS) as a buffer for burnout, post-traumatic stress, and absenteeism. They found that those high in coping humor were less likely to report burnout and post-traumatic stress when they experienced high traumatic stress. When traumatic stress was low, coping humor did not matter much to their level of burnout or post-traumatic stress symptoms.

Lastly, older adults are a population of interest in stress research because aging and stress both potentially harm memory. Health problems may be exacerbated when older adults fail to remember to take their medicine. Diabetics, for example, need to monitor their sugar levels and remember to take their insulin daily. Both tasks place a burden on the memory of older diabetics. Humor may help to reduce cortisol levels and therefore may enhance memory needed for medical adherence. Singh Bains et al. (2015) studied the effectiveness of viewing a humorous video compared to sitting in silence for 20 minutes for older diabetics and a control group of healthy older adults. They measured memory (recall, recognition, and learning sequences) and cortisol levels in saliva. They found improvements in all memory tasks for those who watched the humorous video relative to controls. Cortisol measures showed the greatest decrease in diabetic and healthy older adults who watched the humorous video. These findings support previous studies that humor lowers cortisol levels in the body, and because of elevated cortisol's harmful effect on the hippocampus, vulnerable populations such as older adults and diabetics benefit from having lower cortisol in their body.

It would be incorrect to assume that all you need is humor to cope with stress and all is well. Other variables besides a sense of humor may do a better job in predicting stress levels. In a study that examined poverty, for example, Palomar-Level and Victorio-Estrada (2012) found that (low) sense of humor did not predict depression or anxiety as much as did negative self-esteem, help-seeking style, and lack of self-regulation. As another example, individuals' scores on the CHS showed no significant differences for dealing with the stress of working in academia, whereas gender did–women faculty were more exhausted than men (Tümkaya, 2006).

Further, high coping humor may also co-occur with negative responses to stress. For example, Tan-Kristanto and Kiropoulos (2015) found that using humor to cope with the diagnosis of multiple sclerosis was positively correlated with anxiety and depression. Sometimes,

then, relying on a humor coping strategy may prevent individuals from finding better strategies to ease burdens that cause negative feelings. Humor is a coping mechanism for stress but may not be a good strategy if it serves a dysfunctional purpose. Our humor styles and the reason we use humor matter may interact with humor's ability to lower stress. Keep in mind that the claim that humor helps us to cope with stress does not imply that humor is better than other stress relievers. We need more research for such comparisons and conclusions. Such research needs attention to humor definitions or specific humor styles to reduce some ambiguity in measuring humor in health studies (Fritz, Russek, & Dillon, 2017).

Beliefs and behavioral change

Health psychologists study beliefs about our health. Choices we make to cope or change to healthier behaviors depend on whether we believe we have the ability to control our health (e.g., *I can't say "no" to cookies*), whether we take threats seriously (e.g., *Does smoking really raise my risk of lung cancer*?) or we think we are not susceptible to disease (e.g., *Other people get diabetes, not me*.). The study of beliefs helps researchers identify barriers to maintaining health and the likelihood individuals will change their behavior.

We also have beliefs about humor and its effect on health. Consider the belief that having a good sense of humor means living longer. If humor benefits our health, should we believe that it will help us live longer? Evidence suggests that a belief that humor promotes longevity is unwarranted. Individuals having a strong sense of humor do not seem to live longer than others (Svebak, Romundstad, & Holmen, 2010). In fact, they reported that professional comedians tend to die at a younger age than other entertainers, such as dramatic actors. Why might this be so? One idea is that having a strong sense of humor, which professional comedians have, may mean not taking personal health seriously and therefore not doing enough to prevent problems. For example, Abo, Slater, and Jain (2017) found that serious conditions such as food allergies were often the butt of comedians' jokes which reduced their perceived seriousness and threats to our health. Further, comedians report chronic stress in their job because they frequently deal with hecklers (i.e., physical and emotional attacks) and an intense fear of failing material.

Social psychologists find that exposure to advertisements shapes our attitudes and beliefs. For example, advertisements have the power to persuade people to stop smoking, make healthy lifestyle choices, or engage in positive behaviors such as flossing. Health psychologists study the role of humor in advertisements that promote healthy behaviors and disease prevention. Advertisements use pictures and words to attract people's attention; humor also attracts our attention and improves the memorability of messages (see the humor effect in Chapter 1 "Cognitive Psychology" and an in-depth examination of humor in advertisements in Chapter 10 "Applied Psychology").

To illustrate, Blanc and Brigaud (2014) studied the effectiveness of messages in advertisements for health problems caused by alcohol, tobacco, and obesity. They noted that past research showed that ads that invoked negative feelings usually are ineffective. Humor invokes positive feelings. Humor may contribute to advertisements' effectiveness because it promotes a positive attitude toward the message.

In their study, Blanc and Brigaud (2014) used messages that were either humorous (e.g., *Drinking can cause memory loss, or worse, memory loss*.) or nonhumorous (e.g., *Alcohol is responsible for around 10,000 cancer deaths*.). In their first experiment, participants viewed 48 advertisements at their own pace. The time taken to view each ad served as the dependent measure. The more time participants viewed the ad, the more time they had to process the message. Results indicated that for all three health concerns (alcohol, tobacco, and obesity), humorous messages were viewed longer, roughly one second longer (see Figure 7.3), implying participants better processed the message in humorous advertisements. Blanc and Brigaud (2014) noted no gender differences in viewing times.

In their second experiment, Blanc and Brigaud (2014) assessed whether memory was actually better for the humorous advertisements, as longer viewer times in Experiment 1 suggested would be a byproduct of better processing. Memory was tested one week later in a surprise memory test. In addition to memory, they tested whether participants were convinced of the ads' claims by collecting ratings while the ads were viewed. Humorous ads received higher convincingness ratings than nonfunny ads. In the recognition memory test, participants decided whether the test item was the original message or a close paraphrase (e.g., *Drinking can provoke memory problems. Or worse, memory problems*.). Memory of exact wording was better for original humorous messages than original nonhumorous messages, but for paraphrases, no advantage for humor was observed. These findings suggest that humor in ads helped both belief in the claim and memory for its exact wording, but that memory of the gist of the message did not benefit more from a humorous delivery.

Blanc and Brigaud's (2014) study supports the idea that health messages framed humorously benefit attention (recognition memory) and attitude toward them (convincedness) due to the positive response to humor. Another way to frame the findings, humor in the ad is a tool for emotion management. Instead of threatening or inducing fear about the negative

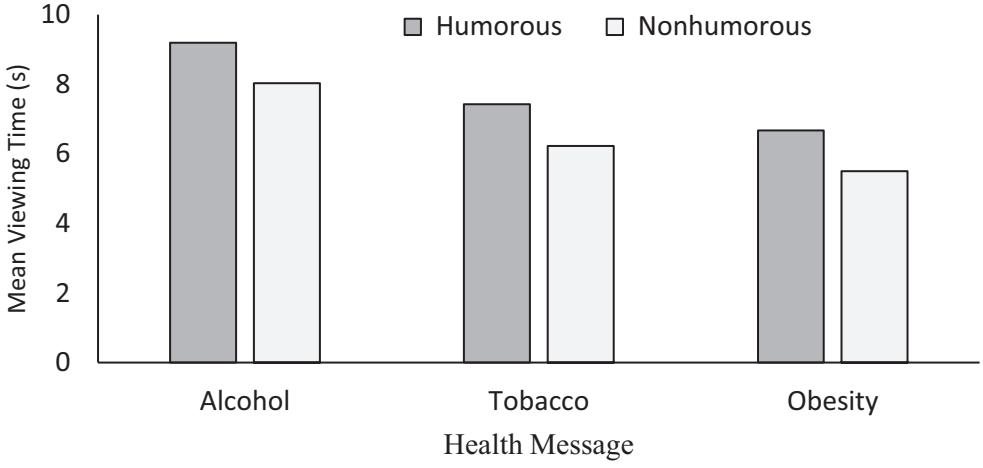

Figure 7.3 Mean viewing time (in seconds) for humorous and nonhumorous messages of three different health problems.

Source: Blanc & Brigaud, 2014.

aspects of unhealthy behavior, humor helps viewers experience positive emotions with the message. Extending this idea, humor in any medical intervention may help patients dealing with the fear of uncertainty or loss or scary treatments. The use of humor in medical interactions is explored further in Chapter 9 "Clinical Psychology" (therapists using humor with clients).

Overall critical evaluation of health and humor research

There is something about the claims in this chapter that sound too good to be true: humor helps boost the immune system so we can resist attacks; it increases our pain tolerance so that we can function longer or better when pain is present; it buffers stress and helps us relax, enabling us to resist the negative effects of stress; it releases endorphins and dopamine that work in neural networks that help us feel good about repeating painful or stressful behavior. There are other claims about humor benefits on health, such humor acts as a laxative (Morreall, 2017). As we question these findings, and search for alternative explanations, we can also look at the methodology and interpretation of research for possible issues.

First, the reviewed studies in this chapter mostly used brief humor exposure times between 10 and 30 minutes. But why? The answer likely is tied to the physical response. For example, aerobics for five minutes a day may not be enough to benefit from exercise; the duration is determined by how long it takes to get the heart rate up, lungs and muscles exerting, and calories burning. With humor, the time may be based on how long it takes for responses from positive feelings, mirth, or laughter to occur. One laugh isn't enough, just as doing aerobics for five minutes isn't enough to be effective, but we don't need to laugh continuously just as we don't need to exercise all day long. To understand the parameters of cause and effect, more research is needed on the frequency of exposure for the best effectiveness of humor on health, for both acute and chronic illnesses or for different types of stress.

Second, health psychologists noted that humor is often better than watching documentaries or sitting in silence, but for the most part, they do not claim that humor is better than drug therapy and other proven therapies used to treat stress and pain. Just as an apple a day keeps the doctor away should not be interpreted as eating apples is all the medicine you need to be healthy, laughter as the best medicine should not be interpreted as humor is all you need to keep your immunity up or live a stress-free life. At the same time, it could be important news that humor helps with immunity, tolerating pain, and buffering stress. Many people do not know this or do not know that research supports such anecdotal beliefs. On the other hand, many do not know the criticisms of humor and health studies, and do not question the findings. Respecting humor's value to our health allows it to be studied systematically (driven by theory and exploring boundary conditions). The findings of this research expand our repertoire of tools for living a healthy, quality life.

Third, across the studies, we have relaxed definitions of humor and laughter as well as cause and effects. Tightening definitions reduces noise and increases generalizability and replicability. For example, as noted by Papousek (2018), laughter is a physical activity that is not always in response to humor. When researchers report that adding simulated laughter to physical activity programs may help older adults increase aerobic endurance as well as mental health (Greene, Morgan, Traywick, & Mingo, 2016), it may not be humor itself that causes

improvement but enjoying healthy activities. Papousek (2018) noted that cheerfulness may be a stronger requirement for laughter being the best medicine. As she and others have pointed out (e.g., McGhee, 1999), having a sense of humor is not sufficient for many health benefits, including feelings of well-being (see Chapter 8 "Positive Psychology"), but health benefits from humor require practice and attention to roles it plays in our interpretation of events and the quality of our social interactions.

Lastly, the biopsychosocial model of health requires more research on the impact of social factors in humor's impact on our health. A majority of studies reported in this chapter focused on individuals filling out scales and reflecting on their own health and humor. Social interaction is important to humor's effect on health (Dunbar et al., 2012; Fritz et al., 2017). Future research needs more study of humor's function in a variety of social or cultural contexts, whether humor enhances benefits of social support needed for our health, or whether humor can reduce health/illness stigmas.

Recap

A healthy life is desirable, and to have one requires defenses against attacks to the body, mind, and spirit. Thus, findings that humor helps boost immunity, increases pain tolerance, and copes with stress support the need to study humor and how we can use it as a tool for maintaining a healthy life. Laughter in response to humor in particular is framed as a beneficial exercise of the respiratory and circulatory systems. Humor and laughter may cause the release of chemicals (immunoglobulin A, glucocorticoids, dopamine, and endorphins) for restoring the equilibrium needed to maintain physical and psychological health.

In general, the research reviewed here suggests that a single session of humor (e.g., 20 minutes) can result in biological and psychological changes compared to doing nothing or doing nonfunny activities. However, we need more research to understand whether biological responses to humor persist over long delays or interact with other variables (e.g., gender and humor styles). It is promising to find that humor can have such immediate results but reducing confounds and increasing experiment rigor in future research will help define the degree of health benefits (perceived or real) due to humor. Education on the psychology of humor is crucial in raising the respect of health providers and the general population for using humor to maintain or improve health.

Suggested readings

Cousins, N. (1979). *Anatomy of an illness*. New York: Norton.
Frankl, V. E. (1959/2008). *Man's search for meaning*. Boston, MA: Beacon Press.
Martin, R. A. (2001). Humor, laughter, and physical health: Methodological issues and research findings. *Psychological Bulletin*, *127*, 504–519.

Suggested class activities

Activity 7.1. Critical evaluation

Discuss the findings that watching a video that makes you laugh throughout a 20–30 minutes exposure is enough to stimulate the production of chemicals that boosts immunity. a)

Critically evaluate the findings. b) Generate questions for future research that may define the boundary conditions of when the effect occurs (e.g., when does shorter or longer exposure become less effective?). Given the complexity of the definition of humor and the various ways it appears in the media (e.g., TV sitcoms and comedy movies), how might you manipulate the material in a study to determine the necessary humor experience for enhancing the immune system?

Activity 7.2. Design an intervention

A major problem today is opioid addiction, a problem that many people develop after chronic pain entered their life. Design a study that could investigate whether humor can be part of the solution. Could humor therapy reduce the need for opioids? a) Use PsycInfo to read about issues and problems in the treatment of opioid addiction; b) draw on paradigms from humor research in health psychology that suggest an appropriate intervention or treatment; c) suggest a follow-up procedure that allows for testing a long-term effectiveness of your humor treatment.

Activity 7.3. Gallows humor

Sliter et al. (2014) noted that gallows humor is common in firefighters, police, and medical professionals, occupations where individuals deal or face death regularly. They cited Garrick (2006) who said gallows humor "was the only way to get by" (p.267). Use the health psychology biopsychosocial model and discuss how gallows humor may help cognitive, behavioral, or biological processes for buffering stress in these workers.

Activity 7.4. Compare primary literature and popular press

Research findings on health psychology, and humor in particular, frequently are paraphrased for the masses, such as, "One minute of anger weakens the immune system for 4–5 hours. One minute of laughter boosts it, for over 24 hours" (www.facebook.com/ForwardSteps/). Are such paraphrases correctly abstracted from the original research? Find a popular press article (newspaper, magazine, or TV news segment) that cites its source and compare it to the primary paper. Critically evaluate how well the secondary source reported the findings of the primary research. Did the secondary report get the facts correct? Did it ignore important limitations or qualifications that the primary researchers made? Write your evaluation of both sources.

Activity 7.5. Policy recommendations

One goal in health psychology is to help set public policy to improve or sustain the common good. We can thank health psychologists for helping to improve food choices in vending machines at schools or improving gym classes to combat childhood obesity. Select a health problem and draft a policy memo to a (hypothetical) policymaker that a) identifies a problem, b) considers alternatives (one which involves humor), and c) makes a recommendation. You may want to consider a particular problem for a specific age group, occupation, or medical condition. Do some research on demographics to convey the scope of the problem (e.g., 70%

of adults have sleep problems), and draw on social activism resources to empower your persuasion that humor may contribute to a solution.

Study guide

Concepts and theories

Coping mechanisms
Health beliefs
Immunity resistance
Pain tolerance
Placebo effects
Recidivism
Self-regulation
Stress buffer
Type A and B personalities

Review questions

1. Summarize the explanations for how humor helps the immune system, pain tolerance, and stress.
2. Identify and discuss appropriate comparison groups needed in an experiment used to show that humor helps our health. Keep in mind the need to control for placebo effects.
3. Explain why beliefs about our health matter to making changes to our health habits. Explain how humor may facilitate changing our beliefs.
4. Individuals with Type A personalities who have coronary heart disease liked aggressive humor more than patients with Type B personalities (Goldstein et al., 1988). This pattern was not found with individuals who did not have coronary heart disease. Which health model may help understand these results?
    a. diathesis stress model
    b. equilibrium
    c. biomedical model
    d. self-regulation model
5. Which of the following are physical responses to attacks to our health?
    a. increased secretory immunoglobulin A
    b. decreased secretory immunoglobulin A
    c. Increased glucocorticoids in saliva
    d. increased levels of glucocorticoids in the blood
6. Tolerating pain helps us cope with it and function better when experiencing it. Findings suggest that
    a. tolerance increases for blood pressure discomfort but not for cold exposure
    b. tolerance increases following exposure to comedies but not to tragedies
    c. tolerance increases for cardiac patients and diabetics
    d. tolerance increases following exposure to comedies, tragedies, and horror films
7. If humor helps keep us healthy, why might professional comedians not live as long as other entertainers?
    a. Comedians' sense of humor is not the same as those in other occupations.
    b. The entertainment industry is a tough life.
    c. Comedians might not take their health seriously.
    d. Comedians do not make good research participants.

8. Health messages (as in advertisements) may raise awareness by educating the public or by persuading behavioral change. Why might humor in the message increase the effectiveness of an advertisement?
   a. Humor reduces the believability of the message.
   b. Humor draws viewers' attention and induces a positive attitude toward the message.
   c. Humor helps us like the negative, unhealthy images of sickness or death.
   d. Humor frames the message in the positive (what to do) rather than the negative (what not to do) to maintain health.

Answers to multiple choice: 4) a; 5) a; 6) d; 7) c; 8) b

8 Positive psychology

Learning objectives

1. Understand the positive perspective of psychology.
2. Know the character strengths and humor's association with them.
3. Explore the connection of humor to life satisfaction and well-being.
4. Consider interactions of positive psychology with the other perspectives of psychology (especially cognitive, personality, social, and developmental).

Assumptions of the field

1. Psychologists are obligated to study what humans do well.
2. Excellence and the good life are authentic areas of scientific inquiry.
3. Health, quality of life, and happiness are desired states.
4. A holistic view of the person is desirable (not just relying on one perspective).

Positive perspective and principles

Positive psychology is an organized response to psychology's focus on what is wrong with behavior, such as social maladaptive behavior, clinical disorders, or failing to learn. It became a separate field of study near the turn of the 21st century through the leadership of Martin Seligman. It aims to study what is desirable or right about behavior, such as happiness, caring about other people, aging well, and having a good sense of humor. It is concerned with achieving and experiencing the good life, for both individuals and groups (e.g., family, school, and workplace). It explores what makes life worth living (Peterson, 2006).

Using the methods of experimental psychology, positive psychologists study factors that affect positive behaviors. One goal is to identify the means to enhance these behaviors and improve the quality of our lives. As in the other fields of experimental psychology,

researchers develop scales and tasks to a) measure the degree to which positive behaviors describe individuals, b) explain differences as a function of these positive traits and behaviors, and c) identify factors that predict positive behaviors.

Core concepts

Throughout the positive psychology literature, a number of concepts connect to life satisfaction. **Well-being** is the subjective state of being satisfied with our lives because it is full of meaning, pleasure, and desired connections to the world. One way psychologists measure satisfaction is to ask participants, *If you could live your life over, what would you change?* Dissatisfied people tend to change many things, whereas satisfied people do not. A life of meaning involves taking responsibility to make the world a better place and finding your purpose in life. Subjective well-being concerns both a cognitive component–the evaluation of satisfaction–and an affective component based on the balance of positive and negative emotions. In interviews with middle-aged and older adults, Ryff (1989) found that a sense was humor was highly valued in defining ideal and well-adjusted individuals.

Similarly, **happiness** is extensively studied in positive psychology. Tragic events may be interpreted with a sense of humor which maintains a state of happiness (Lyubomirsky & Tucker, 1998). In fact, in their study, Lyubomirsky and Tucker (1998) found that sense of humor predicted happiness. They suggested that in the face of negative life events individuals who are less skillful in cognitive appraisal cannot use strategies to maintain happiness. Because their research was correlational, it is not clear whether humor helped increase happiness or whether happiness increased humor use. However, it is intriguing that humor is framed as a mechanism for self-regulation, not just a coping mechanism, with negative life events.

Character strengths are traits reflected in thoughts, feelings, and behaviors. They are virtues and morally valued, which makes them different from abilities or talents (which need no moral associations). Cultures recognize and admire them. Character strengths contribute to feelings of well-being and fulfillment. Furthermore, societal practices cultivate them. Most importantly, like a sense of humor, certain character strengths are present or absent in degrees within individuals (Peterson & Seligman, 2004).

Flow describes the state of deep engagement with tasks. When we are in flow, time passes quickly, and we welcome challenges. Sometimes we experience flow when writing a term paper, playing a musical composition, or reading a map while planning a road trip. Flow is a state that is correlated with well-being, character strengths, and happiness. It connects to humor in that it may occur during play and social interactions when our attention is goal-directed (Csikszentmihalyi, 1997).

Questions asked by positive psychology researchers investigating humor include: how common is humor compared to other character strengths? Does humor contribute to life satisfaction and well-being? Is the character strength of humor associated with cognitive variables (e.g., time perspective), personality characteristics (e.g., extroversion), and development (e.g., successful aging)?

Table 8.1 Character Strengths Belonging to Six Categories of Virtues

Courage:	authenticity, bravery, persistence, zeal
Humanity:	kindness, love, social intelligence
Justice:	fairness, leadership, teamwork
Temperance:	forgiveness, modesty, prudence, self-regulation
Transcendence:	appreciation of beauty, gratitude, hope, humor, religiousness
Wisdom and knowledge:	creativity, curiosity, open-mindedness, love of learning, perspective

Table 8.2 Factors of VIA-IS (Peterson & Seligman, 2004)

Emotional strengths	bravery, hope, self-regulation, zest
Intellectual strengths	appreciation of beauty, creativity, curiosity, love of learning
Interpersonal strengths	humor, kindness, leadership, love, teamwork
Strengths of restraint	fairness, forgiveness, modesty, prudence
Theological strengths	gratitude, religiousness

Character strengths

To understand our behavior, we can identify our personal strengths, much like we identify our personality traits. Peterson and Seligman (2004) created an inventory of 24 character strengths called Values in Action-Inventory of Strengths (VIA-IS), which individuals take to identify which character strengths are most present in their lives. Table 8.1 lists these character strengths organized into six categories of virtues (see Seligman, Steen, Park, & Peterson, 2005, for concise definitions of each strength). Note that humor is a character strength belonging to transcendence, the virtue concerned with forging connections with the universe; these connections provide meaning to life.

Peterson and Seligman (2004) factor-analyzed scores on the VIA-IS from over 150,000 participants to derive five factors of strengths, shown in Table 8.2. Character strengths load on the same factor when they share similar responses. These empirically derived factors work in research much like the Big Five factors do in personality. As you can see, humor is an interpersonal strength. Ten questions on the humor subscale of the VIA-IS assess people's humor with agreement on a scale from 1 to 5 to questions such as *I love to make other people happy*. and *I welcome the opportunity to brighten someone else's day with laughter*.

Humor as a character strength

Peterson and Seligman (2004) defined humor as liking to laugh, making others smile, and seeing the light side of life. Their definition focused on experiences with humor, going beyond merely telling jokes. Humor is valued as a virtue when we use humor to obtain life satisfaction and enrich the lives of others. As a character strength, we use humor to make others feel good, make light of bad experiences, connect with others, or appreciate our own humanity when we make mistakes. In this view, because a sense of humor helps us forge connections to the world and provide meaning to life, humor is not an escape from reality but enhances reality.

One question we can ask is whether scores on the humor subscale of the VIA-IS correlate with the other character strengths. They do. Researchers find humor correlates mostly with the virtues of humanity (love, kindness, and social intelligence) and wisdom and knowledge (creativity, curiosity, open-mindedness, love of learning, and perspective) (Park, Peterson, & Seligman, 2004).

A second question we can ask is whether humor scores on the VIA-IS predict other positive outcomes. They do. In one study, humor scores predicted life satisfaction and did so independently of other character strengths of courage and kindness which also predicted satisfaction (Peterson, Park, & Seligman, 2005). Peterson et al. (2005) noted that these strengths contribute to feelings of well-being during recovery after a serious illness. Further, Müller and Ruch (2011) reported the VIA-IS humor scale correlates with playfulness and socially warm behaviors.

Humor researchers sought further evidence to support the claim that humor is a virtue. Might we express certain virtues, such as justice, with humor? Beerman and Ruch (2009) asked participants for examples from their personal experience of virtuous behavior. The researchers examined specifically those experiences centered on the virtues of courage, humanity, justice, temperance, transcendence, and wisdom. Participants explicitly rated whether they found humor to be obstructive, beneficial, or indispensable in the experience. For example, Beerman and Ruch (2009) asked, *In everyday life, people are sometimes serious and sometimes humorous. This is also the case in situations where virtues occur. When considering all situations in which the virtue X is shown, in how many of them is this done in a humorous way*, where 0 = never and 100 = always?

Results indicated that participants reported humanity and justice as most important in their virtuous experiences. Humor was used most often in their recalled experiences of humanity and wisdom. When asked to describe a situation where they used humor when acting virtuously, 80% of participants were able to do so. Beerman and Ruch (2009) noted this high rate is remarkable given the difficulty of recalling a past situation in which they used humor to achieve the virtuous behavior. Their data support the inclusion of humor as a virtue and show how much humor is entrenched in our lives.

Humor is positively related to life satisfaction and happiness. Ruch, Proyer, Harzer, Park, Peterson, and Seligman (2010) collected data from 351 participants on a German version of the VIA-IS and a variety of measures on satisfaction with life and happiness. They also collected peer ratings of the participant using the VIA-IS. Ruch, Proyer, Harzer, et al. (2010) reported that humor significantly correlated with satisfaction about one's leisure time, one's friends, one's past, one's present, and time spent with friends during a typical month. These correlations indicate that when judging our life satisfaction, reflections of the past establish feelings of well-being and contentment. Reflections on the present establish happiness and flow. Reflections of the future establish optimism and hope.

Another interesting finding from Beerman and Ruch's (2009) study is that satire or sarcasm were used mostly to achieve justice, whereas benevolent forms of humor were used for the other virtues. This finding supports the idea that sometimes mockery or ridicule, which might be described as negative humor by humor researchers working in the other perspectives, can be used morally to uphold social norms and advocate for justice. Such humor is not negative but positive (virtuous). Context or function may help determine whether humor

is used virtuously. Clearly, researchers from all psychology perspectives need to be careful that they are not adding noise to their data sets with broad labels or assumptions, misclassifying the nature of the humor they study, or expecting participants to hold the same ideas of humor as they do.

Humor is a character strength when we use it to connect with others and make ourselves or others feel good through amusement. It usually is not virtuous when we use humor to disparage or ridicule others. Boorish and mean-spirited humor do not correlate with VIA-IS, and this negative humor use is related to the absence of temperance, humility, and justice (Müller & Ruch, 2011). It is perhaps this negative usage of humor that motivated Maslow (1954) to assert that self-actualized people are typically not perceived by others as funny. However, as noted earlier, sometimes we use negative humor to promote justice. This use of disparagement or ridicule can be considered virtuous. However, just as the intention of comedians telling racist jokes may be misunderstood by their audience (see Chapter 4 "Social Psychology"), it is possible that the intention of the person using corrective humor is misinterpreted as mean-spirited.

Benevolent and corrective humor

How can we distinguish humor that disparages or ridicules as virtuous or nonvirtuous humor? As noted earlier, we know that sometimes we use negative humor to promote justice. Also, recall from Chapter 4 "Social Psychology" that some professional comedians reported using racist humor to raise awareness of social injustice. To help clarify the virtuous forms of mockery, ridicule, and disparagement humor as they relate to positive outcomes, Ruch and Heintz (2016) developed a scale to measure beneficient and corrective humor (BENCOR). It assesses the degree of using humor benevolently for promoting goodwill and for using it to correct other's mistakes.

Both benevolence and corrective humor are positive humor uses. Benevolent humor occurs because we understand the world is not perfect. We make light of our imperfections. An example from the six statements measuring benevolent humor on the BENCOR scale is: *When my humor is aimed at human weaknesses, I include both myself and others*. Corrective humor may occur because we use humor to correct the immorality of our behavior. An example of the six statements measuring corrective humor on the BENCOR scale is: *I parody people's bad habits to fight the bad and foolish behavior*.

Ruch and Heintz (2016) collected responses from 340 German-speaking participants on the VIA-IS, BENCOR, SSHS (see Chapter 3) and a mockery scale. Scores on the SHS positively correlated with the benevolent questions of the BENCOR. Corrective humor scores correlated with mockery scores. Using regression analyses, they found five character strengths on the VIA-IS explained the variance for benevolence: forgiveness, love of learning, hope, social intelligence, and zest. Three character strengths on the VIA-IS explained corrective humor: bravery, fairness, and love of learning.

Subsequently, Heintz et al. (2018) published BENCOR scores from 22 countries (translated in the language of respective countries). Most participants were young to middle-aged adults. Whereas their main purpose was to validate the scale as useful in cross-cultural research, their data showed many similarities across countries. For differences found on the BENCOR,

differences in cultures could explain some variance. For example, in Malaysia, interviews with participants suggested that correcting others' incorrect behavior with humor was expected mostly between friends, whereas in India, corrective humor was not used much in society. Heintz et al. (2018) noted that benevolent humor used to arouse sympathy for the human condition increased with age, whereas corrective humor was most used by middle-aged adults and least used by older adults. In looking at gender, they found that men used corrective humor more than women, but genders did not differ in use of benevolent humor.

Humor's relation to other positive behaviors

Does humor make us better, happier people? Edwards and Martin (2014) conducted research to show that humor was associated with happiness. They compared 176 participant responses on various measures including the VIA-IS and HSQ (see Chapter 3). They predicted that affiliative and self-enhancing humor styles would correlate with positive attributes of well-being, happiness, and optimism, but that aggressive and self-defeating humor would not.

Edwards and Martin (2014) found that affiliative humor style and self-enhancing humor correlated strongly with VIA-IS humor. As predicted, weaker correlations were found with VIA-IS humor and aggressive and self-defeating styles. In examining other attributes, they found that mental toughness, needed for resilience, also correlated with VIA-IS humor and affiliative humor style.

Going beyond correlations, Edwards and Martin (2014) examined the unique contributions of each style to predicting positive outcomes (happiness, resilience, and morality). Interestingly, they found that negative humor styles added significantly to the prediction of positive outcomes. The important take-away message is that when predicting positive outcomes, we need to look at both positive and negative uses of humor. The VIA-IS scale examines only virtuous (good) functions of humor. However, the HSQ significantly contributed to predicting positive outcomes above and beyond the VIA-IS measure of humor.

Happiness is correlated with self-enhancing humor style and low suppression of emotions (Paez, Mendiburo-Seguel, & Martinez-Sanchez, 2013). Paez et al. (2013) studied emotional regulation and its influence on happiness and well-being. They expected that individuals who had difficulty expressing their emotions and perhaps even distinguishing them from physical feelings (alexithymia) would have problems connecting with others and coping with stress, and thus have lower feelings of well-being or happiness. They gave their sample of 355 psychology undergraduates the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999), a psychological well-being scale (Ryff, 1989), Martin et al.'s (2003) HSQ (see Chapter 3) and a version of the Big Five personality inventory. Their data showed that, in addition to happiness and well-being being strongly correlated, happiness positively correlated with all the personality factors except for the negative correlation with neuroticism. Yet, even when personality and expressions of emotions were controlled for, analyses found that affiliative humor style correlated with well-being, whereas self-enhancing humor style correlated with happiness. Paez et al. (2013) suggested that low critical, self-enhancing humor helps individuals cope with stress by increasing our self-image, which helps increase feelings of well-being.

In looking at aging, humor may influence positive outcomes, such as optimism and self-esteem of older adults (Francescato et al., 2017). It also may influence negative out-

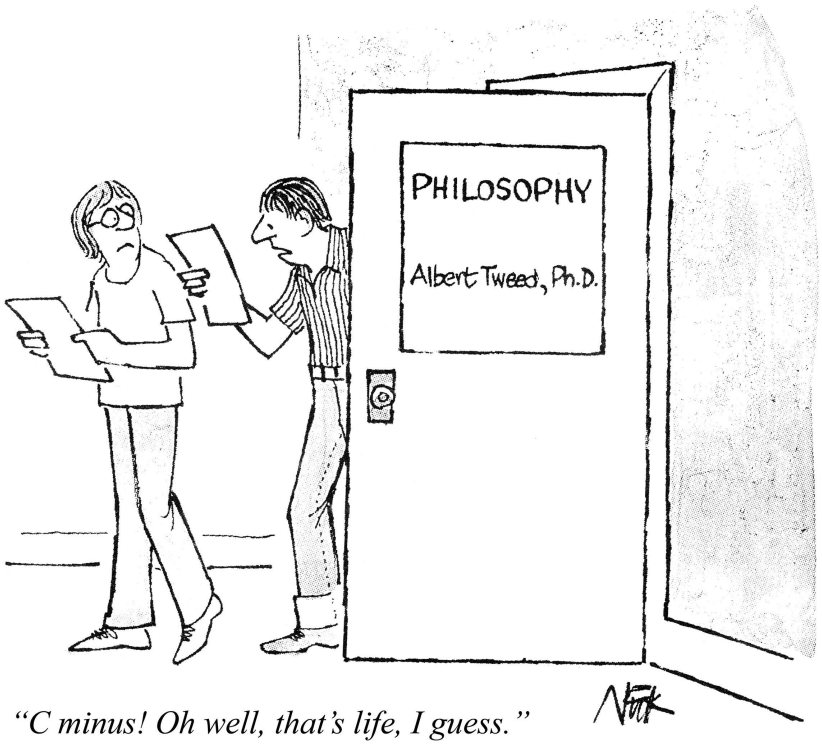

Figure 8.1 A positive world view and subjective well-being are correlated with an appreciation of humor. Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

comes, such as anxiety and depression. For example, Thorson, Powell, Sarmany-Schuller, and Hampes (1997) examined humor across the lifespan for both positive and negative outcomes. They measured humor on the MSHS (see Chapter 3). They noted that as individuals age, death anxiety may increase and yet older adults facing death report fearing death the least. They suggested that humor may serve an adaptive purpose; humor is a resource that older adults draw on for facing the inevitable. Thorson et al.'s (1997) data from 426 adults, aged 18 to 90, showed a significant negative correlation between total MSHS score and death anxiety for men (not significant for females). More importantly, on looking at the specific factors of the MSHS, men and women with higher death anxiety showed lower coping humor and humor appreciation. As found in other studies, optimists had higher humor ratings; the cartoon depicted in Figure 8.1 reflects an optimistic philosophy. Consistent with this research, Monahan (2015) noted humor was very important to help older adults maintain a meaningful life with enjoyment, creativity, and zest.

Individual differences related to humor as a character strength

Peterson and Seligman (2004) suggested that each individual possesses 5 signature strengths of the 24 character strengths on the VIA-IS. These signature strengths describe

the individual's identity and sense of self, much like how a set of personality traits uniquely describe an individual. According to Peterson and Seligman (2004), the top five strengths in their sample–hope, zest, gratitude, love, and curiosity–correlated with well-being. In one study, the top five strengths endorsed by college students were love, humor, kindness, social intelligence, and open-mindedness (Proctor, Maltby, & Linley, 2011). All but humor uniquely predicted subjective well-being, whereas humor marginally did so.

Humor styles (see Chapter 3 "Personality Psychology") show correlations to suggest that our humor style is associated with measures of well-being. Dozois (2018) noted in his presidential address to the Canadian Psychological Association that humor is a means to living a fulfilling life. He reviewed literature that found that self-enhancing humor positively correlated with well-being, self-esteem, optimism, and cheerfulness but negatively with anxiety, rumination, depression, and personal stress. Affiliative humor positively correlated with intimacy, social support, and relationship satisfaction, but negatively correlated with loneliness and interpersonal anxiety. Self-defeating humor style was positively associated with anxiety and depression and negatively with self-esteem and optimism. Lastly, aggressive style was positively correlated with hostility and negatively correlated with relationship satisfaction and agreeableness.

Culture may influence which five strengths comprise signature strengths, American and Japanese young adults completed online questionnaires; most, but not all, were college students. Americans reported kindness, love, humor, authenticity, and gratitude as their top five character strengths. Japanese reported gratitude, kindness, fairness, love, and hope as their top five, and humor ranked sixth. In general, both samples ranked strengths similarly in that strengths near the top or bottom for one sample were in similar locations for the other sample (Shimai, Otake, Park, Peterson, & Seligman, 2006). Humor did not differ by gender. Zest and hope were most associated with happiness, and humor significantly correlated with happiness for the American sample. For the Japanese sample, zest and curiosity were most associated with happiness and humor did not significantly correlate.

Engaging in humorous activities or exercises typically results in increased feelings of emotional well-being and optimism (Crawford & Caltabiano, 2011). The influence of these activities on positive outcomes may depend on our personality and humor styles. Humor styles mediate the associations between personality Big Five factors (e.g., extroversion) and various positive outcomes such as subjective well-being and relationship satisfaction. These associations suggest that humor may be one mechanism by which personality traits influence social and emotional functioning (e.g., Cann, Norman, Welbourne, & Calhoun, 2008; Jovanovic, 2011).

For example, in a study on secure attachments in relationships, Kazarian and Martin (2004), studying Lebanese participants, found self-defeating humor style predicted an anxious attachment style and self-disparaging humor style predicted an insecure attachment style. Affiliative and self-enhancing humor, on the other hand, showed positive correlations with well-being and life satisfaction. Further, Liu (2012), studying participants from Hong Kong, reported higher self-esteem and happiness for affiliative and self-enhancing humor styles.

Recall from Chapter 3 "Personality Psychology" that affiliative and self-enhancing humor styles are typically associated with extraversion. Jovanovic (2011) examined individual

differences in subjective well-being, humor styles, and Big Five personality factors. Specifically, he examined whether the relationship between personality (extroversion and neuroticism) and subjective well-being (satisfaction with life and positive emotional balance) was mediated by humor styles.

Jovanovic's (2011) analyses of correlations showed that affiliative humor mediated neuroticism and affective well-being. That is, individuals high in neuroticism reported using less affiliative humor and had lower affective well-being. Jovanovic (2011) noted this state of affairs could mean those high in neuroticism lose out on the benefits of humor's nurturance of social intimacy and humor's positive emotion resources for coping with negative affect. Low-affiliative humor style is harmful to one's well-being.

In addition, Jovanovic (2011) found that self-enhancing humor style played a mediating role between personality and the cognitive component of well-being, life satisfaction. Those high in extroversion reported using self-enhancing humor more and had higher life satisfaction. Those high in neuroticism reported using less self-enhancing humor and reported lower life satisfaction. Jovanovic (2011) noted that self-enhancing humor functions as a coping mechanism; coping humor may help with cognitive appraisal of stressful situations as well as maintaining hope and optimism during stressful times.

Social intelligence is another individual difference associated with humor. It includes patience, cooperativeness, confidence, sensitivity, tact, and a sense of humor. Hooda, Sharma, and Yadava (2009) examined social intelligence and positive outcomes, specifically happiness, life satisfaction, and optimism. They found that sense of humor significantly correlated with happiness and life satisfaction. Furthermore, sense of humor accounted for 11% of the variance in predicting happiness when sensitivity and memory were included in the multiple regression; however, as a lone predictor, it accounted for only 2% of the variance of happiness.

Older adults may be open to happiness or are happier because of the correlates of aging and wisdom that comes from a lifetime of experience (Moxley, Ericsson, Charness, & Krampe, 2012). Developmentally, older adults likely review their life to help figure out life's meaning. Lurie and Monahan (2015) reported on the various ways older adults' use humor. They found that humor serves to soften the tragedies of the past and allow insight and wisdom to find closure for these tragedies and to find satisfaction with life. In another study, Ruch, Proyer, and Weber (2010) examined humor across the lifespan, using the VIA-IS, Satisfaction with Life Scale, and Orientation to Happiness scale. Over 600 participants in their sample were older than age 60. At every decade of life, humor correlated with a pleasurable life, satisfaction of life, and having a meaningful life, with one exception; those over 70 did not show a significant correlation between humor and having a meaningful life. We need more time for longitudinal studies to complete before we can examine changes across one's lifespan concerning relations between humor and positive outcomes.

Intuition

Intuition plays a role in determining our meaning of life. Recall from Chapter 1 "Cognitive Psychology", Ventis (2015) found participants high on intuitive thinking (and thus are low on reflective thinking) scored lower on a humor test that required participants to provide

humorous endings to joke stems. Using the Cognitive Reflection Test, where higher scores indicate reflective thought and lower scores indicate intuitive thought, Ventis (2015) found humor scores positively correlated with scores on the Cognitive Reflection Test. The more the reflective thought, the higher the humor score.

Also using the Cognitive Reflection test, Heintzelman and King (2016) studied intuition and respondents' meaning-in-life scores, both with correlational and experimental studies. When we do not know the meaning of our life, we must spend cognitive effort to construct it. When we have a clear meaning of life, intuition likely is engaged because it uses less effort than reflective thinking. In their research, they examined people's trust in their intuition. Heintzelman and King (2016) manipulated instructions on a writing task by having participants focus on using intuition successfully, failing when using it, using thoughtful reflection successfully, or failing when using it. After this writing task, they provided meaning-in-life and trust-in-intuition ratings. Heintzelman and King (2016) found that, whereas the writing about intuition resulted in a higher belief in intuition ratings, the instruction manipulations did not affect meaning-in-life ratings despite finding correlations between belief in intuition and meaning in life. They found that meaning-in-life ratings increased with trust in intuition. Although Heintzelman and King (2016) did not study humor, their data suggest that a nonreflective thinking style produces positive outcomes (meaning in life). More research is needed, with more rigorous manipulations and perhaps with varied humorous materials, to examine the relation between processing demands of cognitive thinking styles and how humor may influence finding life's meaning.

Time perspective

Past, present, and future walk into a bar. It was tense. As covered in Chapter 1, time perspective concerns thinking about our past, present, and future. Research on time perspective and well-being generally finds that dwelling on past negative events is correlated with low self-esteem, depression, and having fewer close friends. Those who dwell on positive past experiences, however, report higher self-esteem, energy, social support systems, and happiness. As noted in Chapter 1, a balanced time perspective is optimal. The profile for an optimally balanced time perspective consists of low scores on past negative and present fatalistic factors coupled with moderate to high scores on past positive, present hedonistic, and future factors.

Drake et al. (2008) gave 260 participants the Zimbardo Time Perspective Inventory, a happiness scale, and a mindfulness scale. Only 13 of their participants had the balanced time perspective profile! This small group did have higher scores on the happiness scale (mean of 4.41 compared to 4.03), but small samples often have extreme means compared to large samples. When correlating the time perspectives separately with happiness, Drake et al. (2008) found that, as expected, past positive and present hedonistic correlated with happiness, negatively with past negative, and did not significantly correlate with present fatal or future time perspectives. All perspectives but future correlated with mindfulness.

When participants recall memories of past experiences, measures of well-being are highest for positive memories than for negative ones. However, Strack, Schwarz, and Gschneidinger (1985) found this was true only when the focus of memory was on *how* the event unfolded. When participants wrote about *why* the event occurred, even negative memories

resulted in ratings of well-being as high as found with positive memories. Thus, the relation between well-being and past positive or past negative time perspectives is not straightforward. Further, Strack et al. (1985) found detailed memories led to higher ratings of well-being. Given that humor may enhance memory for the event (see the humor effect in Chapter 1), more research is needed to learn how humor-infused positive and negative memories influence feelings of subjective well-being.

Can humor improve subjective well-being?

It is likely that humor improves subjective well-being given the correlation between the two. Humor may serve as a defense mechanism that keeps psychological negatives at bay. In studying successful positive aging in older men, Valliant (2004) classified humor as part of a mature defense system. He found these humor defenses were present in men who were happy and healthy but absent in men who were sad and unhealthy. These defenses predicted mental health but not their physical health.

A comparison of the research paradigms conducted by positive and health researchers who ask whether humor can improve outcomes reveals an interesting difference. Health psychologists typically examine health outcomes after presenting participants with funny stimuli. For them, the intervention is exposure to humor. Positive psychologists typically examine positive outcomes after participants engage in activities that involve writing about or using humor. For them, the intervention involves reflecting on and interpreting the meaning of humor to daily life.

To examine the influence of humor on well-being, Maiolino and Kuiper (2016) designed a study where participants wrote about positive humor experiences that occurred in their lives in the past two weeks. They compared this condition to two other conditions that positive psychologists knew increased subjective well-being–writing about gratitude or savoring positive experiences in their life. They added a control condition where individuals in a control condition wrote descriptions of the day's events. Maiolino and Kuiper (2016) found that humor, gratitude, and savoring moments in our past exercises increased well-being. Further, they measured participants' humor styles and found that well-being was greater for those with affiliative and self-enhancing humor styles and lower for those with aggressive and self-defeating humor styles. Maiolino and Kuiper (2016) suggested that humor, gratitude, and savoring past experiences might share an underlying commonality connected to positive social interactions.

In another intervention study, Crawford and Caltabiano (2011) examined the effect of practicing humor skills across eight weeks on emotional well-being. These humor skills included finding humor in everyday life, adopting a humorous attitude about yourself, and enjoying humor. These were adopted from McGhee's (1999) humor skills manual and included jokes and amusing stories to break up the reading material in the manual. Participants in the humor group met for one hour to complete the humor training exercises. Participants in a social condition met for one hour over tea; no training occurred but, of course, conversations sometimes included humor. A control group completed pre-and post-measures but did not meet. A follow-up measure was taken 13 weeks later. Results showed that humor training raised reported levels of self-efficacy, optimism, and perceived

control after the eight-week intervention and continued to rise 13 weeks later, whereas no change occurred for the social and control groups. Further, stress, perceived stress, and depression declined for the humor group immediately after training and remained low 13 weeks later, whereas levels were flat for the other two groups. These findings show that humor enhanced emotional well-being.

Similarly, Wellenzohn, Proyer, and Ruch (2016) conducted an online intervention study on humor and well-being. They compared the effectiveness of five different humor exercises. Participants were randomly assigned to one of the humor exercises or a placebo group (writing early memories). The humor exercises included a) writing three funny things experienced that day with a description of their feelings during the experience, b) remembering one funny experience from their past with as much detail as possible, c) counting and recording the number of funny experiences of that day, d) adding humor in their daily lives by adding activities such as reading the comics or watching funny movies, and e) using humor to think how a stressful situation that happened that day could have been solved in a humorous way. Participants completed the activity in the evening for seven days in a row. Measures of happiness and depression were taken a day after the seventh evening of exercises, and at delays of one, three, or six months afterwards.

Wellenzohn et al. (2016) reported that all humor activities increased happiness the day following the exercises (and the placebo group did not report higher happiness): only three activities were effective at each time period: a) writing three funny things, c) counting funny experiences, and d) adding humor. For lowering depression scores, all humor activities were effective the day after the end of the exercises and (b) remembering funny past experiences and (d) adding humor were still effective in lower depression one month afterwards.

An interesting point in their results concerns those low in humor as a character strength. Wellenzohn et al. (2016) found that even those low in humor as a character strength showed increased happiness and decreased depression afterwards. Also interesting in their findings, effectiveness occurred despite not controlling what kinds of humor participants expressed. That is, participants could have focused on negative humor functions or nonvirtuous humor but benefits still were observed. The use of humor interventions for those with depression is discussed in Chapter 9 "Clinical Psychology".

Cheng, Amarnani, Le, and Restubog (2018) blended interests in humor as a coping mechanism (see Chapter 7 "Health Psychology") and a means for increasing subjective well-being. They used health psychology's paradigm of exposure to humor (i.e., watching funny video) to show its effect on subjective well-being. Working from the superiority theory of humor, which states that we feel clever when we understand humor, Cheng et al. (2018) reasoned that humor allows the viewer to feel powerful because they were clever enough to do a cognitive reappraisal of a stressful event that converts a negative event into a funny one. Their participants watched a video that depicted aggression in the workplace where in the humor condition, the mean coworker accidentally farted after insulting their coworker (no flatulence in the nonhumorous condition). The researchers hypothesized that only those participants who felt empowered by the humor would show increased subjective well-being. Their statistical analyses supported this hypothesis. Answers on scales that measured feelings of power and well-being showed the predicted significant increase in well-being due to feelings of power after watching the humorous video.

Can you improve your sense of humor?

So far, we reviewed research that found that humor improves well-being, but can these positive interventions improve our sense of humor? One purpose of positive psychology research is to apply findings and improve the quality of our lives. If we do not have a strong sense of humor, can we practice it with exercises and thereby use it to achieve well-being and life satisfaction? Nevo, Aharonson, and Klingman (1998) considered the numerous aspects of humor to answer this question.

Specifically, they looked at motivational, cognitive, social, emotional, and behavioral components of a sense of humor. They used exercises that enabled participants to practice skills for these components. A motivational component requires an understanding of the importance of humor (why else use it) and a belief that it can be improved. Skills for the cognitive component included the ability to see other perspectives, have a repertoire of jokes in memory, and be able to create novel humor. The emotional component requires the ability to make emotional shifts, to be like a child at times, to laugh, and to use humor in stressful times. The social component requires being sensitive to norms and stereotypes, and the needs of others. Lastly, the behavioral component uses the ability to produce humor, and to laugh, smile, and enjoy it.

With these components in mind, Nevo et al. (1998) created a 20-hour program of 14 units for 101 high school teachers that included lectures, demos, and activities. Experimenters assigned teachers to one of four groups: active production, passive humor appreciation (i.e., they only get some of the presentations/exercises), a control group that focused on study skills activities, and a control group that did nothing. Participants in both humor conditions reported improved humor seven weeks later. Not only did they improve their sense of humor but also they reported a change in attitude and were optimistic about using humor in their teaching in the future. Nevo et al. (1998) also reported that participants reported the program increased their own feelings of well-being.

In a recent study, Ruch, Hofmann, Rusch, and Stolz (2018) examined humor training based on McGhee's (1999) seven humor habits program over eight weeks. One group of 20 adults completed McGhee's homeplay exercises in addition to meeting group activities, 24 adults completed only the meeting group activities, one control group of 16 adults served as the placebo control group, where they were exposed to humor but not trained to develop their sense of humor, and a fourth group of 50 individuals who talked with each other but were not given any humor training or exposed to funny materials. Everyone completed the McGhee's Sense of Humor Scale, the STCI (Ruch et al., 1996), and a satisfaction with life scale both at the start and end of the eight weeks of training, and after two months. In addition, one or two friends of the participants in the intervention groups completed the SHS to provide more information about the effectiveness of the training to improve their sense of humor.

The results showed support for the hypothesis that our sense of humor can be improved with practice or training. At the immediate end of training, both intervention groups showed improvement on Sense of Humor scores, but the additional homeplay activities group did not improve scores above those who did the humor in-session training only. Importantly, the two control groups did not differ, suggesting the mere exposure to humor may not improve

our sense of humor, nor does simply meeting with others. Impressively, these patterns in the data persisted after two months. Peer reviews suggested that a noticeable change in sense of humor was apparent only for those who completed the homeplay activities in addition to the training; the other three groups appeared to peers to have the same sense of humor as before. A major limitation of the study, however, is that homeplay activities were not checked to determine whether they were done or at what quality. This fact could be important to the results. Would students continue to do homework if teachers never looked at it?

An interesting fact in psychology is that people differ and not everyone responds to interventions. Wellenzohn, Proyer, and Ruch (2018) asked whether certain characteristics of people reveal who is most likely to show increased happiness and reduced depression. Across two studies of large sample size, they found that extroverts benefitted from writing three funny things that happened to them today for one week more than introverts. They also reported that a playful attitude helped the positive effects of the intervention to last for at least six months. They noted, however, that not having a strong sense of humor (as measured on McGhee's Sense of Humor scale) did not prevent individuals from benefitting from the humor exercises. Thus, these humor exercises can increase happiness and decrease depression even when individuals begin the intervention with a lower sense of humor than others.

Critical evaluation

A future direction for the field of psychology of humor studied from the positive psychology perspective needs to include more experimental methods. Most studies reported in this chapter relied on correlational data. We will deepen our understanding of humor's role in experiencing positive outcomes by manipulating variables that identify the contextual and boundary conditions. When we control the effects of humor, we understand better the processes involved.

One possible reason for the lack of experimental methodology in the humor research from within the positive perspective may reside in framing humor as a character strength. This frame was new to psychological inquiry, and initial studies focused on measuring humor as a virtue with correlational studies to validate the frame. Another possible reason concerns the strong connection of character strengths to philosophy and existential psychology, two areas which, in general, do not rely on experimental evidence to advance their ideas and theories. Some thinkers may even reject the scientific approach of studying character strengths (and all positive psychology), as it appears to them to be reducing people to objects rather than exploring and celebrating their humanity (e.g., see Wong & Roy's, 2017, criticism of positive psychology). However, researchers of any ilk who espouse psychology as a science likely can see a future in studying humor as a character strength using experimental methods. Although the analysis of humor (and any behavior) in the laboratory may look to some like it ruins the human element, consider another highly valued human behavior, language. The experimental study of the psychology of language provides great knowledge without ruining the awesomeness of language and its speakers, and the experimental study of humor likely takes nothing away from its virtuousness and its contribution to human life.

Recap

In many ways, this newest field to study humor highlights the power of humor to enrich our lives. Positive psychologists find that humor contributes to life satisfaction, feelings of well-being, and subjective happiness. As a character strength, those high in humor tend to use positive humor styles, have high self-esteem, and be optimistic. Even negative humor styles can predict positive outcomes (Edwards & Martin, 2014). We can practice character strengths and use them to move toward higher levels of functioning and deepen our connections with others.

The study of humor as a virtue contributes greatly to our understanding of other character strengths and how they achieve happiness and life satisfaction. Measures such as the VIA-IS, BENCOR, SHS, MSHS, and HSQ all reveal strong relations to positive outcomes, thereby increasing knowledge of how we use humor in our daily lives. Research supports the claim that humor enhances subjective well-being, life satisfaction, and finding life's meaning. Furthermore, positive outcomes are influenced not only by humor but by humor's interactions with personality factors, physical health, cognitive processes (e.g., reflective thinking and time perspective), and aging.

Suggested readings

Goodheart, A. (1994). *Laughter therapy: How to laugh about everything in your life that isn't really funny*. Santa Barbara, CA: Less Stress Press.

Lowis, M. J. (1997). A humor workshop program to aid coping with life stress. *Mankind Quarterly*, *38*, 25–38.

Vilaythong, A. P., Arnau, R. C., Rosen, D. H., & Mascaro, N. (2003). Humor and hope: Can humor increase hope? *Humor*, *16*, 79–89.

Wanzer, M., Sparks, L., & Frymeir, A. B. (2009). Humorous communication within the lives of older adults: The relationships among humor, coping efficacy, age, and life satisfaction. *Health Communication*, *24*, 128–136.

Suggested class activities

Activity 8.1. Corrective humor

a. Discuss how corrective humor may cause behavioral change in others. When we highlight the wrongdoings of others with humor, by making a friendly joke, how do others respond? Discuss why humor (and not insults) might bring about desired changes.

b. Discuss whether this joke is an example of corrective humor:

> *As a premed student, I had to take a difficult class in physics. One day our professor was discussing a particularly complicated concept. A student rudely interrupted to ask, "Why do we have to learn this stuff?" "To save lives", the professor responded quickly and continued the lecture. A few minutes later, the same student spoke up again. "So how does physics save lives?" he persisted. "It usually keeps the idiots like you out of medical school", replied the professor.*
>
> (*Copied from Jester data set*, http://eigentaste.berkeley.edu/)

Activity 8.2. Coping humor and life satisfaction

Discuss the ways in which coping humor (also see Chapter 7 "Health Psychology") might lead to higher life satisfaction.

Activity 8.3. Interpreting correlations

Discuss why it is important that Ruch, Proyer, and Weber's (2010) study included many individuals in each decade of adult life. In particular, discuss how range affects correlations. Given that much of the research on humor in positive psychology is correlational, discuss the strengths and weaknesses of correlational research designs.

Activity 8.4. Try it!

Examine the effectiveness of humor exercises to your happiness. First, collect a pre-exercise rating (*How do I feel* on a scale of 1 to 10, where 1 = very unhappy and 10 = very happy). For a week, at the end of each day, write about your day's events. Put a funny spin on them (e.g., *When I graduate, I can be a professional juggler given all the practice I am getting doing many things at once*!) At the end of the week, rate your happiness again. Did putting funny spins on your daily events increase/prevent loss of happiness? You may also reflect on how writing with humor personally affected you. Based on this experience, design a class project where you could use random assignment to groups that allowed studying the effectiveness of humor exercises on happiness.

Activity 8.5. Comparing health and positive psychology methodology

What is different between *watching and enjoying* a comedy (the preferred method of health psychology interventions) and *writing about and reflecting on* personal humorous experiences? Are there good reasons that the two perspectives should blend their methodologies? Discuss possible reasons why we don't see the use of both paradigms dominating within these perspectives of psychology.

Study guide

Concepts and theories

Benevolent humor
Character strengths
Corrective humor
Flow
Happiness
Intuition
Life satisfaction
Positive interventions
Well-being

Review questions

1. Describe humor as a character strength. How does this description differ from calling humor an ability or skill?
2. Make an argument that humor contributes to subjective well-being. Include empirical evidence to support your point.

3. Critically evaluate the positive intervention research that shows that writing about humorous past experiences improves your happiness or life satisfaction.
4. When is humor a character strength?
    a. When we use humor to show off our intelligence.
    b. When we use humor to cope with stress.
    c. When we use humor to make others feel good.
    d. When we use humor to disparage others to make ourselves look good.
5. The Virtues in Action-Inventory of Strengths (VIA-IS) puts humor in which category?
    a. transcendence
    b. justice
    c. temperance
    d. humanity
6. Which of the following is corrective humor?
    a. Using humor to ridicule and punish the errors of others.
    b. Using humor to cover up our mistakes so no one will notice.
    c. Using humor to forgive the immorality of others.
    d. Using humor to correct others' foolish mistakes.
7. Which humor style most correlates with the VIA-IS measurement of humor as a character strength?
    a. affiliative humor
    b. aggressive humor
    c. self-defeating humor
    d. self-actualization humor
8. How might humor help us to be satisfied with life even when life is filled with tragedies?
    a. Humor helps us forget the bad times.
    b. Humor helps us find closure and meaning.
    c. Humor helps us to expend less effort in reflecting on our past.
    d. Humor helps us be more anxious about the past.

Answers to multiple choice: 4) c; 5) a; 6) d; 7) a; 8) b

9 Clinical psychology

Learning objectives

1. Understand the clinical perspective of psychology.
2. Critically evaluate various perspectives applied to humor: psychodynamic, reversal theory, existential, behavioral, and cognitive.
3. Identify how humor may be affected by specific mental disorders.
4. Identify how humor can be used within therapy sessions or as a treatment/intervention.

Assumptions of the field

1. "Normal" is the desired, natural goal state.
2. Behaviors that cause unhappiness, maladaptive behaviors, or suffering typically are not normal.
3. Multiple perspectives in psychology contribute to clinical psychology's assumptions. For example, from behavioral, abnormal behavior is learned; it can be unlearned. From cognitive, our thoughts influence feelings; cognitive distortions may contribute to abnormal feelings and behaviors. From biological, equilibrium, growth, and health are desired. From social, others besides the self matter to how we feel and behave.

Clinical perspective and principles

Clinical psychology covers both practice and research. A strong influence in its study of maladaptive behavior came from Sigmund Freud and his psychodynamic theory of the mind. However, over the past 150 years, the field has grown to cover many theories and perspectives, some of which derive directly from the experimental perspectives covered in the previous

chapters of this textbook. Many clinical psychologists use more than one perspective and take an eclectic approach, drawing on a variety of approaches to fit the client's problem or situation. Clinical psychologists organize maladaptive behaviors by etiology, symptoms, and prevalence. The ***Diagnostic and Statistics Manual* (*DSM-5***) provides researchers and practitioners a common vocabulary and cross-referencing by disorders. The descriptions, explanations, and control of maladaptive behavior, however, may depend on one's theoretical perspective (e.g., Freudian or cognitive-behavioral).

This breadth in perspectives results in a vast clinical literature on humor. Apter (2004) noted that Roeckelein (2002), in his review and annotated bibliography of research on the psychology of humor, cited 187 publications on psychopathology and counseling. A search conducted in 2017 of Psychological Abstracts (PsycInfo) showed an additional 500 publications since 2002. Clinical psychologists examine humor for both its positive (e.g., freedom from anxiety and a means to lighten up) and negative (e.g., aggression and superiority) functions.

Core concepts

Many core concepts of clinical psychology are shared by previously discussed health (see Chapter 7) and positive psychology (see Chapter 8). These include studying the **effectiveness** of therapy or interventions, **placebo treatment**, appropriate **control groups** in research studies, and **recidivism rates.**

Equilibrium is a key concept in psychology theories. According to Freud, the id, ego, and superego are mental structures that need to balance each other for healthy behavior and mental states. Tension builds up due to the conflict between these structures which must be released to achieve equilibrium within this system. **Anxiety** may result due to this conflict and unreleased tension. **Insight** into the cause of the maladaptive behavior, and **catharsis**, an energizing release of this tension, are important for resolving conflict and restoring equilibrium.

Clinical psychologists may use a **medical model** or a **business model** of therapy. In the medical model, individuals with problems are called *patients* who receive therapy and treatments. As the name suggests, medical models tend to treat psychopathology as an illness or unhealthy state, and the goals are to find insight into the cause, to treat the disease, and to restore health. Psychodynamic theories use the medical model, as Freud was a medical doctor before he started developing psychoanalytic theory. In the business model, individuals seeking therapy are called *clients* who problem-solve, work through their difficulties, or respond to interventions. Clients with disorders are assessed for their needs and skills, and the goal is to develop coping strategies and maximize their functioning. The business model, however, may still consider biological factors contributing to the problems. Freud's theory emphasized the importance of fixing the cause or else the symptoms will continue or perhaps manifest in a different way, whereas the other approaches may emphasize learning new behaviors to replace undesirable feelings or problems.

This chapter is organized into three sections. First, we cover a few approaches that researchers in clinical psychology use to study humor's role in adaptive and maladaptive behavior, namely Freud's psychodynamic theory, Apter's reversal theory, existential theory,

Table 9.1 Some Core Concepts in Clinical Theories in the Study of Humor

Theoretical approach	*Concepts related to humor studies*
Psychodynamic	aggression, catharsis, defense mechanisms, equilibrium, insight, superiority
Reversal	motivation, relief, play, state of mind, safety zone
Existential	freedom, game, social constraints
Behavioral	learning, classical conditioning, operant conditioning, extinction
Cognitive	cognitive distortions, reasoning, framing, cognitive homework

and cognitive and behavioral therapies. Concepts relevant to these approaches are summarized in Table 9.1 and addressed in the text. In the middle of the chapter, we look at particular disorders and issues that individuals with these disorders may have with experiencing humor. We end this discussion with attention to humor expressions tied to unpleasant feelings, namely aggressive humor, teasing and complaining. In the last section, we examine the research on the role of humor in clinical practice.

Researchers studying humor within the clinical perspective ask such questions as, how does clinical theory frame humor? Do individuals with a particular psychological disorder have problems with perceiving or comprehending humor? Does humor play a role (positive or negative) in the development or persistence of maladaptive behavior? Does humor play a role in the therapy or treatment of various disorders?

Freudian psychodynamic theory

Psychodynamic theory is high in explanatory power, and this is true especially for explaining why we use humor and why we laugh. It posits that humor may be a way to express unconscious feelings, to mask true feelings, to deny a topic is distressful, or be a sign of relief from anxiety or fear. It also explains that sometimes we laugh and enjoy humor simply because it is pleasurable. Despite its high explanatory power, many psychologists do not accept all the theoretical baggage that comes with Freud's theory of the mind. For example, to a cognitive psychologist, unconscious processes having nothing to do with ego, id, and superego and repression is not a memory process (Loftus, 1993). Clinicians may use aspects of Freud's theory to interpret their clients' humor or to help them understand their clients' interpretations of their humor. Certainly, laypeople invoke Freudian concepts as explanations or attributions of others' humor.

Freud's contribution to psychology emphasized the role of unconscious processes that affect our behavior. His psychodynamic theory concerns his architecture of the mind, namely the id, ego, and superego. The id is concerned with pleasure and desires, the ego with self and reality, and the superego with conscience and morality. The tension between these structures requires equilibrium and the release of psychic energy to maintain a healthy system. Humor may be one way to release sexual energy and provide catharsis. Healthy defense mechanisms work to achieve the balance between the id, ego, and superego.

Freud wrote two influential works specifically on humor. He published the book *Jokes and Their Relation to the Unconscious* in 1905, and later in 1928, he published an article entitled

Humor. These are well cited by clinical researchers who study the psychology of humor. In his 1928 article, Freud noted that humor is both elegant and a disguise, a pleasure and a prevention of suffering, and an attitude that is a "rare and precious gift, and there are many people who have not even the capacity for deriving pleasure from humour when it is presented to them by others" (p. 6).

There are at least three points to explore about humor from application to psychodynamic theory that might relate to maladaptive behavior: 1) humor is a guilty pleasure (i.e., having taboo or strong sexual desires or feelings of superiority induce guilt), 2) humor is a way for conscious expression of repressed feelings (i.e., aggression and hostility we do not consciously acknowledge), and 3) humor is a healthy defense mechanism (i.e., better to express aggressive feelings in humor than to act them out).

Guilty pleasures

Enjoying humor may produce guilt or cause tension in our superego because that component denies its nonvirtuous desires. Freud drew on Aristotle's belief that humor was a sensual pleasure and therefore vulgar (Martin, 2007). Telling jokes, such as, *Pick up line: Hi, I've lost my teddy; do you think you could cuddle with me instead?*, is considered nonvirtuous behavior. Even today, we may see this attitude as disapproving of humor in professional contexts or viewed as immoral or immature behavior. Consider the cultural example in Chapter 5, where many French do not use humor in the workplace but Danes do (Lundquist, 2013). Part of the difference in attitudes on humor in professional settings comes from Aristotle's influence on our cultural values and conflicting modern social values that encourage humor.

We may also feel guilty about producing and enjoying humor, because it is an expression of **superiority** (Freud, 1928). In discussing the relationship between the joke teller and the listener, Freud (1928) noted that the joke teller acquires superiority by taking on the role of an adult talking to a child, smiling at unimportant things while telling the joke, and the listener of the joke takes on the role of a child, listening to every word as they play along to get the joke. In this view, the superego is motivated to deflate the ego with the superior attitude. One role of humor, then, is for the ego to be rebellious and enjoy for the moment the ability to identify with the parent, a role often consigned to the superego.

According to the superiority theory of humor, we may tell jokes or funny stories to show off how clever we are. For example, in the following joke, understanding why it is funny requires upper-level mathematical knowledge:

> *Two mathematicians were having dinner in a restaurant, arguing about the average mathematical knowledge of the American public. One mathematician claimed that this average was woefully inadequate and the other maintained that it was surprisingly high. "I'll tell you what", said the cynic, "ask that waitress a simple math question. If she gets it right, I'll pick up dinner. If not, you do". He then excused himself to visit the men's room, and the other called the waitress over. "When my friend comes back", he told her, "I'm going to ask you a question and I want you to respond 'one-third x cubed.' There's twenty bucks in it for you". She agreed. The cynic returned from the bathroom and called the waitress over. "The food was wonderful, thank you". and the other mathematician started: "Incidentally, do you know what the integral of x squared is?" The waitress looked*

pensive almost pained. She looked around the room, at her feet, made gurgling noises, and finally said, "Um, one-third x cubed". So, the cynic paid the check. The waitress wheeled around, walked a few paces away, looked back at the two men, and muttered under her breath, "… plus a constant".

Both telling and laughing at such jokes conveys that we are smart enough to detect and resolve incongruities (and in this case that we know math). Humor production and comprehension require cognitive and social competence, ideas espoused in evolutionary psychology (see Chapter 2) and the idea of survival of the funniest. When humor is used to show off or show up others (i.e., my joke is better than your joke), humor is not used to engender closeness; it is used to make yourself look superior. Such use moves the function of humor from cognitive skill to one of aggression.

Freud noted that feelings of superiority feed aggression. Usually, in social interactions aggression is undesirable, and conflict thus results because the id wants to be aggressive, but the ego and superego inhibit this inappropriate behavior. Humor allows for the expression of this aggression by disguising it as appropriate. It is passive-aggressive behavior: appearing friendly but actually hostile. This disguise allows us to be insulting or malicious, and, because it is "just for fun", our guilt is lessened. For example, someone else could hide his or her dislike for someone by joking, *If I had a nickel for every time I thought of you, I'd buy some gum*. Aggressive humor will be discussed later in more detail, as its study does not require Freudian theory.

Expression of repressed feelings

Freud theorized that feelings which the conscious mind cannot handle are repressed, placed out of our awareness. These repressed feelings, however, cause conflict and seek expression in other ways. Freud argued that humor provided an economical way to expend psychic energy or achieve equilibrium so that goals of the system were obtained by expressing unconscious desires with humor rather than the literal expression of true feelings. Consciously, we may not be able to handle liking our feelings of superiority, aggression, or sexual desires, so we make jokes that express these guilty pleasures in a disguised way. This point differs from the previous point because in the former guilt reduction motivates humor, whereas in this point repressed expression motivates it.

When we tell a joke, or laugh in response to it, we may not even consciously realize that the desires or feelings being expressed are our own. Hidden within the context of humor instead of overt expressions of literal truths, we do not face the underlying causes as literal contexts would require. For example, someone could express their desire to cheat without consciously dealing with that negative thought by laughing at jokes such as, *How do you make your girlfriend scream while having sex? Call her and tell her*. This notion of repressed ideas expressed in humor adds to the ambiguity of racist or sexist jokes (see Chapter 4 "Social Psychology"). If we enjoy telling or hearing a racist joke, for example, we might think we are not racist because it is just a joke, but perhaps we are racist and achieving catharsis by engaging in humor. Freud's theory suggests unconscious motives explain enjoyment of such humor. Our unconscious motives frequently appear in cartoons playing with psychodynamic theory (see Figure 9.1, and Activity 4.1).

"You have a deeply-rooted hostility to cats..."

Figure 9.1 Freud's theory and psychodynamic therapy are frequent referents in cartoons.
Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

Healthy defense mechanism

Lastly, Freud's theory of equilibrium among his structures of ego, superego, and id provides a further role for humor. If the id wants to express sexual desires or aggressive feelings, but the superego generates guilt and prevents these from reaching the conscious mind, tension builds within the system. Tension must be released, like the release of steam in a steam-engine train, or else the system malfunctions. The concept of "blowing off steam" is well-accepted as truth by laypeople. According to Freud, laughing reduces this tension. In this way, humor is an appropriate way to handle conflict between structures instead of resorting to maladaptive behavior, such as physical aggression. Further, we use the defense mechanism of sublimation to turn repressed desires into socially accepted admired work. For example, one study on guilt and anxiety in Protestants found that priming participants with words related to eternal damnation led to increased creativity in producing cartoon captions (Kim, Zeppenfeld, & Cohen, 2013).

Levine (1963) noted that throughout history, laughter has been associated with madness. Both are involuntary to some extent, and emotional disturbance may encourage laughter even when it is not pleasurable. However, Levine (1963) also noted that laughter and humor are signs of good mental health. Freud, too, recognized the positive characteristics of humor and acknowledged that, as a healthy defense mechanism, it can be a sign of inner strength, security, and mastery of our fears.

Humor researchers working from the psychodynamic perspective have examined **swearing and dirty jokes** as expressions of unconscious desires. Swearing shares many

functions with humor. Similar to humor, swearing can be used to reduce stress and increase pain tolerance, may increase social interaction among peers, and may express aggression and vent anger (Vingerhoets, Bylsma, & de Vlam, 2013). Lastly, as with humor, swearing with taboo words breaks social norms and creates surprise and incongruity (Dynel, 2012; Jay, 2009).

Vingerhoets et al. (2013) examined the frequency of swearing in stand-up comedians. They found that swearing served as a language device to signal to the audience that the comedian intended a nonliteral interpretation. Swearing signaled the relaxation of constraints on the rules of (polite) conversation. In other words, swearing helps disambiguate the ambiguity that surrounds the intentions of many humorous statements. Jay (2009) also noted that swearing can be just a conversational habit with no other social or clinical function attached to it.

Reversal theory

Another psychological theory with a focus on our subjective experience is reversal theory. This theory examines psychological states of mind with a focus on motivation, arousal, and emotions. Whereas reversal theory applies to a variety of behaviors, such as military combat and risk taking, I cover it here as a means to understand the role of anxiety in the humor experience. Of particular interest to clinical psychologists, reversal theory applies to mental disorders such as agoraphobia, depression, and sexual dysfunction (Apter, 1984). Similar to Freudian theory, equilibrium is a critical concept in reversal theory. We are motivated to maintain a balance with arousal and emotions to achieve an optimal level of performance.

According to reversal theory, subjective experience has a structure with a set of discrete ways of experiencing the world (Apter, 1984). These states derive from basic psychological desires and motivate our performance. Each state consists of a range of emotions and levels of arousal. States are paired in opposition to each other so that only one state can be active at a time. The pair of states most relevant to humor are telic and paratelic states.

In the **telic state**, we are serious and focused on goals. The emotions in this state range from relaxation to anxiety. In the **paratelic state**, goals are secondary, and we enjoy the present for its own sake. Emotions in the paratelic states range from high energy/excitement to boredom. When we are in the paratelic state, we are in a playful state and motivated to enjoy humor.

The paratelic state is a safety zone where threats and risk are low. In this state, it is okay to violate social norms or consider simultaneous incongruity. Arousal in the paratelic state feels exciting and filled with positive emotions. Arousal in the goal-oriented telic state, however, is felt as anxiety and stress, especially when there is risk in not achieving our goal. The relation between these states to emotions and arousal are depicted in Figure 9.2.

We frequently move between states. Reversals of state happen for one of three reasons. An environmental cue might trigger the switch, as when we are concentrating on homework when a friend stops by to chat; we move from the telic to the paratelic state. Negative

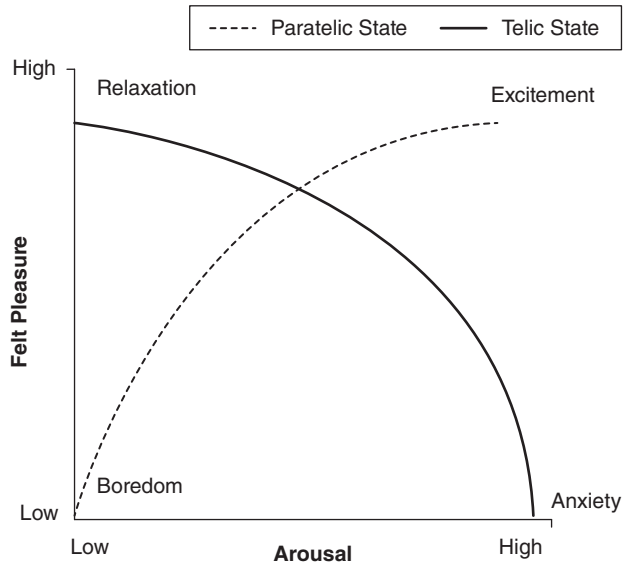

Figure 9.2 Reversal theory posits that when in the telic state, low arousal feels relaxing, but as arousal increases, it generates anxiety, which is unpleasant, and when in the paratelic state, low arousal feels boring and is unpleasant but when highly aroused, it is exciting.

Source: Apter, 1984.

emotions may also trigger the switch, such as becoming frustrated when trying to solve a homework problem which ends our motivation to continue; we take a break and move to the paratelic state. Lastly, being in one state for a long period of time fatigues the level of arousal, and we are motivated to change states.

Apter studied humor extensively using reversal theory (e.g., Apter, 1984, 2000, 2004, Apter & Smith, 1977; Apter & Svebak, 1992; Svebak & Apter, 1987). Reversal theory helps define humor; it is experienced when the (serious) identity of the person, object, or statement is diminished (Apter & Desselles, 2012). This diminishment is just enough to keep us in the paratelic state and be permissible within the culture without disengaging our interest. Apter and Desselles (2012) distinguish two kinds of humor. Disclosure humor is focused on incongruity and revealing an alternative meaning. For example, *I had a great evening. Unfortunately, it was not this evening* (Groucho Marx, as cited by Apter & Desselles, 2012). Distortion humor is focused on absurdity or incompatible attributes, such as that found in caricature or satire, such as suggesting children be eaten to handle overpopulation (from Jonathan Swift's *A Modest Proposal*).

Relief from anxiety is key in reversal theory as in Freud's psychodynamic theory. When we move from the telic to paratelic state, anxiety and tension give way to relief and relaxation. In fact, relief is greatest when something funny happens to move you from an anxious telic state to an amused paratelic state. Humor helps maintain arousal and stay in a paratelic state. Laughter increases physical arousal, and this increase in arousal is pleasurable.

An empirical example of humor, switching states, and relief from anxiety is found in an early study done by Shurcliff (1968). He used a funny deception similar to what you might

see in joke shops that sell phony items that look real. For example, I obtained years ago a heavy-looking rock from a South Street Philadelphia novelty shop that is actually a light sponge. When others pick it up, they laugh at their false assumption they made based on its appearance. In fact, Deckers (1993) studied such reactions and reported that when participants misjudged the weight of the objects they picked up, they smiled or laughed and felt surprise and amusement. Another example you may have encountered is a drinking glass that looks like it is made of thick heavy glass but is actually made of light plastic. When you pick up this glass filled with water, you will likely exert too much muscle pressure and end up spilling it on yourself, making for funny physical comedy. In a similar vein, Shurcliff (1968) used a toy rat that looked like the real thing. As part of a psychology experiment, students were to open a cage and pick up the rat. When they did so, however, they discovered that the rat was not real but a toy replica.

Reversal theory predicted that the movement from the telic (*this is a serious psychology experiment and I hope the rat won't bite me*) to paratelic (*the joke's on me*) state would be experienced as most funny for those who felt strong relief after being anxious about picking up a rat. Shurcliff (1968) collected anxiety ratings prior to picking up the rat, and surprise and humor ratings afterwards. He actually collected two funniness ratings, the first immediately after discovering the rat was not real, and the second after participants answered questions concerning their degree of surprise and anxiety, and what they thought the purpose of the experiment was (delayed ratings). These second funniness ratings came after having time to process the experience and be more objective. Shurcliff (1968) hypothesized that initial funniness ratings of the experience would be highest for these experiences due to the relief from anxiety. As shown in Table 9.2, the funniest ratings are highest for those who reported the highest anxiety as well as those who experienced the greatest surprise at the deception. Shurcliff (1968) had not predicted humor ratings would increase after the delay from answering all the questions, but as you can see in Table 9.2, they did increase for all groups. Perhaps it was their realization that the entire experiment was incongruous, not just the rat, which made the experience more pleasurable.

Would people with a better sense of humor be those who readily switch from a telic to a paratelic state? We would expect such people to seek out pleasurable arousal because the paratelic state is motivational. The Telic Dominance Scale measures the degree to which individuals self-report frequently being in a telic state (Murgatroyd, Rushton, Apter, & Ray, 1978). This 42-item scale has three factors, serious-mindedness, planning orientation, and arousal avoidance. Low scores reflect paratelic dominance, whereas high scores reflect

Table 9.2 Mean Humor Ratings as a Function of Anxiety and Surprise (Shurcliff, 1968)

Condition	*Mean immediate humor ratings*	*Mean delayed humor ratings*
Low anxiety	3.25	4.08
Moderate anxiety	3.92	4.75
High anxiety	4.22	4.67
A little surprised	3.09	4.09
Moderately surprised	3.50	4.28
Very surprised	5.00	5.18

telic dominance. On the scale, participants make choices which favor one state or the other, as in choosing between *Leisure activities which are just exciting* and *Leisure activities which have a purpose*. Another choice is *Spending one's life in many different places* and *Spending most of one's life in one place*. A third option, *Not sure*, was available on all scale questions.

We would expect telic dominance to negatively correlate with scores on various humor scales. Ruch (1994) correlated scores on the Telic Dominance Scale and four humor scales (covered in Chapter 3 "Personality Psychology" or Chapter 7 "Health Psychology"), specifically the SHRQ, CHS, SHQ, and a humor scale by Ziv(1981). Scores from 157 participants were correlated and factor analyzed. These analyses allowed for measuring associations as well as commonalities across scales. Would those who report being mostly in a telic state show a lower sense of humor? Participants also completed a personality test. Would extroverts, who usually show a stronger association with humor, also show a negative association with telic dominance? His data supported predictions of reversal theory. Ruch (1994) found that the factors of the Telic Dominance Scale showed negative correlations with all humor scales. Negative correlations occur because the more participants reported they were high in telic dominance, the lower their humor scores. Further, in a factor analysis, seriousness-mindedness, planning orientation, and emotional expressiveness negatively loaded on the same factor that had high positive factor loadings from the humor scales. Ruch (1994) found that telic dominance positively loaded on a second factor that he labeled restraint.

Is there empirical support for the role of arousal from humor in switching states? Svebak and Apter (1987) tested 116 individuals on the Telic Dominance Scale. Of these, they selected five males and five females with very high telic state scores and five males and five females very low telic state scores to participate in a study where they watched a comedy TV show while connected to a polygraph. The polygraph recorded changes in respiration to measure their laughter. Participants also rated their level of arousal. Data from this study showed that, as expected, arousal ratings and respiration levels were positively correlated. Both groups laughed and enjoyed the show, but the paratelic group reported feeling more arousal, preferred these feelings, and laughed more during the show. Unfortunately, this study did not include a control documentary to know if responses to nonhumorous stimuli also showed differences in arousal based on telic dominance. However, the data make an important point. Namely, serious-minded individuals do switch to paratelic states and enjoy humor, but they do not enjoy it as much as those reporting low telic dominance. It would be incorrect to think that serious-minded people do not have, or do not enjoy, a sense a humor.

Reversal theory and flow (see Chapter 8 "Positive Psychology") share similarities (Wright, 2016). Flow is a state of intense engagement, subjectively experienced as losing awareness of the passage of time while so engaged. It is a pleasant experience that feels removed from the threat of failure even when the activity is highly goal-driven. The arousal of deep engagement is pleasant instead of anxious, similar to feelings in a paratelic state. Wright (2016) noted that we may realize only after switching back to the telic state that we were in a paratelic state. For example, a phone call may interrupt your deep engagement, and only then do you realize that you were in a "safety zone" removed from the anxiety of a telic state. Wright (2016) also noted one important difference between flow and reversal theory.

Reversal theory posits we stay in the paratelic state just for the joy of it–such as watching a comedy or sharing funny stories with friends. That is, we have some control to stay in the paratelic state. Entering or exiting flow may be beyond our control.

Occasionally, we may find it difficult to switch from telic to paratelic states. However, if instead of occasionally, this inability became a chronic problem, negative feelings would likely result. In clinical practice, clients might seek therapy for problems they experience if they cannot control switching states. For example, they may experience burnout (e.g., chronic fatigue) or always feeling bored (e.g., loss of interest). Or, they may find they act inappropriately for that state, as in laughing when meaning to be serious (Murgatroyd, 1987). Clinicians working within reversal theory would focus on arousal and relief from anxiety to help "grease the switch" and help clients change their states at will.

Existentialism

In the existential philosophy of psychology, we are healthy and happy when we are free and not slaves or prisoners of our feelings and desires. Maladaptive behavior occurs when we lose our freedom. In this view, humor is freedom from the constraints of reality and the burdens of everyday life. Humor is play. Rather than call humor a safety zone, as reversal theory does, existentialists might call humor a break from reality. The sense of freedom feels pleasurable. As Kline (1907, p. 437) noted, it is the "uncertainties of life that give it zest", and ambiguities within humor are uncertainties we enjoy. Humor is a game. Thus, rather than framing humor as hiding or denying hostile or anxious feelings, as Freudian theory does, existentialists frame humor as sometimes violating the daily constraints that hinder our growth.

For example, consider freedom from power hierarchies of social order. In many societies, employers have great power over employees, fathers over sons, or men over women. It can be funny when subordinates make fun of superiors, as in employees making jokes about their bosses, but it is not funny when superiors make fun of their subordinates, as when employers make fun of their employees. For example, *My boss is so dumb he is depriving a village of its idiot* may be rated as funnier than *My assistant is so dumb that my window plant moves more than he does*. Both are insults, but the latter appears more condescending and therefore less funny. It is freedom from power hierarchies that may make the subordinates' jokes of their superiors funny.

Further, when we play the humor game, it provides emotional anesthesia. Muting negative feelings caused by reality may be one reason why we like to play. Many real-world rules are suspended and for a short time, only the rules of the humor game are followed. This freedom from the constraints of life generates positive feelings and helps us grow to be self-actualized individuals.

Fear of death

> *A wife got so mad at her husband she packed his bags and told him to get out. As he walked to the door, she yelled, "I hope you die a long, slow, painful death". He turned around and said, "So, you want me to stay?"*

Some researchers narrow freedom to mean freedom from fear, such as fear of dying. Drawing on existentialism, Elgee (2003) examined humor and fear of dying. He noted that we convert fear into fun as a way to deal with death anxiety. We deal with it by playing with it. Further, Elgee (2003) compared fear in the certainty of death to the fear of not getting the punchline in a joke. As the joke builds up to the punchline, for a moment we metaphorically see the abyss of death in that gap caused by the uncertainty. But, when we get the joke, the gap closes and restores the protection from facing the certainty death. We enjoy the joke more so by enjoying the pleasure of not having to face our death.

Drawing on terror management theory, which argues that because we are aware that we will die we are motivated to avoid thinking about our death or the fear of it, researchers suggested humor helps handle our death-related anxieties (Hackney, 2011; Long & Greenwood, 2013). Researchers test these suggestions by manipulating **mortality salience**, the awareness of our death. For example, to increase mortality salience, Hackney (2011) had participants write a paragraph describing what happens to our bodies after we die. The control group watched a television program. A short distractor task then followed to engage participants and prevent the primed mortality salience group from actively suppressing their death-related thoughts. Then all participants rated comic strips that either had a) a death theme (*At the guillotine the prisoner is asked "paper or plastic" for where his head will go*), b) had a world view message of punishment for individuals who violate cultures' standards, as in a doing a job others find irritating (*You are right, that it was a bad idea to tell people you got a job as a telemarketer*), or had a pun (*an Egyptian Goose that is wearing a pharaoh's headdress while flying over the pyramids saying "ankh, ankh" instead of "honk, honk"*). Hackney (2011) hypothesized that priming mortality salience would enhance the liking of the death-related joke, because the humor would relieve the death anxiety activated by the writing task.

His data indeed supported expectations from terror management theory. Those who wrote about death found the death joke funnier than those who watched TV. Ratings of funniness did not differ for the punishment joke, and the pun joke was rated less funny by the mortality salient group than the control group. Hackney (2011) suggested that as the pun did nothing to alleviate their death anxiety, and participants felt low positive emotions as a result. He suggested that the application of terror management theory in therapy holds great promise in alleviating death-related anxiety and in using humor to improve our lives. Readers are invited to check out the website for the Association for Applied and Therapeutic Humor (www.aath.org) that focuses on using humor as therapy.

Humor production, studied by Long and Greenwood (2013), also helps deal with death anxieties. These researchers used a priming paradigm, where participants were primed in one of four ways: two ways concerned subliminal priming, where words appeared during a computer task where participants judged the relatedness of paired words (e.g., sneaker and fajita). For some participants, the prime was related to death (*dead*) or suffering (*pain*) and was presented subliminally, for 33 ms. during a trial. The other two ways involved having participants write a paragraph about death or dental pain. After a distractor task, all four primed groups completed a captions generation task for *New Yorker* cartoons. They wrote one caption for each cartoon and rated it for how easy they thought it was to generate a funny caption. Long and Greenwood (2013) recruited other raters who then judged the funniness of these captions, on a scale from 1 = extremely unfunny to 7 = extremely funny.

Results indicated that the implicit death prime resulted in judged funnier captions than the pain prime, but the explicit writing prime of dental pain resulted in funnier captions than death. The mean ratings for all four prime conditions were below the midpoint of the scale (4), suggesting these captions were not very funny despite some being significantly funnier than others. Production of funny captions is hard!

Long and Greenwood (2013) argued that the creativity needed for humor production is inhibited by explicit mortality salience but enhanced by implicit mortality salience. They also connected their findings to terror management theory and suggested that death anxieties, when subliminally activated, motivate an implicit defense strategy. Humor is used to relieve those anxieties. Although the explicit prime of death did not result in funnier captions, they noted that participants in this condition judged their own captions to be as funny as the other groups, and, perhaps, though judges did not find these captions funnier, the captions participants wrote may have succeeded in making themselves feel less anxious.

Cognitive therapy

Cognitive therapists focus on our information processing and how our thoughts may distort reality, causing misinterpretations that result in bad feelings. Errors in processing cause us to jump to conclusions or negatively bias interpretations of events. Cognitive homework typically involves clients noting how their interpretations of events are distortions. Cognitive therapists help clients list other possible and plausible interpretations. For example, if clients saw that someone didn't laugh at their jokes, they might believe that other person didn't like them or perhaps that they were a bad joke teller (e.g., *I'm no good*). Such negatively biased distortions are common in depression. Because of the negative emotions these distortions cause, they help to create or maintain depression. For homework, the client might list alternative interpretations (e.g., *others didn't laugh because they weren't paying attention, they were in a bad mood where nothing would seem funny, or they just got bad news prior to the conversation)*.

Rnic, Dozois, and Martin (2016) studied cognitive distortions and humor styles in individuals with depression. They asked whether humor styles might mediate the association between cognitive distortions and depression. If so, then the relation between cognitive distortions and depression is better understood when humor styles are taken into account. The researchers noted that humor is an excellent medium to study cognitive distortions because ambiguity in humor allows for the therapist to point out alternative interpretations, both literal or humorous, in clients' interpretations of their experiences. Rnic et al. (2016) suggested that humor is also worthy of study because humor allows for a shift in perspective to comprehend it, which helps reduce distortions, and at the same time provides clients with a sense of mastery to handle stressful situations. Further, they noted that humor styles are a form of emotional regulation and coping, and thus could be influenced by cognitive distortions, which in turn would increase depressed feelings.

Specifically, Rnic et al. (2016) measured 208 college students' humor styles on the HSQ (see Chapter 3 "Personality Psychology"), frequency of their cognitive distortions, and level of depression. As expected, they found a significant correlation between frequency of cognitive distortions and depression. The more participants said they have distortions, such as framing

things as should statements (*I should be funny when with others*), the higher their depression score. Self-enhancing humor style did mediate the relationship between distortions and depression so that having frequent cognitive distortions and low use of self-enhancing humor style predicted higher depression scores. The authors concluded that therapists could increase clients' use of self-enhancing humor to help clients manage social situations. Doing so would provide them with opportunities to increase positive feelings rather than reinforce negative feelings that result from their negative cognitive distortions. Interestingly, Rnic et al. (2016) found that affiliative humor did not have a mediating effect between distortions and depression. It did, however, negatively correlate with cognitive distortions, meaning that the more one used affiliative humor, the lower the frequency of cognitive distortions. Being correlational, it is not clear if they use affiliative humor to increase closeness because they are not distorting their interpretation of the situation or whether distorted interpretations reduced the wanting to engender closeness and therefore the use of affiliative humor.

Distortions occur also at a broad belief level, which increases worry. For example, worriers tend to believe that everything is potentially dangerous, or there are perfect solutions to prevent negative consequences, or they are unable to solve their problems on their own (Kelly, 2002). Is it possible that worry interacts with our sense of humor? In Kelly's (2002) study, 140 undergraduates completed the Worry Domains Questionnaire and the MSHS (see Chapter 3). He found that worry and sense of humor were negatively correlated. Worry accounted for 4% of the variance in MSHS scores. Recall from Chapter 3 "Personality Psychology" that the MSHS measures four humor components: production, coping, appreciation, and attitudes toward humor. Using stepwise regression, humor production accounted for 9% of the variance in worry scores, and coping accounted for 5%. Total MSHS scores accounted for only 3% of the variance, but this was still above chance, indicating worry contributes to production. Kelly (2002) reported a positive correlation between coping and worrying; worriers develop strategies to deal with their worrying.

Kelly (2002) found that humor production was the strongest component to explain the variance in worrying. This finding makes sense in that producing humor involves taking social risks, and worriers would be less likely to take social risks in fear that others might negatively react to their humor. The positive relationship between coping and worrying also makes sense in that worrying is a coping mechanism for stress. As did Rnic et al. (2016), Kelly (2002) suggested therapists aim to increase clients' sense of humor to reduce or replace worry, increase positive feelings from humor, and to use humor as a coping mechanism.

Behavioral therapy

Dog #1: Does the name Pavlov ring a bell? Dog #2: No, but it makes my mouth water. In behavioral psychology, behavior is controlled by the environment. We learn to respond in certain ways, with certain frequencies, to stimuli we encounter. Clinical disorders might be treated by teaching new responses to stimuli, so that individuals may extinguish the maladaptive learned responses of the disorder with desired ones. In the treatment of phobias, for example, clinicians use behavioral therapy to teach individuals to associate pleasant stimuli with fearful stimuli so that the pleasant response (usually relaxation) becomes the learned response instead of fear or anxiety to the stimulus. Specifically, the behavioral technique of **systematic**

desensitization reduces anxious responses in steps, by pairing weaker versions of the phobic stimulus with a pleasant stimulus until individuals respond to systematically stronger versions of the phobic stimulus as they would to the nonfearful one (e.g., with relaxation).

Humor researchers asked whether humor could be used with systematic desensitization to treat spider phobia. Ventis, Higbee, and Murdock (2001) compared traditional systematic desensitization treatment with one that used a funny stimulus of the phobic object. The idea was that the humor response (instead of relaxation) could become associated with the feared stimulus, replacing fear with positive emotions. They compared these two systematic desensitization groups to a control condition who received no treatment for their fear of spiders.

To conduct this study, they recruited students who indicated they had an intense fear of spiders and wanted to decrease it. The students had to meet the behavioral criteria of intense fear by refusing to do four or more tasks connected with spiders. For example, they were asked if they would stand 20 feet from a caged tarantula. An example of adding humor to the viewed scene, participants were asked to think what the spider was thinking as they were about to touch it with a gloved hand, as in, *So who said these clowns could feel my leg? Would they be so patient if I were feeling their leg?* To ensure the procedure used the best humor hierarchy, participants rated the scenes' funniness.

Participants proceeded through these funny items across four sessions, where these humorous items were interspersed with regular scenes to encourage surprise at when humor was added. In addition, humor homework was assigned, where they generated ten uses for a rubber spider that squeaked when squeezed or completed sentences such as *I would rather ____ than _____ a spider*. The control group did not complete any activities, homework, or systematic desensitization procedures. All participants completed a handful of scales, including a measure of perceived self-efficacy, the CHS, and SHS.

Results showed that both humor and standard systematic desensitization methods were significantly effective in reducing the fear of spiders compared to the control group. Both treatment groups increased their ratings of perceived self-efficacy (no improvement for the control group), reduced their fear ratings of spiders, and increased the number of tasks they were willing to do in the room with the tarantula in the cage. Perhaps most importantly, Ventis et al. (2001) noted that humor not only reduced fear, but it also gave participants a means to cope with fear, as shown by their improved scores on the CHS, and feelings of self-efficacy. Their conclusion is like that made earlier by Rnic et al. (2016) with depressed clients and Kelly (2002) with anxious clients: humor therapy works and empowers clients to handle further situations.

The take-away message of their study is that positive responses to humor may be learned to replace responses to feared objects. Their measures, not all discussed here, suggested the improvement was due to association (classical conditioning) and not due to any changes in their general anxiety or sense of humor. This point is important, however, because associative learning may happen even when we don't desire or consciously intend it; Ventis et al. (2001) noted that advertisers, who include humor when advertising products such as cigarettes, could teach viewers to associate positive feelings from humor with those products. Such classical conditioning research provides further support for not using cartoons such as Joe Camel (R. J. Reynolds Tobacco Company) in cigarette advertisements.

Aggressive humor

You may have seen a t-shirt with a hand pointing left with the words *I'm with stupid*. Humor researchers define aggressive humor as that which reflects superiority, uses violent or coarse language, or which is intended to hurt others (e.g., Ferguson & Ford, 2008; Martin et al., 2003; Zillman, 1983). It may be on a particular topic, such as sexist jokes about women, be delivered in a particular manner, such as frank or lack of subtle teasing, or delivered with profanity or sarcasm (McCreaddie, 2010). *I'm glad to see you're not letting your education get in the way of your ignorance*. Clinical researchers examine aggressive humor as potentially related to other maladaptive behaviors or disorders.

Recall that aggressive humor style is measured on the HSQ, where respondents agree with statements such as, *If I don't like someone, I often use humor or teasing to put them down*. Would those who have an aggressive humor style also report problems in engaging in maladaptive behavior or persistent negative emotions? Masui and Ura (2016) looked at humor styles with regards to psychopathy (a set of behaviors that include lack of empathy, impulsivity, and aggression). They cited Coyne and Thomas (2008) who found those high in psychopathy used more malicious humor. In their review of the literature, Masui and Ura (2016) noted that lower SES in childhood correlated with aggressive behavior, conduct disorders, and coping deficits, and therefore they also examined childhood SES. They reported research that showed that psychopathy predicted lower belief in a just world (the belief that people get what they deserve) for those with low childhood SES but not for those with high childhood SES.

In their study, Masui and Ura (2016) asked whether childhood SES moderated the relationship between aggressive humor and psychopathy. They predicted that the relationship between aggressive behavior and psychopathy would be stronger for those low in childhood SES who use negative humor. College student participants completed a psychopathy self-report questionnaire, the HSQ, and a childhood SES questionnaire. Using hierarchical regression analysis, they entered psychopathy scores first and then childhood SES scores to predict aggressive humor style. This analysis showed that those high in psychopathy when childhood SES was low used more aggressive humor those with high childhood SES. This finding endorses the role of childhood social support to buffer the negative effects of psychopathy, which results in less aggressive behavior. Likely, the social environment in childhood offered ways for individuals to learn to inhibit their aggressive behavior.

Interestingly, adolescents who use aggressive humor frequently enjoy popularity among their peers. Adolescents use aggressive humor to express their dislike of others. Given that popular children have a large influence on their peers' behavior, Bowker and Etkin (2014) conducted a study to find out why children who use aggressive humor are popular. The researchers cited past research that found adolescents who bullied others did so because it made them feel both funny and popular. Bowker and Etkin (2014) hypothesized that aggressive humor might be admired because it violates social norms and defies authority, which peers admire, and mimics violence they see in television cartoon shows (which are considered funny even when violent). In their study, the researchers focused on relational aggression or what is nonphysical aggression, including humor meant to harm others (e.g., insults) and

malicious gossip. They expected to find that aggressive humor influenced the relationship between popularity and aggression.

In particular, more than 200 sixth graders named their best friend, second best friend, and three close friends. They named two peers who were relational aggressive (e.g., *Someone who spreads rumors so that others won't like them*), physically aggressive (e.g., *Someone who hits, kicks, or punches others*), one peer who they considered had a sense of humor, and an unlimited number of peers whom they considered popular and unpopular. These measures were also taken 3 months later to take into account changes in friendships. Bowker and Etkin (2014) analyzed the frequency of names provided and found, indeed, that popularity, relational aggression, and sense of humor were significantly positively correlated with each other. Popular students were named as having a sense of humor and who used relational aggression. These associations provided some support for the notion that adolescents use relational aggressive humor to gain popularity. However, the social rewards of using aggressive humor likely depend on complex relationships, as their results were limited to boys and whether their best friend engaged in relational aggression. When these were not the case, then children who used relational aggression were not popular.

Teasing

Related to aggressive behavior is teasing. Teasing is intentional, and it is playful (Keltner, Capps, Kring, Young, & Heerey, 2001). Teasing as a form of humor that may or may not have an aggressive component. A tease contains ambiguity about the role of humor and aggression. Clearly, teasing is aggressive when it is meant to be painful and hostile. However, some teasing is meant to be either corrective (see Chapter 8 "Positive Psychology") or a means to comment, in a gentle way, negative aspects of our behavior. We may tease for the same reason we say something funny, to get a response from the target (Keltner et al., 2001). Teasing can be a way to play, fight, manage conflict, or exert power (Keltner et al., 2001).

In one study on schoolchildren, which involved both essays and answers to questionnaires on teasing, Shapiro, Baumeister, and Kessler (1991) found that teasing descriptions consisted of making fun or calling other names (28%), simply laughing at others (11%), and nonverbal teases, such as pointing, making faces, or playing practical jokes, such as "kick me" signs (9%). About 39% of the content of teasing involved physical appearance, and in descriptions provided, girls teased about someone's physical appearance more than boys (48% vs. 29%). Reasons for teasing were reciprocal (35%), playing around (16%), disliking the target (12%), and bad mood (8%). Teasing functioned to disguise their intentions (i.e., was it meant in a friendly way or as an insult?) or to show social dominance. Teasers were described as bullies who used aggressive teasing (51%) but 23% of teasers were described as funny and popular. Eighth grade participants reported that children of low social status, small in appearance, shy, and unpopular were more likely targets of teasing.

As you might expect, students' responses to teasing predominantly involved negative feelings. Ninety-seven percent reported a negative reaction to being teased. Ninety-one percent of teachers believed the best way to respond to teasing was to ignore it. Children reported they responded by fighting (10%), laughing along (12%), tease back (39%), or

ignore it (24%). Interestingly, 31% of older children (eighth graders) said the teasing sometimes informed them of something undesirable that they could then change. For example, if they were teased about a habit, such as biting fingernails, they could think about why they did it and work on stopping it. In this sense, teasing served a positive function. The appreciation of teasing for both bad and good functions showed a developmental change: 18% of third graders, 82% of eighth graders, and 94% of teachers believed teasing can serve both bad and good functions.

Complaining with humor

When we complain with anger, negative feelings between parties may prevent resolution of the problem. When complaints are expressed humorously, however, positive feelings in both parties reduce anger or threats and encourage settlement. McGraw et al. (2015) studied humorous complaining and relayed the story of someone who made a video they put on YouTube showing a sleeping-on-the-job cable repairman as a means of complaining about not getting their cable fixed. This video conveyed that the situation was wrong, but it also entertained.

As McGraw et al. (2015) noted, this type of humorous complaining is impression management. The receiver of the complaint, who feels positive emotions in response to humor, attributes positive characteristics to the complainer. The recipients of the complaint are more likely to listen and be willing to work with the complainer to achieve a solution. McGraw et al. (2015) also noted that it is important that the humor not be too strong or else the complaint won't be taken seriously. Further, they suggested that it is important for recipients to feel sympathy for the complainer to motivate working on a settlement; just liking it or the complainer is not enough. The clinical applications are obvious for clients with hostility and anger management issues–they can still complain and act on their emotions, which they really want to do, but they can replace inappropriate anger with pleasant humor, stay in control, and, hopefully, come away from the conflict satisfied that their needs were met (McGraw et al., 2015).

Humor and disorders

It is important to note that many who seek therapy for symptoms or a disorder have intact humor processing. For example, Falkenberg, Jarmuzek, Bartels, and Wild (2011) reported that clients with depression (median on Beck's Depression Inventory was 22) similarly rated the funniness of cartoons as control participants, and they reported similar preferences for different types of humor (i.e., sexual, incongruity resolution, or nonsense, see Chapter 3 "Personality Psychology" for Ruch's 3 WD factors).

Researchers in clinical psychology may study humor to determine whether it predicts negative outcomes, such as depression, loneliness, or anxiety, whether humor can alleviate difficulties those with a disorder have, or whether the disorder causes difficulties in experiencing humor or related social interactions. A common methodology is to give participants the HSQ and determine whether negative styles of humor (self-defeating and aggressive) are associated with negative outcomes (and positive styles are not). This methodology finds

that negative humor styles are related to unhappiness (Ford, McCreight, & Richardson, 2014), depression (Frewen, Brinker, Martin, & Dozois, 2008), risky behaviors (Cann & Cann, 2013), loneliness and lower self-esteem (Fox et al., 2016), and psychopathy (Martin et al., 2012; Zeigler-Hill, McCabe, & Vrabel, 2016).

In this section, we briefly look at three disorders that illustrate issues related to cognitive, social, and emotional components of humor. In autism spectrum disorder, researchers investigate how humor may be affected by deficits in Theory of Mind (see Chapter 6 "Developmental Psychology") or the compromised ability to process complex humor with complex social interactions. In borderline personality disorder, they investigate how difficulties in managing symptoms may be influenced with humor. In schizophrenia, researchers investigate issues concerning the detection of and production of humor.

Autism spectrum disorder

Individuals diagnosed with autism spectrum disorder may have difficulties with emotion, language, Theory of Mind, and using nonverbal cues that inform their social relationships (Samson, Huber, & Ruch, 2011). They likely have problems with understanding teasing, as in knowing why they were teased or what social norms govern appropriate social interactions (Heerey, Capps, Keltner, & Kring, 2005) These abilities have central roles in humor processing, and we would expect that even individuals with high functioning autism to have problems processing humor. Indeed, findings indicate that individuals with high functioning autism often fail to appreciate or understand cartoons that require Theory of Mind, but they may appreciate visual puns or slapstick comedy as much as healthy controls (Samson & Hegenloh, 2010).

One interesting line of research on individuals with high functioning autism concerns holding a strong fear of being laughed at (gelotophobia). Perhaps 45% of those with high functioning autism have gelotophobia compared to only 6% of the rest of the population (Samson et al., 2011). However, Samson and Hegenloh (2010) found that those with high functioning autism also were less able to laugh at themselves (gelotophilia) but showed similar low enjoyment for laughing at others (katagelasticism) as controls. Samson et al. (2011) recommended that, in addition to the other treatments individuals with high functioning autism receive, they be taught to differentiate between teasing, mocking teasing, and bullying. Knowing these differences might help ease misinterpretations of innocent laughter of others as malicious. This conclusion is like Proyer et al.'s (2013) study covered in Chapter 4 "Social Psychology"; they found that children who are bullied would also benefit from being taught the difference, thereby helping them respond more appropriately in their social interactions.

A second line of research draws on research on character strengths. In Chapter 8 "Positive Psychology", we covered the idea that individuals have signature character strengths, the top five traits that individuals possess the most. Those with autism spectrum disorder may not rank humor as a character strength, as measured on the VIA-IS, as highly as those with typical development (Samson & Antonelli, 2013). Further, Samson and Antonelli (2013) found that their participants with autism spectrum disorder only associated humor with pleasure but not for making life meaningful or satisfying. In another study, Kirchner, Ruch, and Dziobek (2016) reported a control group (matched for gender, age, education, and job status)

that rated humor as a signature strength, whereas those with autism ranked it 15th, about the same ranking as found by Samson and Antonelli (2013). The top five strengths for those with autism were open-mindedness, authenticity, love of learning, creativity, and fairness. Although not in their top five strengths, those higher in humor reported greater satisfaction with life. Kirchner et al. (2016) suggested that because emotional and interpersonal character strengths were positively associated with satisfaction with life in individuals with autism, therapy focused on strengthening their emotional and social competencies empowers them to draw on these strengths to achieve a higher quality of life.

Borderline personality disorder

Personality disorders involve a stable pattern of difficulties relating with others. Borderline personality disorder concerns issues of identity, mood swings, and cognitive distortions tied to social attachments (e.g., *you are my best friend, you are the worst*). Individuals with borderline personality disorder may have difficulties with relationships, impulsivity, self-image, and suicidal thoughts (Terzi et al., 2017). They may have difficulties using humor in their relationships as well as may have difficulties using humor to cope with their social difficulties.

Humor styles may help cope with symptoms or consequences of having a borderline personality. Meyer et al. (2017) examined the humor styles of individuals with borderline personality disorder. They predicted that those with positive humor styles (affiliative and self-enhancing) would be better equipped to adjust to having their disorder, whereas those with negative humor styles (aggressive and self-defeating) might have depression and negative self-image. They collected measures from 176 participants on the HSQ, a hopelessness depression symptom questionnaire, and a borderline inventory. As predicted, Meyer et al. (2017) found that having an affiliative humor style reduced their thoughts of suicide, whereas those with a self-defeating style reported more frequent suicidal thoughts. An interesting note to Meyer et al.'s (2017) study is that they measured borderline personality in terms of personality traits of the Big Five (see Chapter 3 "Personality Psychology") and not by *DSM* criteria or clinical diagnosis. The traits deemed descriptive of borderline personality (e.g., despondence and rashness) positively correlated with self-defeating humor style, whereas they negatively correlated with self-enhancing humor style.

To help with diagnosis or identify vulnerability to developing a disorder, clinical psychologists investigate whether disorders, such as borderline personality disorder, have a strong genetic component. Recall from Chapter 3 that humor styles were found to have a genetic component. Schermer et al. (2015) looked at influences of genetics and environment on aspects of borderline personality disorder with respect to humor styles. They examined 574 twins who were participating in a broader longitudinal research study. These twins were not a psychiatric population. Scores for four aspects of borderline personality disorder were assessed–affect irritability, identity disturbance, negative relationships, and self-harm. As expected, both affiliative and self-enhancing humor styles negatively correlated with borderline personality traits, whereas self-defeating and aggressive humor styles positively correlated. Further, Schermer et al.'s (2015) analysis allowed for detecting how much of the variance in the data was explained by genetic and environmental factors. We can determine that genetics has a greater influence when associations are greater for monozygotic twins

compared to dizygotic twins. Schermer et al.'s (2015) data supported the idea that negative humor styles share a genetic component, especially for self-harm. Genetics also influenced the negative correlation between positive humor styles and the traits of borderline personality disorder.

Schizophrenia

Individuals with schizophrenia typically have difficulty with cognition, emotions, and social relationships, three relevant domains of humor. "Impairments related to humor comprehension may be considered one of the most specific phenomena related to communication disorders in schizophrenia" (Adamczyk, Domagalik, Cepuch, Daren, & Marek, 2018, p. 593). Most areas of the brain that process humor (see Chapter 2 "Biological Psychology") are affected by this disease. Research finds individuals with schizophrenia typically have difficulties detecting humor and producing it (Ivanova, Enikolopov, & Mitina, 2014; Polimeni, Campbell, Gill, Sawatzky, & Reiss, 2010). As Polimeni et al. (2010) state, deficits in humor processing in individuals with schizophrenia are obvious compared to controls, making the study of humor helpful to researchers and therapists for understanding this disorder.

In one study on humor production, Derks, Leichtman, and Carroll (1975) asked individuals with schizophrenia and college students to write funny captions to movie stills. Both samples had an equal number of men and women, and some participants with schizophrenia had some college education. Mean ages were not provided, but it is inferred from what was provided that those with schizophrenia and the college students were mostly in their twenties. These captions were then judged by another sample drawn from the same populations. These judges rated the captions written by those with schizophrenia as less funny compared to those written by college students, supporting the observation that those which schizophrenia have deficits with producing humor.

In another study, Ivanova et al. (2014) noted that individuals with schizophrenia have difficulty recognizing humor. They suggested that therapists can use humor recognition difficulty as a diagnostic tool to help classify the disorder because similar disorders do not show a difficulty with humor. They compared individuals with mood disorders, schizotypal disorder, schizophrenia, and a control group for their ability to detect humor and for their emotional response to it. The materials included either humorous statements (e.g., *Two condoms talking: "I've heard they want to use us". "Come on! We'll break through".*) or nonhumorous statements (e.g., *Workers are needed to work on a work. The salary is money*.). Participants sorted the statements into four categories: worst, not funny, funny, and best

All three patient groups, known to have affect disturbance, laughed less at jokes than the control group. Most importantly, all participants except those with schizophrenia sorted the humorous statements similarly. The researchers noted that individuals with schizophrenia showed a preference for jokes about alcoholism and drug addiction more than other participants. However, Ivanova et al.'s (2014) data relied on a small set of jokes and found only a small deviation in differences in humor detection. Further research would be needed to determine the value of humor recognition as a diagnostic tool for discriminating schizophrenia from schizotypal disorder. Some support for Ivanova et al.'s (2014) conclusion was found by Adamczyk, Domagalik, Cepuch, Daren, and Marek (2018) who reported that hypofunction

of the right supramarginal gyrus (Brodmann's area 40) was observed in participants with schizophrenia during the detection of incongruity, but no difference with controls was observed in jokes' resolution or elaboration. These data were supported by their higher liking for absurd endings to jokes, indicating they know humor has unexpected endings but have problems detecting incongruity that control subjects know make for funny endings.

Humor may serve as a tool for therapy to alleviate difficulties individual with schizophrenia have. Schizophrenia's negative symptoms include social withdrawal, diminished affect, and lowered motivation. Cai, Yu, Rong, and Zhong (2014) conducted a humor intervention study with individuals with schizophrenia to try to reduce negative symptoms. For five weeks, two sessions per week, individuals with schizophrenia practiced exercises to improve their appreciation, detection, and production of humor. These skills, suggested by McGhee (1994, 1999) for increasing one's sense of humor, are described in Chapter 7 "Health Psychology" Table 7.1. Participants completed exercises at home to practice their humor skills. Cai et al. (2014) measured improvements on the MSHS and collected measures of mood. After five weeks, participants reported reduced depression, anxiety, and negative symptoms relative to the control group who used comparable time doing "handwork" therapy. Cai et al. (2014) noted in addition to scores showing an improvement, participants reported a perceived notable improvement in their mood, sense of humor, and using humor to cope. They researchers strongly recommended using humor as a therapy for schizophrenia. However, they also noted that future research needs to determine whether the beneficial effects are long-lasting.

Humor in therapy sessions

Freud (1928) noted that humor is a means of gratifying sexual and aggressive desires which otherwise would be frustrated or censored. Thus, the therapy session is a safe place for patients to gratify these desires. In this view, patient humor is encouraged in therapy. Further, patients' humor that appears in sessions may provide insight into patients' underlying issues or the dynamics of the session. For example, Jacobs (2009) noted that clients' humor may reveal conflict (aggressive humor), control (taking away therapist's control of the talk), or concealment (avoiding issues). In family therapy, even family members' recall of humor used at home might reveal to therapists dynamics of family relationships (Fox, 2016).

A therapist could use humor to help establish rapport and provide a shared positive experience with the client (Franzini, 2001). Their humor may illustrate healthy ways to lighten up and not take oneself too seriously. It may also help relax tense situations, promote self-efficacy, engender trust, and encourage assertiveness (Ventis, 1987). However, it is important that both the therapist and client know they are still taking therapy seriously. Humor should not be a means of distraction or preventing difficult work.

Greenson (1967) argued that the best therapists possess a good sense of humor. However, therapists have different styles, and it is advisable that they use healthy humor in therapy sessions. They defined healthy humor as humor that brings people together, reduces stress, promotes insight, and good feelings (Franzini, 2001). Unhealthy humor alienates others, increases hostility, and feels bad. Vulnerable clients may misinterpret even healthy humor (Andersen, 2015). Walsh (2015) recommended that humor needs to a) be linked to the logic

or goals of the session, b) be kind, gentle and not offensive, and c) have a clear context that is understood. These needs prevent misunderstanding about being laughed at or losing focus on serious work at hand. Yet, Yonatan-Leus, Tishby, Shefler, and Wiseman (2018) noted that even a therapist's aggressive humor style might be helpful in therapy if it resulted in confronting a client's denial or deception, thereby acting as a mechanism to promote insight to break through these barriers.

Research shows that the therapist's humor style matters to the effectiveness of humor in therapy. Yonatan-Leus et al. (2018) studied 29 therapists who treated 70 clients. They found that humor style predicted patient outcomes. In particular, aggressive humor style was negatively related to clients' change over time. The humor style of therapists accounted for 5% improvement in client outcomes. Compare this finding to therapists' empathy which accounted for 9% improvement.

Different cultures may interpret humor differently (see Chapter 5 "Cross-Cultural Psychology"). Clients and therapists may each come from different cultures. Therefore, cultural factors must be considered to have a clear context for humorous exchanges between therapists and clients, as each may not appreciate the cultural differences in their humor. Fox (2016) suggested that in America, Native Americans use humorous stories to convey cultural values and symbolism, African Americans use humor to cope with pain and oppression, Latinos use humor to express identity, family values, and the imbalance of social power, and Asian Americans are more reserved and use humor as an expression of humbleness and family hierarchy. Therapists need to be sensitive to cultural differences between their uses of humor and the ways clients use humor in their social interactions.

Humor is a tool for modifying behavior. For example, a number of maladaptive behaviors arise because of a lack of self-control. Baumeister, Vohs, and Tice (2007) suggested the metaphor of muscle strength to describe weaknesses in self-control. In their model, **ego strength** is a resource depleted by behavior, biological conditions, and the environment. Ego strength is needed to control thoughts, make decisions, or manage our emotions. When ego strength is low, overeating, overspending, or aggression can result. According to this model, humor and laughter restore ego strength, giving individuals the resources they need to control their behavior. Such theorizing suggests that therapy interventions use humor to provide clients with a tool for improving their self-control and managing their problems.

One such study examined an intervention that practiced humor in group therapy. Sheesley, Pfeffer, and Barish (2016) worked with clients with social anxiety disorders. They developed an intervention program that involved comedy improv. Members of the group practiced spontaneous routines. These routines not only enhanced group cohesiveness, but they helped members practice managing their social anxiety.

In addition to improv routines, Sheesley et al. (2016) used other activities drawing on humor. One involved adding funny expressions to another's statement by beginning their response with "yes, and…." For example, *The sky is blue. Yes, and the clouds are elephants*. Another example involved one member adding a word to "1,001" and another member adding a phrase to make a joke. For example, "*1,001 bananas*" might be answered with *1001 bananas walk into a restaurant. The waiter says, "We don't serve your kind here". The bananas shed their skins as they run away. The waiter then slips on the peels and is unable to get up* (Sheesley et al., 2016, p. 165). Using humor, the clients with social anxiety disorder practiced social

interchanges that involved thinking quickly on their feet, and they were rewarded for facing their fear with shared laughter and positive feelings from each other's joking.

Recap

Clinical psychology describes, explains, and predicts maladaptive behavior. Psychodynamic, reversal theory, and existentialist approaches provide frameworks that apply to maladaptive behavior in general and humor in particular. For psychodynamic theory, humor and laughter are a means to express unconscious thoughts and feelings. They are defense mechanisms to protect the self and foster mental health. For reversal theory, humor and laughter are experienced when we are in a playful state of mind (paratelic) as compared to a serious, goal-oriented state (telic). The switch between states comes with emotional and arousal changes. We feel relief from anxiety when moving to the paratelic state. Existentialism suggests humor is freedom from social constraints and is therefore play (freedom from the rules of the real world). In these theories, humor may provide insight into clients' feelings of anxiety, inabilities to experience relief, or how to restore positive feelings.

Issues concerning particular disorders involve difficulties with social relationships, mental health stigma, and the fear of being laughed at (gelotophobia) because an individual with a disorder may think and behave differently than others. Difficulties with social intelligence may result in misunderstanding social cues that help disambiguate humorous situations. Humor production may also be affected. In this chapter, we reviewed autism spectrum disorders, borderline personality disorder, and schizophrenia to highlight current directions of humor research involving cognitive, emotional, and social deficits.

The cognitive and personality perspectives contribute to our understanding of humor of clinical symptoms and disorders. Humor styles, in particular, provide insight into individual differences to explain the severity or frequency of symptoms. For example, aggressive humor style is often correlated with maladaptive social relationships (e.g., depression and psychopathy). Measures of coping (CHS) and sense of humor (MSHS) help therapists draw on clients' strengths to work on improving their social relationships and replacing their maladaptive behavior with more appropriate behavior that produces positive feelings.

More than ever, humor inside therapy is encouraged. Humor has the ability to increase rapport between therapist and client, to illustrate cognitive distortions in interpreting ambiguous situations, and to increase positive feelings. Concerns about humor in therapy involve misunderstandings of why humor is expressed in the session by therapist or client. Interventions help clients find humor in their daily activities, and these activities increase positive feelings, decrease cognitive distortions, reduce clinical symptoms, and increase coping skills.

Suggested readings

Apter, M. J. (1984). Reversal theory and personality: A review. *Journal of Research in Personality*, *18*, 265–281.

Clark, C. N., Nicholas, J. M., Gordon, E., Golden, H. L., Cohen, M. H., Woodward, F. J., . . . Warren, J. D. (2016). Altered sense of humor in dementia. *Journal of Alzheimer's Disease*, *49*, 111–119. doi:10.3233/JAD-150413

Fox, L. E. (2016). The use of humor in family therapy: Rationale and applications. *Journal of Family Psychotherapy*, *27*, 67–78. doi:10.1080/08975353.2016.1136548

Suggested class activities

Activity 9.1. Discuss the models

In small groups, discuss whether the study of clinical psychology from a medical or business model changes how we frame humor's role in maladaptive behavior.

Activity 9.2. Discuss strategies to switch to a paratelic state

When we are busy with school work, the deadlines and multitasking demands required to succeed may motivate us to stay in a telic state. Given the benefit of humor, discuss ideas of what students can do to maintain their flexibility in switching to a paratelic state (or returning to a telic state after a study break).

Activity 9.3. Discuss mental health stigma

Mental health stigma is a major problem for individuals with psychological disorders. a) If the disorder impairs their detection, expression, or comprehension of humor, how might this increase the reluctance of others to associate with them? b) Discuss the importance of using humor to reduce mental health stigma.

Activity 9.4 Novices and misattributions of knowledge

Because we are not skilled therapists, the chance of error is high when we infer the unconscious motives of why someone used humor instead of literal expressions. Discuss the pros and cons of interpreting someone's humor as an expression of hidden desires, conflicts, or guilt. For example, how might the difference between inferring you made a joke to make me feel better and you made a joke in order to express unconscious sexual desires affect my response to your humor?

Activity 9.5. Evaluate reversal theory

List and evaluate the strengths and weaknesses of reversal theory as a general theory of behavior. Consider how reversal theory includes cognitive and motivation concepts but does not include Freudian structures of the unconscious mind. Does this inclusion and exclusion strengthen or weaken reversal theory?

Activity 9.6. Connect knowledge about humor and the brain with client needs

More than ever, many psychological disorders are known as brain disorders. a) Connect information about humor and the brain (see Chapter 2) with possible brain changes that occur in some mental health disorders (such as schizophrenia which is marked by brain atrophy). b) Discuss how humor in therapy sessions or as intervention exercises might need to be modified due to particular areas of the brain affected by the disorder.

Activity 9.7. Humor portrayals in individuals with mental health disorders

Watch a movie that focuses on a character with a mental health disorder, such as *GOOD AS IT GETS* (Jack Nicholson plays a man with OCD). Document examples in the character's

production, appreciation, or understanding of humor. Evaluate whether the media portrayal of humor matches research on humor for individuals with that disorder. (Find information about humor and the disorder from PsycInfo to help inform your evaluation.)

Study guide

Concepts and theories

Aggressive humor
Catharsis
Defense mechanism
Existential freedom
Guilt
Paratelic states
Psychodynamic theory
Relief theory
Repression
Reversal theory
Superiority
Telic states

Review questions

1. Explain how a) humor generates guilt and anxiety, b) is an expression of repressed feelings, and c) functions as a defense mechanism.
2. Describe how Apter's reversal theory applies to humor. Include a point about how Shurcliff's (1968) study supports the role of relief to experiencing humor.
3. Use examples within the chapter to show that humor styles provide a means to understand the role of humor in a psychological disorder or as a treatment/intervention.
4. When we experience conflict, guilt, and anxiety, tension can build up in the psychodynamic structures of the mind. One way to release this tension is through
   a. laughter
   b. repression
   c. relief
   d. freedom
5. In reversal theory, the state of mind that allows us to enjoy humor is called
   a. telic
   b. paratelic
   c. psychedelic
   d. psychotic
6. Cognitive therapists examine our thought processes for errors or distortions. Humor's nature allows for humor to help point out errors in our distortions. Why?
   a. Sensitive clients have a stronger sense of humor and thus are more likely to form distortions.
   b. Distortions tend to be funny and thus they increase one's sense of humor.
   c. The ambiguity of humor allows for multiple interpretations and highlights the uncertainty of our cognitive interpretations.
   d. Depressed patients often fail to have a sense of humor, and thus do not make cognitive distortions.
7. Aggressive humor is humor meant to hurt others. Research examining the correlates of aggressive humor finds the following:
   a. Aggressive humor is not positively correlated with empathy.
   b. Aggressive humor is not positively correlated with impulsivity.

c. Aggressive humor is positively correlated with aggressive behavior.
d. Aggressive humor is positively correlated with respect for authority.

8. Which of the following is one reason why a therapist might encourage humor in therapy?
   a. Not all clients take therapy seriously.
   b. Humor evokes sympathy.
   c. Humor keeps the focus off the difficult, sensitive issues.
   d. Humor helps establish rapport and the sharing of a positive experience.

Answers to multiple choice: 4) a, 5) b, 6) c, 7) c, 8) d

10 Applied psychology

Learning objectives

1. Identify applied settings where psychologists study humor.
2. Evaluate the role of humor in advertisements.
3. Evaluate the role of humor in the workplace.
4. Evaluate ways humor in educational materials influences learning.

Assumptions of the field

1. Psychological principles tested in the laboratory can be applied to field studies.
2. Psychological theories suggest research questions and solutions to problems in the field.
3. Laboratory research suggests research methods for studying problems in the field.

Applied perspective and principles

Psychology is everywhere. We find psychology careers in government, hospitals, courtrooms, classrooms, and businesses (see Donaldson, Berger, & Pezdek, 2006). But applied psychology is more than finding psychologists working in various settings. It is a perspective concerned with applying psychological theories for solving problems in particular settings.

Applied researchers use psychological theories from all the perspectives covered in this textbook to bridge the gap between basic and applied research. Training in experimental psychology helps to suggest research questions to ask, variables to manipulate, conditions to compare, procedures to collect and analyze evidence, and ways to communicate these findings to the public or concerned parties. The setting also suggests questions to ask and methods to use for gathering evidence. With this knowledge, applied psychologists pose

solutions to problems for specific populations, such as consumers, managers, educators, or policymakers.

Core concepts

Applied psychologists examine whether findings in the laboratory generalize to the real world. That findings should generalize is not a given. Why would people brought into a lab to watch a video laugh at the same things as when joking around the office water cooler? One reason is because our behavior is consistent across settings. Our preferences and attitudes more or less stay the same across time and place. **External validity** concerns the ability of findings of experiments conducted in the laboratory to generalize to real-world settings. Ideally, laboratory studies have high external validity and do generalize to the real world, and, conversely, problems in the real world can be studied in the laboratory.

Basic research is conducted in controlled laboratory settings and typically examines the boundary conditions of the influences of humor on behavior. Laboratory studies may approximate real-world settings to increase their **ecological validity**, a concept related to but not identical to external validity, because findings from a lab study that approximates the real world (high in ecological validity) may or may not generalize to the real world. **Applied research** is focused on problems specific to a particular setting or group of people. It applies principles based on basic research or identifies new ones that emerge from problems unique to the particular setting. Applied researchers may use the vocabulary of basic researchers or they may develop their own to fit the particular problems particular to the setting.

Applied humor researchers may use **ethnographic methodology**. In this method, the researcher joins the natural setting and moves among participants (who may or may not know the researcher is studying them), observing humor usage. In such research, specific anecdotes are used as evidence for hypotheses or as illustrations of principles. The data tend to be qualitative in nature. The reaction of the observer (the researcher) is often included to provide first-person context to the anecdotes. Other methodologies used in applied research include those found with other psychology perspectives, namely surveys, questionnaires, and experiments.

In this chapter, we limit our focus to three applied areas: advertising, the workplace, and educational materials. Researchers in these settings ask such questions as, does humor help make advertisements more persuasive? How might humor help employees do their jobs more effectively? Do cartoons in textbooks or lectures enhance learning?

Marketing and advertisements

> Advertising agency: Eighty-five percent confusion and fifteen percent commission.
>
> – Fred Allen (as cited in Esar, 1949, p.18)

Every year, companies invest billions of dollars in advertising campaigns (statistica.com; Weinberger, Spotts, Campbell, & Parsons, 1995). Advertisements function to increase awareness of a brand (Charmin: *We know where to go for a little inspiration*), an issue (Stop littering: *What goes around comes around. Keep the sea clean*), or a behavior (Smoking. *Tar the roads,*

not your lungs). Their goals range from encouraging purchasing behavior, contributing to a cause, changing attitudes, or complying with requests.

Advertisements come in many forms; they may use words, pictures, sound, or video, and may appear in television, radio, magazines, or signs around town. Advertisers may use brand placement inside delivery of a story, television show, or movie, such as using Reese Pieces in the movie E.T., which increased liking of the product in the viewing public (Gibson, Redker, & Zimmerman, 2014). Humor appears in about 10–30% of all advertisements, and many marketers use humor to attract viewers' attention (Weinberger et al., 1995). With the wide variety of functions and contexts in which these advertisements appear, and with the complexity of humor as a construct, generalizing about the role of humor in advertising is complicated. To help parse this vast amount of research, we will examine humor's role for memory of the ad or the brand, liking the ad, brand, or message, interactions with individual difference variables, and whether humor is still effective when ads are viewed repeatedly over time.

Memory for product brand in humorous advertisements

It would appear at first blush that an advertisement was ineffective if viewers didn't remember the brand or product it advertised. And, in fact, memory for information in advertisements is considered by many to be the measure of an ad's success or effectiveness (Goode, 2007), so much so that researchers on advertising make comments such as, "Advertising without recall is advertising without impact" (Precourt, 2016, p. 230). However, the research on memory for brand or product reveals a complicated story, which, of course, adds to our difficulty in understanding the effect of humor on memory for brand names or products.

First, there are a number of variables that might matter to brand memory. These include the duration of viewing the ad, having seen or heard the advertisement before, familiarity with the brand, what the product is, and whether you use it (Precourt, 2016; Weinberger et al., 1995). Advertisers can only control these variables to a certain extent in the real world, such as by advertising x number of times in x number of venues. For example, advertisers may make use of the isolation effect, which is increased memory for a distinctive item in a series, by embedding one humorous ad in a series of serious ads; in this case, humor benefits consumers' memory (Dunlosky, Hunt, & Clark, 2000; Pick, Sweeney, & Clay, 1991).

Second, advertisements may include direct branding of products, which involves the explicit use of the brand name, or indirect branding, which involves advertising through "brand elements", such as logos, characters, or slogans (Hartnett, Romaniuk, & Kennedy, 2016). The animated Yellow or Red M & M characters, for example, are easily identified as M & M's without the ad including the brand name. However, despite consumers' accurate identification of brand with indirect branding when looking at ads, Hartnett et al. (2016) found that recall for brand names used in direct branding advertisements was higher than indirect branding, and that having both a picture (indirect) and the brand name (direct) produced best memory. Humor, falling within creative indirect branding elements, is most effective in terms of recall with the brand name included in the advertisement.

Third, methods to measure memory for advertisements may happen by recall (including cued recall) or by recognition. In recall, participants generate the answer from memory on the test, whereas in recognition, an answer is provided, and they judge whether it matches

their memory or not. Advertisers debate whether the best test of memory for an advertisement is recall or recognition, and each method has its measurement problems (see du Plessis, 1994) that cloud the issue of measuring an ad's effectiveness. In addition, even when looking only at recall tests, the evidence is mixed, so that, whereas one study found that recall for humorous slogans (*Heineken: the beer that made Milwaukee jealous*) was more memorable than nonhumorous ones (*Heineken: that's some beer*) (Pick et al., 1991), another found no advantage, and even harm, in recall for humorous ads (Hansen et al., 2009).

Fourth, it is possible that humor could hurt brand memory if viewers gave attention to the ad's content or to its humor but not to the brand, an idea supported by finding the gist of humorous ads are better recalled but not their products compared to nonhumorous ads (Hansen et al., 2009). For example, viewers who talk about Superbowl commercials might remember liking a funny piece (say Betty White turning into a football player after eating a snack) but not the product being advertised (Snickers chocolate bar). Humor could be distracting and cause interference. A brand is remembered better when humor is related to the product than when it is embedded only to attract attention (Hansen et al., 2009). Researchers also sometimes blur memory for brand and memory for claims made in the ad, so that humor may help elaborative processing for claims but not for rote recall of brand names (Hansen et al., 2009).

Lastly, memory for brand may be measured for its implicit memory, not only its explicit memory. Our experiences result in two kinds of memory: explicit, which involves conscious recollection tested by recall and recognition, and implicit, which involves perceptual fluency and familiarity, tested by perceptual ease or attraction. Research shows that these two kinds of memory are independent of each other (e.g., Jacoby, 1991). Implicit memory can influence brand recognition (as well as liking covered in the next section). For example, Berg and Lippman (2001) noted that shoppers tend to select items based on brand name recognition and not on advertisements' recall. When shoppers look over products, familiar brand names may "pop out" among the shelf selections, and thus be purchased, even though shoppers don't explicitly remember any particular advertisement. Familiarity/fluency of implicit memory causes this pop-out effect. Berg and Lippman (2001) showed that even if humor in ads did not affect explicit recognition for the brand, humorous ads increased implicit associations between brand names and product types.

To explore possible different influences of explicit and implicit memory for advertisements, Hansen et al. (2009) used a design technique called process-dissociation procedure, developed by Jacoby (1991), to disentangle influences of explicit and implicit memory on test performance. This procedure involves two tests, one in which participants identify items that appeared in the presentation list (inclusion test), and one in which they try not to use any of the presented list items (exclusion test). For example, if an advertisement for YouTube was in the presentation list, on the inclusion test, participants should identify YouTube as being on the list, and on the exclusion test, they should only check or write in new items and not use YouTube. If, however, on this exclusion test participants check or use YouTube, then we can infer conscious recollection of that ad was low because they didn't remember it being on the list and thus thought it was okay to write it on the exclusion test. By using Jacoby's process-dissociation formula, researchers can use such test data to determine the probability that conscious recollection and familiarity/unconscious processes separately influenced

Table 10.1 Mean Proportion of Explicit and Implicit Memory for Brand Names as a Function of Advertisement Humor (Hansen et al., 2009)

	Explicit	*Implicit*
Humorous Advertisements	0.12	0.12
Nonhumorous Advertisements	0.23	0.09

test performance. Hansen et al. (2009) argued that distraction would hurt explicit memory but not hurt implicit memory.

As shown in Table 10.1, results indicated that, indeed, only conscious recollection of the brand name in humorous advertisements was forgotten but not its implicit memory. Another way to frame this finding is that humor made the brand name less accessible for recall. Hansen et al. (2009) found support for this conclusion in another experiment that examined Stroop color naming. They reasoned that if humor in the ad harmed the processing of brand names, by making them less accessible, then when the name appeared in a color-naming task, those names processed with humor would show faster naming times than names processed without humor, whose processing would cause interference and slow down color naming. After the presentation of the ads, the brand names appeared in a Stroop test. The researchers found color-naming RTs for brand names in humorous ads averaged 708 ms., whereas they slowed to 790 ms. for names in the nonhumorous ads. These data support the idea that humor prevents brand name in the ad from being fully processed.

Although marketing executives might want humor to show benefits for product or brand recall, implicit memory is important because it may rely on associations made about products and the advertisements. Goode (2007) showed that due to the fluency obtained from exposure to humor in the ad, participants made favorable attributions about the product. Specifically, familiarity led them to attribute truth to ad information. That is, when forgetting the source (the ad), they attributed the cause of their perceived fluency or feelings of familiarity to factual knowledge instead of a persuasive ad. Humor and implicit memory help form positive brand name associations, which definitely are desired outcomes for advertisers, and thus even in the absence of explicit memory, make advertisements effective.

Seppänen, Hellman, and Katainen (2017), working from a Freudian perspective, suggested that humor in alcohol advertisements activates playful attitudes and reduces critical thinking that feeds denial of addiction (and may induce the addict to use alcohol). They begin their article with the quotation by Groucho Marx, "Humor is reasoning gone mad." A theme emerges from this research (implicit memory, associative conditioning, or Freudian unconscious processes) of system 1 thinking (see Chapter 1) whereby humor's positive associations with the product and brand may improve liking for the brand, a topic which we turn to next.

Liking humorous advertisements

As argued earlier, brand memory is not the only measure of the effectiveness of ads. Liking is important, too. Does liking an advertisement because it contains humor make it more

effective? Does liking it affect our attitude toward the company, and make it more believable or persuasive? Does it increase intention to buy?

To examine these questions, Gelb and Pickett (1983) gave participants either a humorous (with cartoon) or serious (no cartoon) advertisement that marketed a kit to help quit smoking. The cartoon showed a woman speaking to a man who is smoking, *What do you mean "you nonsmokers don't know what you're missing?" I know what I'm missing: lung cancer, heart disease, emphysema*. . . . The serious advertisement showed the statement, *Where there's smoke… there's lung cancer, heart disease, emphysema*…. Both ads included the same statement about ordering a kit. The researchers collected participants' agreement on whether information in the advertisement was true, sponsor worthy, persuasive, and whether they intended to order the quit smoking kit.

Gelb and Pickett (1983) found that liking the advertisement correlated with persuasiveness and attitude toward quitting. For example, liking and disagreeing with the statement *Nobody would even consider giving up smoking from seeing this ad* positively correlated. For intentions to order the kit, liking the advertisement was correlated with intention to order, although only about 29 of 136 individuals who agreed strongly or somewhat agreed with the advertisement indicated the intention to order one. Humor detection (agreeing that there was humor in the advertisement) correlated with positive belief in the organization sponsoring the advertisement. However, as the researchers noted, it is not clear whether humor caused an increased favorable impression of the organization or whether a favorable impression of the organization facilitated humor detection in the advertisement.

Based on similar studies, researchers find that humor in advertisements draws the attention of the viewer, generates interest, and increases positive attitudes toward the product or sponsor. The positive attitude generated by liking the humor typically leads to better attitude for the brand or message (Lee & Mason, 1999).

In addition, humor helps the audience process/understand the advertisement's message (Weinberger & Gulas, 1992), and with ease of understanding comes positive feelings. However, research shows it matters whether the viewer supported the message or not when viewing the humorous advertisement. Yoon and Tinkham (2013), for example, studied how liking the message *Save the forests by using less paper* interacts with humor. They used either advertisements showing a forest ending at open, barren land (no humor) or a picture of Tarzan swinging from the forest falling into open, barren land (humor). They found that if participants reported high engagement with the issue, they did not like the humorous advertisement, but if participants reported low engagement and avoided thinking about the problem in their daily lives, they reported liking the humorous advertisement.

With these data, Yoon and Tinkham (2013) suggested that engagement with the issue is motivation to process the message in the advertisement. Those high in engagement don't need more motivation, and the humor is distracting or deemed irrelevant. Those low in engagement, however, become motivated to process the message when resolving humor's incongruity. This resolution reduces the arousal of the threatening message. Further, when individuals don't care about the issue initially, they are likely to use heuristics to process the surface information (the humor) in the advertisement. Humor, then, makes the threatening information more approachable and easier to process rather than ignored or avoided. Without humor, the message in the advertisement is ineffective for the disengaged.

Interestingly, humor in advertisements for soliciting funds can reduce donations rather than increase them. Boster et al. (2016) examined advertisements for soliciting funds for a society that works with the homeless. Advertisements were either humorous (e.g., *Family kidnapped by ninjas, need $4 for karate lessons*.) or not (e.g., *Please help, I'm hungry and unemployed and homeless*.). Nonhumorous advertisements were more effective (10 times more money–$49.32) than humorous ($4.82) advertisements.

Sometimes advertisements focus on a health issue for which cultural values incite shame or fear of negative evaluation of others, such as advertisements for mental health services or medical treatments for sexually transmitted diseases. Humor's frequency in health advertisements is low (Yoon, 2015), yet her data showed that humor can help reduce the threat of shame. Further, socially anxious people enjoy such humor more. Yoon (2015) advocated using humor in advertisements because those who avoid seeking help might do so when the humorous advertisement lowers their stress response to the message. However, as found with engagement with social issues, Yoon (2015) found that those who did not feel shame about the message did not rate the humorous advertisements more positively than the nonhumorous ones. Thus, humor in advertisements carries a risk of viewers not liking the advertisement, but if you think about it, those who are ashamed of their problems need to get the message, and therefore, having humor in the advertisements is better than not having it, as those who are not ashamed are likely to seek treatment without prodding from advertisements.

Funny political slogans catch our attention, as in *Hearing crazy voices? Turn off Fox News* or *If republicans don't believe in government, perhaps they shouldn't run for it*. Political advertisements may try to encourage voting and for a particular candidate or care about an issue of a party's platform. Political cartoons tend to portray party politics and support for party agendas (Conners, 2017). In her review of the literature on effectiveness of political cartoons and advertisements, viewers likely found humor in political advertisements funny when they agreed with them but did not change their opinions when they disagreed with them. Interestingly, the humor appreciation is related to individual differences in liberal and conservative viewpoints. For example, political conservatism is associated with the lower liking of humor in nonpolitical ads (perhaps the reason why jokes like those that began this paragraph are made by liberals targeting conservatives). In one study, conservatism negatively correlated with tolerance of ambiguity, which reduces motivation to process humor (Young et al., 2017). See Chapter 4 for more information on political humor.

Individual differences and humor in advertisements

Culture, age, and gender

Differences in culture, age, or gender help explain humor's influence on advertisements' effectiveness (Madden & Weinberger, 1982). Humor in an advertisement in one country may not be perceived as funny or be effective in another country (Alden et al., 1993). Recall from Chapter 5 "Cross-Cultural Psychology" that humor perception and appreciation may vary by culture. These differences may interact with cultural values of the purpose of advertisements (Crawford & Gregory, 2015). For example, the French, who use humor in advertisements more

than Americans do (Taylor, Hoy, & Haley, 1996), use humor for emotional reactions, whereas Americans use humor to inform. Taylor et al. (1996) interviewed French creators of advertisements where two models of advertising emerged. The French model made an emotional connection, a pleasurable seduction, to the viewers, such as using visual images of sexual seduction in advertisements in creative and sometimes humorous ways (e.g., wine glasses and flowers for a car washing company). The American model informed viewers about the product or brand in advertisements, and humor drew attention to enhance informing. With this culture clash, French creators (and likely French viewers of ads) found American advertisements boring (Taylor et al., 1996).

In their review of the literature on humor in advertisements across cultures, Crawford and Gregory (2015) generated a list of the "7Cs" (p. 573) of dimensions that humor researchers find matter to advertisements' effectiveness. These include the culture selection (national, regional, or subcultural levels), categorization (intended or perceived), content (theme, modality, and type of product), context (the content surrounding the ad), consumer (demographics, Need for Humor, Need for Cognition), consequences (cognitive, affective, behavioral), and complexity (e.g., replications and extension, measurement and construct validity). As if cross-cultural studies in humor were not already difficult to conduct! You can imagine the difficulties in designing humor research studies to capture cultural differences (and similarities) in ads on all these dimensions.

Turning to gender, the appearance of stereotype humor in ads may result in problems if genders do not share the same attitude for the stereotype. However, if the humor creates positive feelings, it is possible that it helps to mitigate negative reactions to the stereotype (Eisend, Plagemann, & Sollwedel, 2014). For example, humor may increase liking of advertisements when including nontraditional gender stereotypes. But, if the humor does not generate positive feelings, as sometimes also happens with aggressive humor, the viewers may not like the ad. Further, it is possible the same ad can cause different responses to different genders. For example, sexist humor that puts down women in advertisements tends to result in negative evaluations by women but may increase positive evaluations by men (Swani, Weinberger, & Gulas, 2013).

Lastly, liking an ad can be measured beyond self-report or judgments. The act of sharing advertisements on social media is also a measure of their effectiveness. The more users share an ad, the more marketers know it caught their attention. Relatedly, Kim and Yoon (2014) noted an increasing frequency on social media of violence (aggressive humor) in advertisements and a corresponding increase in sharing them. Kim and Yoon (2014) surveyed more than 400 Internet users and found younger people liked advertisements with aggressive humor more than older people did; they found no gender effects. Further, the researchers suggested that because arousal increases when watching violence, advertisements with aggressive humor may have their most effectiveness when they appear during sports games or on sports websites.

Need for Humor and Need for Levity

In addition to targeting advertisements to members of a culture or gender, the study of individual differences also includes how motivated individuals are to seek humor in their

lives. Viewers of advertisements may differ on their Need for Humor and Need for Levity (see Chapter 3 "Personality Psychology"). Those high in Need for Humor may be motivated to carry out elaborative processing about the claims made in ads with humor in them. Those low in Need for Humor, however, might attend to humor in an ad only if the humor was unexpected. In examining the interaction of Need for Humor, humor's expectancy, and its relevance to the claims in ads, Kellaris and Cline (2007) found that Need for Humor does influence memory for claims made in ads. Specifically, those low in Need for Humor remembered claims made in unexpected humorous ads much better than when humor was expected (no motivation in this case to put more effort into processing the claim), and those high in humor were unaffected in their recall of the ads' claims, as they processed its humor, relevant or not.

We turn now to Need for Humor and liking the ad or product. We might expect that if you have a high need to use or find humor in your life, then you may like advertisements that have humor in them, and if you have a low Need for Humor, you may like humorous advertisements less. Research supports this interaction, too. Cline, Altsech, and Kellaris (2003) collected ratings of how much participants liked funny or serious advertisements. Those with a high Need for Humor noticeably responded to the humor in the advertisements. On average, they rated advertisements low in humor at 3.52 on a five-point scale, and advertisements high in humor at 4.64. Individuals with a low Need for Humor rated advertisements low in humor at 4.34 and those high in humor at 4.26. As shown in the pattern of means, individuals with a low Need for Humor were not affected much by humor in advertisements, but those high in humor responded positively to its presence and negatively to its absence.

In further research, Cline et al. (2011) examined the Need for Levity or lightmindedness. Those high in Need for Levity are motivated to seek out amusement. The construct of the Need for Levity includes four components: internal humor (need to generate it), internal whimsy (need to experience or act playfully), external humor (need to experience humor in other people or situations), and external whimsy (need to experience playfulness in other people or situations). Those high in internal or external humor rated advertisements more favorably. Cline et al. (2011) suggested that advertisers should select their advertisements for targeted audiences. For example, humorous commercials would appeal to viewers during comedy shows who likely are watching because they have a high need for external humor.

Advertising and context effects

The research on humor in advertisements reviewed earlier suggests a complicated relationship between the message, the humor, and the viewer. This relationship is also explored when humor exists near but not actually in the advertisement. Strick, van Baaren, Holland, and van Knippenberg (2009) studied liking of nonhumorous magazine advertisements when a humorous cartoon appeared on the same page. They wondered if humor in a nearby advertisement could prime an implicit attitude for the product appearing in a nonhumorous advertisement. They found that liking the advertised product increased by spatial association. That is, humor processing of the nearby cartoon carried over to the processing of the advertisement, a mechanism known as affect transfer or evaluative conditioning (Strick et al., 2009, p. 36). By associating the effect of the humorous cartoon with the product, participants experienced an implicit attitude change toward the product.

This attitude change mediates the relationship between humor and advertisement outcomes. In their Experiment 3, for example, after exposure to advertisements, participants were able to physically choose products to test, and they chose the product brand more often that was previously paired with a humorous cartoon than a nonhumorous one. Interesting, their data also showed that memory for information in the advertisement was poorer when paired with a humorous cartoon. This finding again suggests that humor processing distracts viewers from giving more cognitive resources to the processing of the information in the advertisement needed for explicit memory. As Strick et al. (2009) noted, an advertisement is still considered effective when product choice is made by implicit attitude and not by explicit memory for the information.

Repetition of humorous advertisements

Humor is used in about 30% of radio announcements (Weinberger & Campbell, 1991). Surprise at the appearance of humor in advertisements contributes to their effectiveness (Alden et al., 2000; Lee & Mason, 1999). However, most radio advertisements appear on multiple occasions. Surely, we are not surprised each time we hear it. And, in the absence of novelty, a joke's incongruity is quickly resolved on subsequent presentations, further reducing its humor. Is there empirical evidence that advertisements that were initially effective become less so when repeated?

To answer this question, Gelb and Zinkhan (1985) examined the effectiveness of humorous radio advertisements before and after six exposures. Liking ratings decreased with each repetition, so that initial ratings of about 4.2 on a 6-point scale decreased to about 2.2, just above the ratings of the nonhumorous commercial (Mayor's speech, which was rated around 2.0 throughout all six exposures). However, the researchers found evidence that changing perceptual features (e.g., sometimes male voice, sometimes female voice) across repetitions slowed the decrease in humor ratings.

Although repetition may reduce attention in general, optimal levels of repetition of funny advertisements may be found when listeners are given a reason to attend, such as needing to catch precise details, attending to expiration dates, or location of the event. It may also matter whether the memory test is taken soon after listening to the repeated ads or after longer delays (Craig, Sternthal, & Leavitt, 1976). Most researchers who study the effectiveness of humorous advertisements check for immediate influences on participants' memory or liking, and more research is needed to examine long-term effectiveness (Craig et al., 1976).

Humor in the workplace

> I like work. It fascinates me. I sit and look at it for hours.
>
> – Jerome K. Jerome (as cited in Esar, 1949, p. 114)

Organizational psychologists study the effect of employee satisfaction and office climate on worker production or success. We can imagine that too much humor or practical jokes at the office might be distracting or would slow down productivity. However, humor is known to have positive effects in reducing stress (see Chapter 7 "Health Psychology") and enhancing group cohesion (see Chapter 4 "Social Psychology"). Such research argues for using humor in the workplace (Clouse & Spurgeon, 1995).

The study of workplace humor has the potential to enhance our understanding of management and organizational behavior (Duncan, Smeltzer, & Leap, 1990). Research shows that having fun at work increases employee satisfaction, performance, engagement with the company, and employee morale (Plester, 2009). However, organizations differ in how structured they are, how large they are, and whether their work culture supports the use of humor in various settings within it (boardroom, office, around the water cooler, and interacting with customers). Organizational boundaries set what is allowable in a company. Plester (2009) found that formal companies tend to have narrow boundaries, and informal companies have wider ones. We would expect humor functions better in companies with wider boundaries.

Humor may occur in the workplace through various intentional means. For example, spontaneous fun is encouraged by Southwest Airlines and Google (Plester, Cooper-Thomas, & Winquist, 2015). Humor may be managed fun, such as the company implements strategies and policies to fill objectives that include humor. One example of managed fun is a company that injects humor in an employee-mandatory cultural-sensitivity awareness workshop (Rocke, 2015). Or humor may be encouraged to happen alongside the work activities (Plester et al., 2015), such as hanging up cartoons in cubicles or bulletin boards.

Expressing humor, verbal humor in particular, contributes to workplace culture (Holmes & Marra, 2002). It contributes to the formation and maintenance of social relationships and groups. As one example, humor may function in coworker interactions to show a mutual collaboration, such as supporting or echoing ideas. For example, one employee could joke about their many roles at work and say *I need another head just to wear all the hats I have to put on*. and a coworker could reply *ah, but then you would need more time for haircuts*. or *Yes, but at least your shoulders are broad enough to hold another head*. Such humor exchanges facilitate supportive and collaborative work relationships.

Sense-making with humor

One interesting idea from organizational psychologists who study humor at work concerns how humor helps employees make sense of ambiguous events within an organization. Co-workers frequently discuss situations where it is unclear what a policy change might mean. For example, if a company announced cutbacks on overtime, employees might interpret this as *we need to pitch in to help the company through tough times* or they might interpret this as *the company doesn't care about our needs* (Blanchard, Stewart Cann, & Fullman, 2014). This sense-making influences employees' attitudes and memories of the company. Through answers on questionnaires, Blanchard et al. (2014) found that humor played an important role in how employees interpreted ambiguous events. When managers supported humor in the workplace, that is, when they created a positive humor climate in the workplace, employees tended to interpret ambiguous events in positive ways, but when there was a negative humor climate, negative interpretations were more likely.

Such powerful findings suggest that employees' humor use helps foster identification with the organization. Thus, encouraging humor use at work is endorsed not because it makes

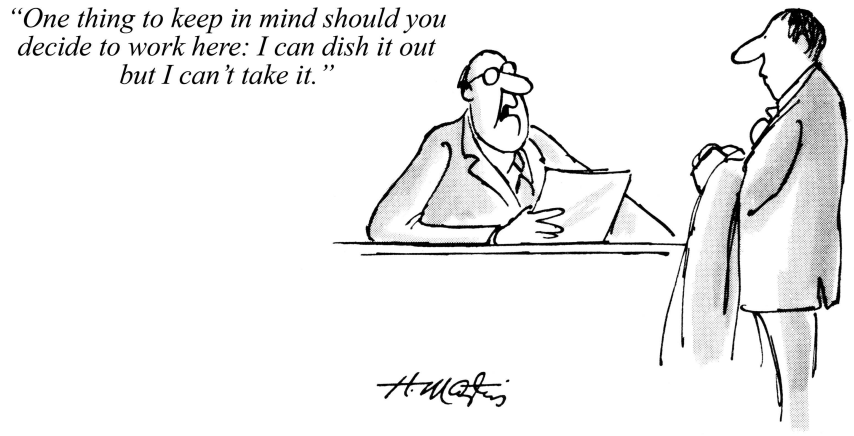

Figure 10.1 Managers' use of humor helps reduce stress and establish norms.
Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

for happy or relaxed employees but because it helps employees maintain a positive work climate that encourages identification with the company, which encourages positive interpretations of ambiguous events at work. Shared attitudes contribute to workplace culture. Organizational psychologists suggest that encouraging humor appears less manipulative and less risky for management while at the same time increasing resources and rewards of employees working in a positive climate (Cooper, 2005).

A strong benefit at work, humor helps make routine tasks more interesting (Holmes & Marra, 2002). Because it is linked to creativity, employees who use humor tend to generate creative solutions to problems (Lang & Lee, 2010). The ambiguous nature of humor, and how it challenges social norms, often connect to organizations' goals to be creative or think outside the box. As Lang and Lee (2010) noted, when humor relieves stress, it opens opportunities for employees to continue creative thinking that might otherwise be too effortful under stress. However, when humor is used to control others or assert one's superiority, humor reduces creativity. As with psychoanalysis, cartoons of office workers poke fun at ambiguous behavior in the workplace (see Figure 10.1).

Workplace culture

Holmes and Marra (2002), using ethnographic analyses, found that humor significantly contributes to a community's culture, where workers hold shared beliefs and actions. Humor serves to sustain relationships, share lore, work coherently, and create a style of membership and belonging. Mesmer-Magnus, Glew, and Viswesvaran (2012) reviewed relationships between humor and employee positive outcomes (burnout, health), and work-related outcomes (performance, job satisfaction), and leader effectiveness. Their meta-analysis found that in 49 studies employee humor enhanced performance, satisfaction, cohesion, health,

and coping, and decreased burnout, stress, and work withdrawal. Leader humor enhanced workers performance and their satisfaction. In sum, humor plays mainly a positive role at work, but, of course, sexual humor or derogatory humor causes problems.

Lang and Lee (2010) examined three humor types in the workplace based on their function: liberating, controlling, and stress-relieving. Liberating humor helps employees take multiple perspectives and a fresh look at problems. This kind of humor, related to creativity, allows employees to broach taboo topics, correct faulty beliefs, and reorganize ideas by activating remote associations. An example from their questionnaire of liberating humor is *We usually handle sensitive organizational issues by joking about them*.

Controlling humor stifles creativity; it includes using irony, satire, caricature, and sarcasm, which may be used creatively, but it also conceals malice and expresses prejudice to cause others to restrict their freedom of expression and creativity. An example from their questionnaire is, *Stories are often told to put down others*. Decker and Rotondo (1999) found that the use of negative humor in the workplace often encourages others to use negative humor.

Stress-relieving humor increases motivation to tackle complex problems or tasks. It stimulates a positive work culture while providing an emotional release for tension that arises from difficult tasks or a break from the task, allowing them to feel refreshed or return to the task out of the rut. An example from their questionnaire is *We frequently tell jokes to loosen up a stressful work environment*.

Lang and Lee (2010) analyzed data from 324 MBA students and 282 supervisors. They correlated these three humor types with ten statements concerning creativity. For example, *Staff members are encouraged to explore new fields of knowledge*, and *The organization has been innovative in developing new products and services to compete in the marketplace*. They found creativity correlated with liberating humor, negatively with controlling humor, and positively with stress-relieving humor. Impressively, these three humor types accounted for 31% of the variance in creativity scores. Although the study treated these humor types as occurring independently, the authors acknowledged that these humor styles interact. Speaking of interactions, Lang and Lee (2010) noted that the effect of humor in the workplace highly depends on social interactions, between employees and also between employees and supervisors. Supervisors need to understand the functions of humor in the workplace to best manage the impacts of humor. The researchers suggested future research in positive organizational behavior needs to examine these three humor functions and their interaction with contextual variables, such as culture and social norms, and the content of humor that enacts these functions.

To understand how humor is perceived by employees in the workplace, their dispositional characteristics, such as the degree of gelotophobia (fear of being laughed at), may matter. Hofmann, Ruch, Proyer, Platt, and Gander (2017) examined workplace humor with their PhoPhiKat questionnaire that measures gelotophobia (fear of being laughed at), gelotophilia (liking being laughed at), and katagelasticism (enjoying laughing at others). They found that those who scored high in gelotophobia did not discriminate between friendly teasing and ridicule, and negatively responded to these (e.g., with shame or fear). As you might suspect, these individuals reported generally more work stress and less work satisfaction, as did those high in katagelasticism, whereas those high in gelotophilia enjoyed their work. Their findings, like others who have studied bullying (see Chapter 4 "Social Psychology"), suggest that

organizations interested in reducing bullying at work should attend to employees' reactions to humor.

Ostracism, whether bullying or not, is common in the workplace (Neves & Pina e Cunha, 2017). Sometimes employees take sides so they don't lose favor or resources from others in the workplace. Neves and Pina e Cunha (2017) noted that humor minimizes the threat of losing this resource. Co-workers may distance themselves from other employees who threaten the loss of a leader resource. Conversely, co-workers may use humor to point out the silver lining of the situation, which reduces stress or helps keep the threat of losing the leader resource low. If the leader ostracizes an employee, co-workers may use humor to reduce the ostracism and keep the unit functioning and preserve a positive climate.

Some researchers assert that being able to take a joke, that is, when you are the butt of a joke, is part of the male identity, just as being strong means being able to take a punch (Watts, 2007). When women enter a male-dominant profession, they will encounter interactions where they are expected to handle being the butt of the joke, to show that they are "one of the guys." Further, in Watts (2007) ethnographic analysis of humor in a workplace where women were the minority, she found that humor in the workplace served three functions: 1) the men made jokes as resistance to the women's authority; 2) women made jokes with others for obtaining social support, such as in office banter or going out afterwards at a bar; and 3) humor was used to maintain the barrier between the sexes as harassment or a form of punishment. Watt's (2007) agreed with Westwood and Johnston's (2013) review of the functions of humor as symptomatic of the workgroup's social systems. Humor serves a means to reaffirm the status quo. Another reason to use humor instead of direct challenges to authority or power is that humor can be laughed off or ignored but direct statements cannot; employees who make jokes instead of direct statements of criticism may be free from discussing or elaborating their thoughts and feelings.

How managers or leaders in companies use humor matters to their employees and therefore to employee satisfaction or productivity. In general, when superiors are rated high in humor, employees reported stronger favorable impressions of them and greater employee satisfaction (Decker, 1987). Further, supervisors may use humor to place others in good moods that make them more willing to work or open to helping others (Cooper, 2005). When that humor is sexual, however, age and gender of the employee may matter to how he or she evaluates the superior. Female employees older than 25 devalued superiors who used sexual humor, whereas females younger than 25 and male employees of any age did not (Decker, 1987).

When superiors use self-denigrating or aggressive humor, there are several issues that result. One is how to take it, and the other one is how to save face of the superior. Schnurr and Chan (2011) noted that the individual who is the target of the humor has a range of responses, including laughing or smiling, echoing the comment, producing more humor, or increasing their interaction with the superior. Schnurr and Chan (2011) studied discourse data from workplaces in New Zealand and Hong Kong. They noted that responses often were made to save face of the superior as well as exercise the employee's social rights. Politeness often drove the chosen response.

Pundt and Hermann (2015) examined the effect of workplace leaders' humor style on leader-employee interactions. They found that leaders with a positive humor style increased

the willingness of employees to interact with them, but a negative humor style reinforced hierarchical distance. When leaders mocked or ridiculed employees with negative humor, employees saw this as an expression of superiority, which reduced spontaneity of interactions. On the other hand, leaders' positive humor increased the employee-leader interactions which then increased more opportunities for humor to occur. Pundt and Hermann (2015) noted that employees may expect leaders to use humor to lighten stress, and thus a leader's negative humor style disappoints, whereas a positive style is welcomed and encouraged with increased interactions.

Nonfunny occupations

Consider occupations where the daily job description involves death (e.g., morticians) or the stress of human suffering (e.g., firefighters or emergency room doctors). Whether it is appropriate or not to use humor on the job often depends on the perspective of the judge. As you might suspect, timing, place, and context matter. For example, researchers find that workplace humor that occurs in private, behind-the-scenes, functions to create a healthy distance for morticians from their jobs of dealing with dead bodies, while keeping this humor hidden from public interactions with the viewing public (Thompson, 2001; Thorson & Powell, 2001).

Vivona (2014) studied crime scene investigators with interviews and on-the-job observations. He found these workers might use humor to defuse job stress, but, of course, outsiders (some of whom are friends and family members of the victims) might be offended that joking occurs even in private. In his interviews, the investigators expressed difficulties they have in being sensitive and yet needing the stress reduction and connection with co-workers that humor provided. Professionalism required using discretion in the presence of others and attempting to keep the humor to themselves when no one was around. The fact that the field was their workplace made it difficult to limit their humor to private places. Further, some participants noted that the boundary between when appropriate and when not was itself an attraction to some employees to push the limits. Figure 10.2 illustrates humor in the nursing profession.

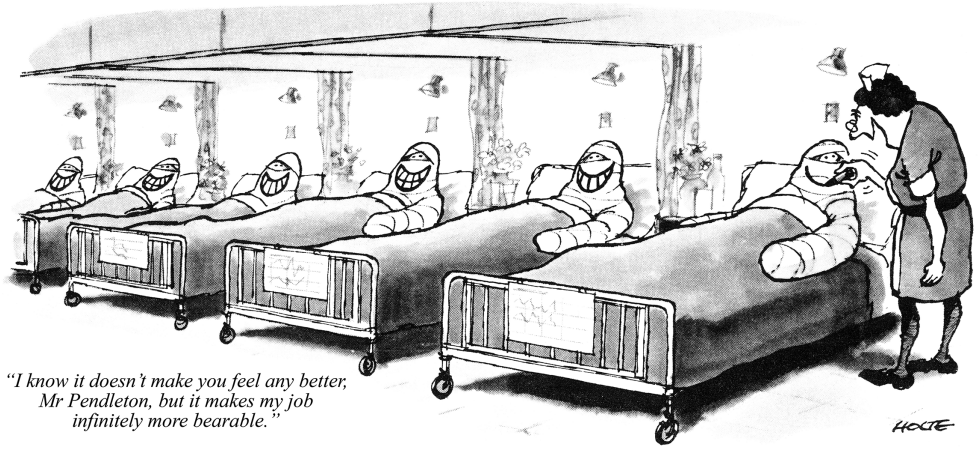

Figure 10.2 Health providers typically use humor to cope with job stress.
Source: Reproduced with permission of Punch Cartoon Library/TopFoto.

Educational materials and settings

If you think education is expensive, try ignorance.

– Derek Bok (cited in Shapiro, 2006, p. 93)

I once had a college professor who liked to tell stories within his lectures. I am not sure if they were humorous, but they were interesting and enjoyable, and they were, in my mind, irrelevant to the lecture itself. For example, he talked about the relationship between Florence Nightingale and her husband's cousin, statistician Francis Galton (the connection to the course on tests and measurement). The stories were interesting, but they, unfortunately, went in one ear and out the other, and of many stories he told, years later I only retained this one story–because the story appeared on the exam! When we complained that it was unfair to test funny stories told in class, that we didn't study the stories, he said that everything he said in class was fair game and we should not have dismissed it as irrelevant.

This story is related to a number of questions: Should humor occur in textbooks or lectures? Is the humor information to retain? If educators do use humor should it be the means of delivery of information, only accompanying it, or should it be the content to be tested? Would it matter if the humor was directly relevant to the information or not? Does it depend on the topic of the course? Does the answer depend on short-term learning or long-term retention? Given the research on advertisements covered earlier, is its effectiveness measured as memory or does students' liking of the course material matter? Do we require students to remember the humor with the fact, like my psychology professor did? Hopefully, you agree by now that there are many questions here that humor researchers can investigate. Researchers address many of these questions using a variety of paradigms, such as controlling materials in actual sections of courses or bringing students into the laboratory to compare learning of humorous and nonhumorous materials (ecological valid studies).

Recall from Chapter 1 "Cognitive Psychology" that the humor effect concerns improved memory for course material when humor is included. Perhaps humor acts as "mental Velcro" (my term) to help make knowledge stick. As noted in Chapter 1, humor may enhance learning because the positive emotion of humor elicits rewards and motivates students to increase their frequency of studying. Humor may raise arousal, which may help students sustain attention and interest on factual material (Hidi, 1990). Either way, it is likely not an accident that most textbooks contain cartoons, including this one.

Some evidence suggests that integrating factual information and humor most benefits learning. For example, consider this lecture fact students are to learn: *When a neutral atom loses an electron, it becomes a positive ion*. To enhance learning, we could provide a diagram of a carbon atom showing the electrons encircling the nucleus (not funny but still helpful to visualize the atom), or we could add humor, but there are two ways we could add humor. It could be nonintegrated, such as a cartoon human professor (Einstein caricature, perhaps) stating the fact, or it could be integrated, such as the image of a cat professor (representing a cation) also stating the fact as a joke: *One atom says to another, "I lost my electron", and the other says, "Are you sure?" and it responds, "I'm positive"*. In dissertation research which compared these three methods for learning facts–nonhumorous, nonintegrated humor, and

integrated humor–the integrated humor condition resulted in best memory for the facts (Fitzpatrick, 2010).

Unfortunately, despite such studies endorsing a humor effect on learning, evidence from other studies sends a mixed message. In fact, research finds that humor may harm memory for the to-be-learned information. It can be distracting (attention is on the humor rather than the facts), irrelevant to the material (just doubles students' memory load), or simply not as good as the delivery of organized facts. For example, Harp and Mayer (1997) examined science material presented with and without humor and found that factual summaries resulted in superior test performance compared to entertaining supplements that held emotional interest but did not organize the information.

Additional evidence took into account students' sense of humor and found that humorous cartoons did not improve learning. When examining cartoons in college textbooks, Özdoğru and McMorris (2013) looked at whether students' sense of humor, as measured on the MSHS (see Chapter 3) increased learning with relevant humorous cartoons. For example, for course information on obsessive-compulsive disorder (OCD), a cartoon showed a panel with a crooked sign outside an OCD clinic and a second panel with a passerby who straightened the sign being kidnapped with a fishing net by clinic staff, with the caption, *I got another one, doctor*. Özdoğru and McMorris (2013) found that students who said they liked the cartoons in the readings or who scored higher on the MSHS showed no benefit in learning text material compared to those who did not like the cartoons or who scored lower on the MSHS. But here is where the story gets complicated. MSHS scores were positively correlated to perceptions of learning despite no apparent benefit to learning. The students judged their learning was better, which was an illusion (because the test showed no benefit to learning). Indeed, it is possible that their overconfidence of learning might actually have caused them to not study further. On the other hand, end-of-course evaluations may be higher on the perceived effectiveness of the teacher or course when, in fact, actual effectiveness was not enhanced.

Finding similar patterns, Alstott (2017) asked whether related cartoons improved reading comprehension of science material when compared to text with serious diagrams. For example, she used a cartoon that depicted a bacterium giving the commencement address to graduating bacteria, proclaiming, *What does not kill us makes us stronger!* to illustrate the text's point about the use of antibiotics creating resistant bacteria strains. Participants found both presentations equally comprehensible, showing no benefit for the cartoon. But, similar to that found with the Özdoğru and McMorris (2013) study earlier, those in the humorous cartoon condition reported higher engagement with the material. This finding suggests that memory and comprehension are not the only outcomes of using humor with educational materials. Engagement is also a desirable outcome.

The two studies bring in an important point about the difference between cognitive benefits and emotional benefits of humor to the learning process. The processing of pleasant emotions is separate from the processing of conceptual or semantic information. As you likely will agree, students' subjective feelings are important outcomes. Numerous studies show that humor in educational materials reduces student anxiety and helps make studying more approachable for those who are intimidated by the material, such as science or statistics textbooks. Humor may help students perceive a better study environment and may even

reward studying by activating the reward centers of the brain (medial ventral prefrontal lobe; see Chapter 2 "Biological Psychology"). Without humor, students may have to work harder and feel less happy about the perceived boring nature of the material, but because of their hard work and perseverance could still result in test levels equal to those who experienced a more pleasant study session with humor. Quality of the study experience and creating open-mindedness for learning are benefits that matter to educators and students even when memory benefits are missing (see McCartney Matthews, 2011, for similar findings and conclusions). On the other hand, because humor creates subjective feelings that we are studying well (even when we are not) or that we know it because we like it (when we may not know it), students are deceived by humor and their studying will be impaired.

To help reconcile the mixed evidence on the benefits of humor for class lectures, Suzuki & Heath (2014) examined the role of humor's relevance to the content of the lecture and the nature of the memory test. Students completed a cued recall or multiple-choice quiz after watching a taped lecture with embedded short videos that either were humorous or serious and which were directly relevant to the lecture or not. His results indicated relevant humor helped more on the multiple-choice recognition quiz. Irrelevant humor appeared to hurt memory on the cued recall quiz, but that difference was not statistically significant. See Figure10.3 for this pattern of results. It appears that humor's influence was rather limited. We likely can rule out test format as critical to the magnitude of humor's influence on learning.

We shouldn't be too quick to dismiss any cognitive benefits from humor in course materials simply because memory performance was disappointing when humor was present. Firstly, the benefits may best be observed when students and teachers share the same humor skills (Wanzer & Frymier, 1999). Secondly, the benefits of learning with humor may not show up immediately. We know that poor study habits, like cramming for exams, may result in good test performance when the test occurs soon after cramming, but long-term retention suffers. If we compare good study habits with cramming, at first blush it may look like cramming was equally effective, but typically over longer delays, the crammed information is forgotten, whereas good study strategies retain information over time. Conversely, although humor benefits may not show up immediately, we need to know if humor has long-term memory

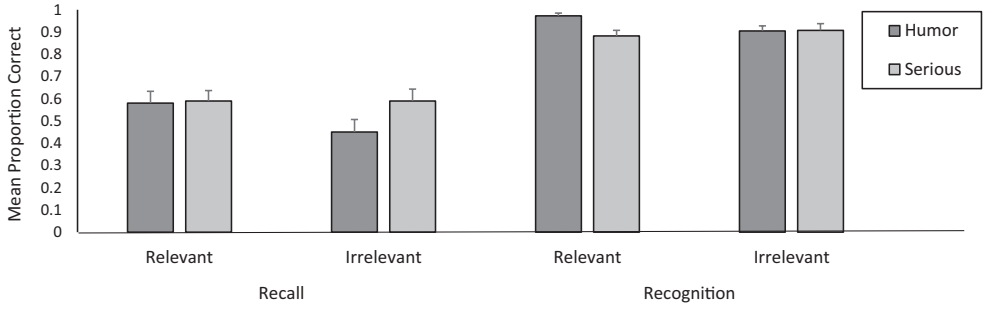

Figure 10.3 Humor relevant to lectures helped on the multiple-choice (recognition) quiz but not on the fill-in-the-blank recall quiz.

Source: Suzuki & Heath, 2014.

benefits, benefits that could be superior to long-term retention of information studied without humor months or years later.

To examine the humor effects on long-term retention, Kaplan and Pascoe (1977) studied actual college classes where across three psychology course sections they manipulated whether the lecture provided humorous examples of concepts, humor unrelated to the concepts, or a little of both. These lectures were videotaped to ensure delivery of the lecture and the examples were delivered as desired. Back in 1977, there were no online lectures, so students were told the taped lecture was an experimental way to test new material and that the quiz on the content would not count toward their grade. All lectures with humor resulted in higher immediate quiz scores (roughly means of 4.09–4.53 out of 11) than nonhumor versions (2.7–3.0), and the humor conditions (conceptual, irrelevant, and both) all resulted in similar scores. So far it looks like humor does not matter. However, six weeks later, memory for concepts illustrated with humor (4.23) outperformed all other humor (3.69–3.91) and nonhumorous lectures (2.79–3.07). Such findings suggest that humor does enhance long-term learning.

Most researchers agree that humor, when presented in the classroom, should create positive feelings. In support of this belief, Saroglou and Scariot (2002) found that hostile and self-defeating humor in the classroom decreased student motivation to study. Irrelevant humor is also discouraged, at least for adults. Zillmann et al. (1984) noted that there is an inverse relationship between relevancy of humor to the lesson and age of the students. Preschoolers, the youngest group studied, learned as well from irrelevant humor as they did from relevant humor, but as age increases through elementary grades, the material presented with irrelevant humor was learned less well.

Humor in the classroom makes the room a safe place to play with learning (Pomerantz & Bell, 2011). They suggested that humor allows students to deviate from traditional class norms and restrictive learning strategies. It allows students to be more spontaneous, and, especially in L2 learning classes (their focus), to construct personal identities and allow students to express themselves differently than without humor (Pomerantz & Bell, 2011).

Before ending, it is noteworthy that classrooms are not the only place where educational materials are delivered. Educational television programs for children frequently use humor to make the delivery of the facts less boring. Zillmann et al. (1984) examined humor that distorted properties of new objects for children to learn. They created videos that illustrated these novel objects' properties to help them learn the objects. These properties were presented with exaggeration (e.g., a juicy fruit squeezed out more liquid than was possible), irony (e.g., a juicy fruit squeezed out only one drop), and irony with correction (e.g., another fruit replaced the first and squeezed out the correct amount of juice). The researchers found that children overestimated the properties of the objects in the exaggerated condition and underestimated them for objects in the irony condition. Interesting, correction did not remove the underestimations. These findings make the point that the form of humor illustrated during learning may become integrated into students' semantic memory representations. Thus, teachers need to be careful in their choice of humor, as students may not store humor separately but instead are storing it as part of the fact and potentially distorting the real factual information.

Recap

Advertisers aim to increase brand awareness, favorable attitudes toward the brand and company, and consumer behavioral action, such as purchasing products or supporting a social cause or political viewpoint. Research suggests that humor plays a major role in whether the target audience responds favorably to advertisements. Individual differences help explain the importance of context effects on whether advertisements have the desired positive outcomes.

Humor's role in the workplace contributes to our understanding of complex relationships among co-workers, employee satisfaction, and workplace climate and culture. The study of humor's role in the workplace concerns its role in encouraging employee sense-making, creativity, productivity, and identification with the company. Workplace humor predicts how employees make sense of, and respond to, corporate decisions as well as suggests strategies for management.

The study of humor in the classroom and textbooks reveals the tension between using humor for creating a low-stress, safe, interesting learning environment and for creating distraction and disrespect for the lesson. In general, course materials use humor to both increase attention and interest in the material as well as to illustrate concepts in potentially memorable ways. As with research found in whether it is appropriate to use humor in therapy sessions (see Chapter 9 "Clinical Psychology") and the workplace, educators need to be aware of the boundaries of appropriate, relevant, and effective use of humor in learning. More rigorous testing is needed, however, to examine the benefits of humor in educational materials on long-term retention.

Suggested readings

Blanchard, A. L., Stewart, O. J., Cann, A., & Fullman, L. (2014). Making sense of humor at work. *The Psychologist-Manager Journal*, *17*, 49–70. doi:10.1037/mgr0000011

Özdoğru, A. A., & McMorris, R. F. (2013). Humorous cartoons in college textbooks: Student perceptions and learning. *Humor*, *26*, 135–154. doi:10.11515/humor-2013-0008

Weinberger, M. C., & Gulas, C. S. (1992). The impact of humor in advertising: A review. *Journal of Advertising*, *21*, 35–59.

Suggested class activities

Activity 10.1. Issues in the application of lab research to real-world settings

Identify and discuss reasons why basic research on humor might or might not apply to particular real-world settings.

Activity 10.2. Examine magazine advertisements

Bring in a variety of magazines that contain advertisements. In small groups, examine the advertisements. How many of the advertisements include humor? Is the frequency related to the target audience (men, women, children, particular interest)? Discuss the nature of the humor (e.g., exaggeration, incongruity) and whether it relates to the message/product or is irrelevant.

Activity 10.3. Examine commercials on television

Watch television programs targeted to particular audiences and attend to their commercials. Note humor's frequency in the commercials. Discuss how humor may change based on the nature of the show or its targeted audience–i.e., whether the show is for children or adults, or comedy, drama, or news.

Activity 10.4. Experiential knowledge from your workplace

Bring in observations/examples of humor from your workplace (or interview someone in a particular job to obtain examples). Do these examples support and/or raise questions about the roles of humor in the workplace?

Activity 10.5. Connections with social psychology

Connect to research in Chapter 4 "Social Psychology" about humor being a violation of social norms to the need to respect social norms in the workplace. Discuss the role of discretion and workplace culture in understanding how humor matters to workplace climate.

Activity 10.6. Discuss management styles

The management style of companies varies greatly. Some allow casual play and others consider humor unprofessional and silly. One reason to include humor in all styles is the stress reduction benefit for employees. Create a chart of the pros and cons of humor in a) large corporations, b) small businesses, and c) business that have high customer-employee interactions. Does the chart suggest that size of the company matters to whether there are more pros or cons for humor usage in the workplace?

Activity 10.7. Differences between actual and perceived effectiveness

Discuss the difference between actual effectiveness and perceived effectiveness of humor in applied settings. For example, research might find cartoons in textbooks do not greatly increase learning of text material (actual effectiveness), but students find they helped make the material interesting (perceptived effectiveness). Employers might find productivity did not greatly change when play activities were added to the office routines, but employees might say they looked forward more to going into the office. Consider various reasons why perceived effectiveness might matter as much as (or more than) actual effectiveness.

Activity 10.8. Extend to other settings

Choose other settings not covered in this chapter, such as courtrooms or hospitals. Using PsycInfo, research how humor is being studied in that setting. Identify the research questions driving this research, the methods used to address them, and summarize your findings. Consider giving an oral presentation to the class based on your research.

Activity 10.9. Integrate the issues

Integrate setting with particular issues covered in previous chapters to generate research questions. For example, a) Might workers in cognitive-demanding jobs use humor differently in their work compared to those in social-demanding jobs? b) Do you think individuals with physical or learning disabilities deal with different issues of humor at work that might matter to how organizations create an inclusive work environment? c) How might managers use humor as a strategy to increase creativity when work groups are newly formed compared to long-existing groups? Discuss ideas with fellow classmates to deepen your understanding of the issues.

Study guide

Concepts and theories

Advertisement effectiveness
Ecological validity
Employee satisfaction
Ethnographic methodology
External validity
Humor effect
Leadership
Perceived effectiveness
Sense-making

Review questions

1. Illustrate the use of the ethnographic method for studying humor in the workplace by using two studies covered in the chapter.
2. Identify reasons why humor increases or decreases the effectiveness of advertisements. Provide evidence to support them.
3. Evaluate the use of humor in professional settings (workplace or classroom). Based on the covered research, identify reasons why humor can have positive or negative outcomes.
4. The term that measures the ability of laboratory research to transfer to real-world research is
   a. face validity
   b. construct validity
   c. ergonomic validity
   d. external validity
5. Humor in advertisements that call for action on a social issue helps most with which population?
   a. Those who favor that action.
   b. Those who strongly disagree with that action.
   c. Those who are highly engaged with the issue.
   d. Those who are not engaged with the issue.
6. Employees discuss ambiguous decisions or events and will interpret them to give them one meaning. What role does humor play in these sense-making discussions?
   a. A positive humor workplace encourages positive outcomes of incongruity resolution of ambiguous events in organizations.

   b. A positive humor workplace encourages negative outcomes of incongruity resolution of ambiguous events in organizations.
   c. A negative humor workplace encourages positive outcomes of incongruity resolution of ambiguous events in organizations.
   d. A negative humor workplace encourages a positive work climate.
7. Even when humorous illustrations may not be more effective than nonhumorous illustrations for learning textbook material, researchers find that
   a. Students report the humor made the material more interesting and learning more effective.
   b. Students report the material was less interesting and humor was distracting.
   c. Students report the material was more difficult to understand with humor.
   d. Students report the material appeared more credible with humor.
8. Research on children's educational programs (e.g., Zillmann et al., 1984) used humor to exaggerate or underestimate the properties of novel objects. How were the memories of these objects affected by the humor?
   a. Children retained the properties illustrated with humor.
   b. Children forgot the properties illustrated with humor but remembered other properties.
   c. Children's memory for these objects was worse than for those taught without humor.
   d. The humorous distortions had no effect on children's learning of the novel objects.

Answers to multiple choice: 4) d, 5) d, 6) a, 7) a, 8) a

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