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CONCEPTUAL METAPHOR THEORY AND PERSON PERCEPTION

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Fictional characters are typically portrayed with exaggerated personal qualities. These portrayals create interest for characters that may otherwise be mundane and unappealing. For example, Homer Simpson from the TV show *The Simpsons* has particular difficulty interpreting other people's emotions, leaving him at times unsure whether his wife and boss are happy or angry with him. Furthermore, his ability to attend to the present moment and reflect on the self is easily interrupted by the presence of donuts, beer, or television. The legendary fictional detective Sherlock Holmes, in contrast, has an uncanny ability to accurately interpret people's emotions, the causes of their actions, and the truthfulness of their statements.

As real people interact with others in their social environment, their ability to accurately perceive themselves and others falls somewhere in between that of Homer Simpson and Sherlock Holmes. This is because our perception of self and others is influenced by a host of variables that can bias our thoughts,

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feelings, and behavior. For example, upon learning that a new acquaintance is an atheist, subsequent interactions with that person might be biased by our expectations and experiences with atheism (e.g., we may expect that person to be more confrontational or dogmatic). Other variables influence our interpretation of self and others in more subtle ways. Significant research has demonstrated the powerful nature of stereotypes in guiding perceptions of others (e.g., Devine, 1989; Fiske & Neuberg, 1990). We often project on others what we see in ourselves (e.g., Waytz & Mitchell, 2011) and evaluate others on the basis of our own goals and desires (e.g., Fitzsimons & Bargh, 2003; Fitzsimons & Shah, 2009). Past relationships color new ones, even without our awareness (e.g., Andersen & Chen, 2002; Andersen, Glassman, Chen, & Cole, 1995).

The perception of people is typically examined within the area of social cognition and is sometimes more specifically labeled *person perception* (Fiske & Taylor, 2008; Kunda, 1999). Here, we use the term person perception to include the perception of both self and others. Perception involves gathering information from our senses to interpret and act on our environments (Goldstein, 2010). Such information can be acted on directly or combined with preexisting knowledge. Person perception more specifically focuses on how we perceive self and others on the basis of sensory inputs as well as our accumulated knowledge.

The purpose of this chapter is to examine how conceptual metaphor theory (CMT) can enhance our understanding of the factors that influence person perception. First, we briefly review a common theory in social cognition that is used to explain person perception in terms of schemas and concept accessibility. Next, we examine research that highlights how CMT can be used to enhance our understanding of person perception processes. Finally, we present a research agenda that more fully integrates CMT into the study of person perception.

SCHEMAS AND PERSON PERCEPTION

Social cognition research is dominated by a common theory that contends that thoughts, feelings, and behaviors in the social realm are guided by schemas (e.g., Fiske & Taylor, 2008; Kunda, 1999). A *schema* is generally considered to be a representation in memory of a particular concept, category, or situation. Schemas contain general information about something that is typically true across situations. For instance, our schema for *cats* may contain information about legs, fur, temperament, and sounds such as “meow.” The components of our schemas can influence person perception. For example, the decision to vote for someone in a political election may be influenced by the fact that one candidate is a lawyer. A person’s lawyer schema can guide his

or her perception of that individual and subsequent voting behavior (Fiske & Taylor, 2008; Wyer & Srull, 1986). Indeed, depending on the nature of one's lawyer schema, a voter may think the candidate is logical, wealthy, and smart versus egotistical, unethical, and boring. One's previous experiences with lawyers help define the content of this schema.

Decades of research have revealed that our perception of self and others is guided by the accessibility or heightened activation of schemas and their related concepts (Bargh, 2006; Higgins, 1996), a process sometimes referred to as *priming* or *spreading activation*. In a classic study that has been cited some 1,000 times (Harzing, 2007) since it was first published in 1977, Higgins, Rholes, and Jones found that unobtrusive exposure or priming of words (as part of a study on reading comprehension) naming trait concepts such as *adventurous* or *reckless* later affected participants' interpretation of a person they read about in a descriptive essay. Higgins et al. (1977) found that participants who were first exposed to words such as *adventurous* or *independent* later perceived a fictional person described in ambiguous terms to be an adventurous and independent person as well (also see Srull & Wyer, 1979). This initial research revealed that accessible trait-related concepts can bias people's perception of the personality of an unrelated target individual by priming related traits. Such findings were extremely important because people's interpretation of the personality of others can affect how they interact with them.

Since these seminal publications, numerous research findings have revealed the multitude of ways in which concept or knowledge accessibility affects person perception processes (Bargh, 2006; Förster & Liberman, 2007) and other cognitive judgments that affect social cognition. For example, priming the concept of African Americans versus Caucasians increases people's propensity to misidentify a tool as a weapon (Correll, Park, Judd, & Wittenbrink, 2002; Payne, 2001), exposure to one's national flag increases feelings of unity because it causes people to report less extreme political views (Hassin, Ferguson, Shidlovsky, & Gross, 2007), and exposure to weapons increases people's aggressive behavior toward a provoking individual (Bartholow, Anderson, Carnagey, & Benjamin, 2005; Klimesmith, Kasser, & McAndrew, 2006).

Although the foregoing description of research on the impact of schemas on person perception is admittedly simplistic (e.g., years of research have revealed several moderating variables: Bargh, 2006), the important point is that schemas are considered to be a major influence on social cognition and person perception across social psychology areas as well as other psychological disciplines. Schemas afford us the opportunity to use our cognitive resources for more pressing concerns and to offload more basic information processing to our representation of previous experiences. We would not have survived as a species if we had to continuously relearn how to act and respond

to everyday social situations. One of the hallmarks of human consciousness is that we have the ability to predict the outcome of a situation given our previous experiences. We know what to expect and how to conduct ourselves when standing in line at the grocery store, trick-or-treating with our children, or attending a wedding ceremony.

Although schemas are likely essential, the research on schemas and concept accessibility has tended to focus on social judgments that are made on the basis of accessible knowledge that is typically *directly* related to the dependent measure at hand. For example, priming the concept *elderly* leads individuals to walk more slowly across a hallway (Bargh, Chen, & Burrows, 1996) because *slow* is a central characteristic of our schema of the elderly. In other words, a schema view focuses on knowledge activation elements that are typically part of a given concept or category. Recent work related to CMT, however, has revealed that our perception of self and others can be driven by relations between categories or concepts that are subtle and more indirect than has previously been documented in social cognition research. In the next section, we contend that CMT can enrich the schema view and enhance our understanding of person perception processes.

CONCEPTUAL METAPHOR THEORY

The general contention of CMT is that people use metaphor to understand and not just talk about abstract concepts (see Gibbs, 1994, 2006; see also Chapters 1 and 2, this volume). CMT asserts that metaphors provide conceptual mappings between more concrete and common *source* concepts and more abstract and less perceptual *target* concepts (Lakoff & Johnson, 1980, 1999; Landau, Meier, & Keefer, 2010). In specific relation to person perception processes, it is clear that people use metaphors in their everyday discourse to define and explain attributes of the self and others (Lakoff & Johnson, 1999; Landau et al., 2010). Asch (1946, 1958) is frequently cited as being one of the first social psychologists to write about person perception in metaphoric terms. He stated that people use descriptors that relate to perceptual experiences to examine and understand more abstract ideas about the self and others. For example, we may label people as *warm* or *cold*, *rigid* or *flexible*, *bright* or *dull*, and *straight* or *crooked*. We likely use such metaphoric descriptions because it is difficult to conceptualize abstract person qualities without linking them to more easily understood concrete experiences familiar to beings with sensory apparatuses.

Many linguistic metaphors involving person perception likely develop from physical experiences in early childhood that consistently pair the physical and the abstract. For example, the feeling of physical warmth occurs when

people hug and hold others. Typically, we hug or hold someone as a display of affection and belonging. In adulthood, such experiences are described through metaphors that pair *warmth* (the physical source concept) with *likeability* or *affection* (the abstract target concept), such as when we use metaphors that suggest *a warm person is an affectionate person*. CMT predicts that such mappings actually influence the representation of self and others through a type of scaffolding or embodiment in which early perceptual experiences are used to eventually ground conceptual knowledge (Barsalou, 1999, 2008; Williams, Huang, & Bargh, 2009). In other words, individuals use more concrete and familiar experiences (e.g., physical warmth) to later conceptualize and think about more abstract concepts and experiences (e.g., psychological warmth). Glenberg (2010) contended that past bodily interaction with the environment provides the grounding for conceptual metaphors. For example, when we are sad, we lie *down*; when we are happy, we jump *up* (often literally). Therefore, it is not surprising that we talk and think about happiness and sadness in terms of high and low positions in vertical space, respectively (see Chapter 7, this volume).

It is important to point out that CMT is not an alternative to the schema-based theory discussed earlier. Schemas are essential for understanding how people interpret and navigate their social world. CMT significantly enriches a schema view by predicting that links between physical source concepts (e.g., physical cleanliness) and abstract target concepts (e.g., moral judgments) influence person perception through metaphoric mappings even though the concepts in question can be dissimilar in a prior sense. In other words, CMT allows researchers to examine person perception processes in domains that a typical schema view (e.g., thinking of the word *doctor* primes or activates the concept of *nurse*) would simply not predict. Furthermore, a conceptual metaphor view can explain priming or accessibility findings involving dissimilar concepts because it focuses on early embodied experiences as an important impetus. In the sections that follow, we discuss a number of relevant findings that illustrate the contribution of CMT to the person perception literature.

Vertical Orientation and Person Perception

Efficient spatial perception was a crucial ability for survival as early humans evolved in a three-dimensional world replete with dangers and rewards (Chatterjee, 2001; Coslett, 1999; Mirabile, Glueck, & Stroebel, 1976; Previc, 1998). The ability to perceive space and spatial orientation often requires input from multiple sensory modalities, such as vision, audition, and touch. Spatial orientation was thus a prime candidate for eventually lending meaning to the abstract aspects of a person's social world. It is perhaps no surprise, then, that linguistic metaphors commonly link locations in

space to social dimensions such as interpersonal power, evaluative behavior, and religiosity (Lakoff & Johnson, 1980; Landau et al., 2010; Tolaas, 1991). A person's action can be *low*, whereas another person can be feeling *on top of the world* or have a corporate position that places her *high in the hierarchy*. We review research that suggests that these linguistic metaphors do indeed reflect representation processes in person perception.

Meier and Robinson (2004) showed that implicit associations between good–up and bad–down exist in people's memory. They found that people are faster to determine whether a word has a positive meaning if it is shown in a higher location on a computer screen, whereas people are faster to determine whether a word has a negative meaning if it is shown in a lower location on a computer screen (see also Crawford, Margolies, Drake, & Murphy, 2006; Palma, Garrido, & Semin, 2011). Meier, Moller, Chen, and Riemer-Peltz (2011) found that this metaphoric association can affect person perception. They examined map coordinates and housing location. Maps in many countries are typically drawn so that north is on top and south is on the bottom. In their Study 3, they found that people preferred to live in the northern half of a hypothetical city, but only when the city map was presented with north on the top (i.e., this north preference disappeared when a map was presented with north on the bottom and south on the top). Their Study 4 has implications for person perception. Meier et al. (2011) randomly assigned participants to read about a high or low socioeconomic status (SES) person named "Bennett." In the low SES condition, Mr. Bennett was an unemployed high school dropout who struggled to pay the rent each month. In the high SES condition, Dr. Bennett was a wealthy businessman who inherited money. Participants were asked to choose a location on a map (see Figure 3.1) of a fictitious city where they thought Bennett lived. The map boundaries measured 11.60 centimeters in both the north–south (up–down) and west–east (left–right) directions. As shown in Figure 3.2, participants believed the low SES Bennett lived in the southern or lower half of the city, whereas they believed the high SES Bennett lived in the northern or upper half of the city.

Research has also examined the implications of power–vertical position metaphors. Giessner and Schubert (2007) showed participants an organizational chart of a company with five "subordinate" boxes at the bottom connected by a horizontal line, with the middle box connected by a vertical line to a box on top that was labeled "Manager A." The length of this line was manipulated so that it was 2 or 7 centimeters in height, which placed "Manager A" at a higher or lower location on the paper. Participants were given information about Manager A and were asked to rate him on perceived power (e.g., "I think that Manager A is dominant"). Participants who viewed the long line gave higher power ratings than participants who viewed the short line. Thus, higher locations in vertical space were predictive of

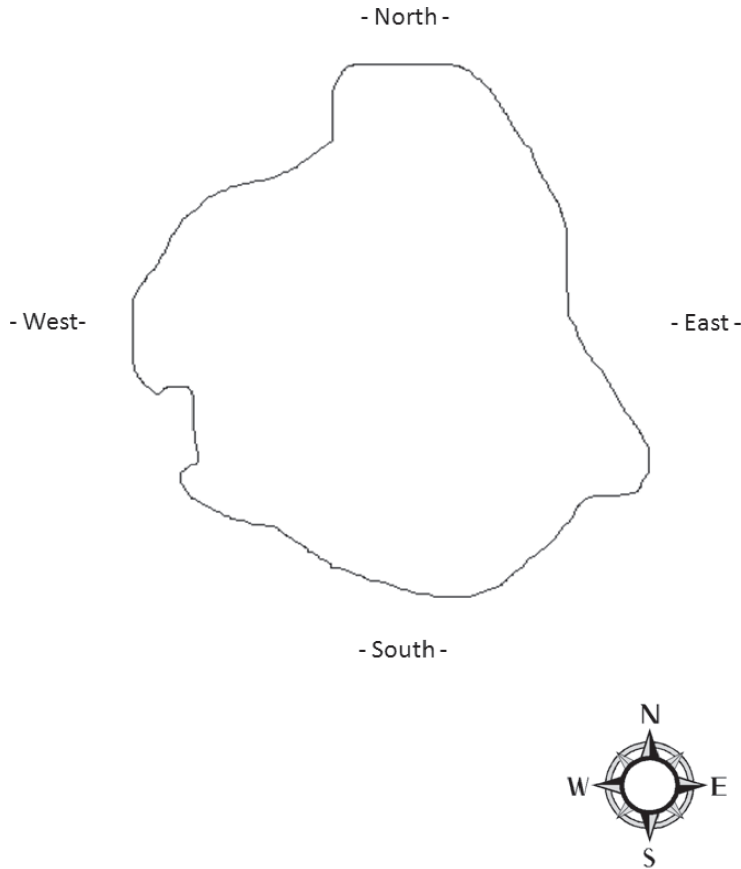


Figure 3.1. Map used in Study 4. From “Spatial Metaphor and Real Estate: North-South Location Biases Housing Preference,” by B. P. Meier, A. C. Moller, J. Chen, and M. Riemer-Peltz, 2011, *Social Psychological and Personality Science*, 2, p. 551. Copyright 2011 by Sage Publishing. Reprinted with permission.

increased interpersonal power perceptions (see also Lakens, Semin, & Feroni, 2011; Meier, Hauser, Robinson, Friesen, & Schjeldahl, 2007; Schubert, 2005; Schwartz, Tesser, & Powell, 1982).

Meier and Dionne (2009) built on the findings of Giessner and Schubert (2007) in the domain of physical attraction. Evolutionary views of human mating strategy focus on the preference for dominant or powerful males and submissive or powerless females as potential mates (Buss, 1989, 1994). Meier and Dionne found that people appear to use verticality as an implicit cue to power when rating the attractiveness of opposite-sex individuals. Their male participants rated pictures of females as more attractive when their images were presented near the bottom of a computer screen, whereas their female

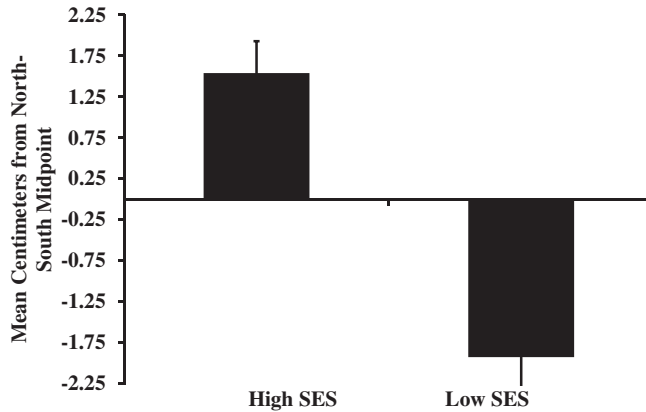


Figure 3.2. Mean location chosen in Study 4. The numbers reflect the mean distance in centimeters from the north–south map midpoint (i.e., positive numbers = northern/upper location; negative numbers = southern/lower location). From “Spatial Metaphor and Real Estate: North-South Location Biases Housing Preference,” by B. P. Meier, A. C. Moller, J. Chen, and M. Riemer-Peltz, 2011, *Social Psychological and Personality Science*, 2, p. 552. Copyright 2011 by Sage Publishing. Reprinted with permission.

participants rated pictures of males as more attractive when their images were presented near the top of a computer screen.

Other research has shown that power–vertical position metaphors are implicated in more practical social settings. For example, researchers have shown that taller people have higher incomes (Frieze, Olson, & Good, 1990; Judge & Cable, 2004; Loh, 1993) and better health-related quality of life (Christensen, Djurhus, Clayton, & Christiansen, 2007) than shorter people. Individuals randomly assigned to complete a general knowledge test on a higher (eighth floor) versus lower (second floor) location in an office building had more confidence in their ability (Sun, Wang, & Li, 2011). Van Quaquebeke and Giessner (2010) conducted a fascinating series of studies on soccer fouls in actual soccer games and in a laboratory setting. Using data from German Bundesliga seasons, UEFA Champions League seasons, and FIFA World Cup tournaments, the authors found that players who were called for fouls were, on average, taller than the alleged victims. To address the fact that taller players may simply be more dominant, a laboratory study was conducted. It was found that participants expected a taller versus shorter player to be more likely to commit a foul when both players were presented in pictures chasing a soccer ball. These data confirm that height is an implicit cue to social dominance. Although these additional findings could be due to a variety of factors, they are similar to the aforementioned studies that found a consistent link between power and vertical space. In summary, power–vertical position metaphoric links play a real but subtle role in person perception.

Vertical orientation is also commonly used in metaphors that describe religious concepts. Jesus and God are considered the “most high,” whereas the antithesis of God, Satan, is considered to be a “lowly” being. Such metaphors likely develop through the historical belief that God resides high in the heavens, whereas Satan resides deep in the underworld (Favazza, 2004). Even nonreligious individuals are likely to encounter such metaphors in cultures in which Christianity is prevalent (e.g., the United States). This metaphoric link between the physical and abstract has been shown to influence person perception. Meier, Hauser, et al. (2007) showed that people have implicit associations between God–Up and Devil–Down. Chasteen, Burdzy, and Pratt (2010) extended these findings by showing that thinking about God versus Satan biases people’s visual attention to a higher location in space. Meier, Hauser, et al. (2007) revealed the implications such associations have for person perception as they found that people believed strangers had a stronger belief in God if their images appeared higher versus lower in visual space.

Brightness and Person Perception

Brightness is another perceptual characteristic that is invoked in metaphors to describe the social world (Lakoff & Johnson, 1999; Meier & Robinson, 2005). Brightness perception is a physical experience that developing humans engage in at birth. Young infants quickly learn that brightness is predictive of the presence of loved ones and darkness is predictive of the absence of loved ones. It is probably no surprise that brightness eventually comes to represent aspects related to the social world. Indeed, one can have a *bright day*, a *dark time*, or a *shady disposition*. In a general sense, dark things are described as bad, and light things are described as good. Terms related to brightness and darkness have been used throughout history to portray positivity and negativity, especially in religious texts (Meier & Robinson, 2005). Furthermore, common media portrayals borrow this visual characteristic to present heroes (in white) and villains (in black), such as in classic movies like *Star Wars* and *The Wizard of Oz*.

Do affect–brightness metaphors have relevance for person perception processes that move beyond language? The first step in such work is to determine whether associations between good–light and bad–dark exist in non-linguistic tasks. Meier, Robinson, and Clore (2004) and Meier, Robinson, Crawford, and Ahlvers (2007) showed that people do indeed have strong associations in memory between brightness perception and valence in a metaphor-consistent fashion (see also related work by Banerjee, Chatterjee, & Sinha, 2012; Sherman & Clore, 2009). Other work has revealed that these metaphoric associations bias person perception. For example, in an

illuminating series of studies by Frank and Gilovich (1988), sports teams in darker uniforms were rated as more malevolent and were more likely to be called for penalties than sports teams in lighter uniforms. Furthermore, participants who wore darker versus lighter uniforms in an experimental laboratory study chose more aggressive forms of game play (e.g., a fun darts duel) in an ostensible study on the psychology of competition. The studies by Frank and Gilovich reveal that brightness biases the judgments of others (i.e., teams in darker uniforms received more penalties from referees) as well as the self-concept (i.e., individuals wearing darker uniforms chose to play more aggressive games). Similar results were found in a study by Webster, Urland, and Correll (2012) with data from the National Hockey League and in a laboratory study that examined participants behavior and expectations in an online game in which their avatars wore black or white cloaks (Peña, Hancock, & Merola, 2009).

A large amount of work in social psychology has shown that people have strong automatic associations between race and valence. Specifically, African Americans are more strongly associated with negativity and Caucasians are more strongly associated with positivity (Fazio & Olson, 2003; Nosek et al., 2007). The typical study reveals that people are faster to recognize stereotypical Caucasian names when they are paired with positive words and stereotypical African American names when they are paired with negative words (the Implicit Associations Test or IAT; Greenwald, McGhee, & Schwartz, 1998). Although automatic negative stereotypes for African Americans likely have a host of causes (e.g., a history of slavery, ingroup-outgroup differences, categorization processes), it appears that at least part of the effect is due to a more basic association between affect and brightness and to the metaphors that reinforce such associations. For example, Smith-McLallen, Johnson, Dovidio, and Pearson (2006) showed that the typical IAT effect mentioned above (Greenwald et al., 1998) is significantly reduced when the extent to which people associate the colors white and black with positive and negative valence, respectively, is statistically controlled. In a related study, Ronquillo et al. (2007) examined activation in the amygdala, an area of the brain that becomes active when people are exposed to a potential threat. They found that participants had greater amygdala activation when people were shown pictures of darker versus lighter skinned Caucasians (i.e., suggesting a deeper neurological connection between affect and brightness).

The results of the research on stereotypes suggest that darker skinned individuals are at a disadvantage compared with their lighter skinned counterparts. The metaphoric association between brightness and valence may partially drive such effects. Although conceptual metaphors may be involved in inducing stereotypical thinking about race, it may also allow

one to understand how to reduce it. Song, Vonasch, Meier, and Bargh (2012) used CMT to predict that smiling faces would be judged as perceptually brighter or lighter than frowning faces. They found that people perceived different colored schematic and real faces as lighter in color when the faces were presented with a smile versus a frown and the actual luminance was held constant across stimuli. Such effects were found in a two-choice forced judgment task (judging which of two faces is brighter) and when smiling and frowning faces were independently shown to different participants and the task was to select a color shade on a scale that reflected their judgment of the face's brightness. Although speculative, such findings suggest that emotional expressions could reduce automatic stereotypes based on facial brightness.

Other Source Domains Involved in Person Perception

A host of other physical factors are used in metaphors to help people make sense of social concepts in terms of more concrete experiences. Such links have been shown to have an impact on person perception. The nature of the relationships cannot be fully discussed here, but there are many examples. Meier, Moeller, Riemer-Peltz, and Robinson (2012) found that taste-related metaphors (e.g., "she's a sweetie") have implications for people's personality as well as their perception of others. They found that sweet taste preferences and experiences were associated with agreeable personalities, perceptions, and behavior. For example, in their Study 1, individuals rated strangers as more agreeable if they were said to like sweet foods (e.g., candy, chocolate cake) compared with other food types (e.g., salty peanuts, peppers).

Several researchers have found that physical warmth or high temperature stimuli affect the perception of others (Bargh & Shalev, 2012; IJzerman & Semin, 2009; Wilkowski, Meier, Robinson, Carter, & Feltman, 2009; Williams & Bargh, 2008a; Zhong & Leonardelli, 2008). For example, Williams and Bargh (2008a) found that holding a warm versus cold coffee cup caused participants to perceive another person as more psychologically warm or friendly. This research is being published at a quickening pace. Recent papers have shown metaphor-related effects on person perception in a number of diverse areas, such as physical distance and emotional closeness (Williams & Bargh, 2008b), left-right bodily sway and political attitudes (Oppenheimer & Trail, 2010), the perception of soft versus hard objects, judgments of a person's gender and personality (Ackerman, Nocera, & Bargh, 2010; Slepian, Weisbuch, Rule, & Ambady, 2011), and physical cleanliness and morality (Lee & Schwarz, 2011; Schnall, Benton, & Harvey, 2008; Zhong & Liljenquist, 2006), to name a few.

PITFALLS AND PROMISES OF CONCEPTUAL METAPHOR THEORY AND PERSON PERCEPTION

The research reviewed in this chapter represents only a portion of the conceptual metaphor work that is relevant for person perception. Even though our review of the literature is not exhaustive, the amount and breadth of the work discussed reveal that CMT should not be overlooked in the realm of person perception. Some writers have even gone as far as to suggest that a general embodiment view could be a unifying perspective in psychology because it provides a similar explanation of human behavior regardless of the psychological subdiscipline in question (Glenberg, 2010; Schubert & Semin, 2009). At the same time, however, the upsurge of research in this area has led to interesting findings that seem to be outpacing the focus on theory development. In the sections that follow, we discuss some of the pitfalls and promises that conceptual metaphor holds for understanding person perception.

Pitfalls

Our review suggests that conceptual metaphor research in person perception is in its infancy. The existing work has typically focused on demonstration effects, which are certainly essential for any new area of inquiry because they identify whether there is indeed an area worthy of empirical interest (Meier, Schnall, Schwarz, & Bargh, 2012; Rozin, 2009). The excitement generated by this area has likely led to the increasing number of studies. That excitement may also be a pitfall unless the research begins to move beyond the beginning stages. Ideally, new research would begin to examine process variables in addition to demonstration work.

Landau et al. (2010) suggested that one way research can move beyond an initial phase is for researchers to develop questions using a phenomenon-based focus, which is an approach that centers on particular behaviors (e.g., aggression, helping, loving) and then examines how CMT can be used to explain and modify the behavior in predictable ways. Such an approach builds on existing theories while examining the potential for CMT to enrich present viewpoints. For example, consider the research on physical and psychological warmth. Williams and Bargh (2008a) found that feelings of physical warmth caused people to rate a stranger as more psychologically warm or friendly. Furthermore, feelings of physical warmth caused people to act in a more agreeable manner. This initial work showed that metaphoric mappings between physical warmth and psychological warmth have implications for person perception in areas other than metaphoric language. Bargh and Shalev (2012) extended this work by revealing that individual differences in the desire for physical warmth (i.e., bath taking behavior) correlated positively with

individual differences in the experience of loneliness. That is, lonelier people bathed more frequently and for longer durations. Bargh and Shalev's research moves beyond demonstration because it enriches existing theories in person perception and self-regulation. Furthermore, it invites intriguing new research questions in such diverse areas as clinical interventions for mental health, techniques for persuasive appeals, and even industrial organizational research that focuses on environmental factors in the workplace (e.g., temperature).

Another pitfall in the existing research on CMT in person perception is the absence of work that examines theoretical boundary conditions, moderators, and mediators. We know little about whether conceptual metaphors shape, constrain, or reflect the body's influence on person perception. Much of the existing work has led to fascinating findings of everyday interest. However, CMT will become less viable for new researchers unless more is known about the factors that moderate and mediate the effects. It is likely that concept accessibility processes suggested earlier (Fiske & Taylor, 2008; Kunda, 1999) are involved in many of the effects discussed in this chapter, but few researchers have examined such possibilities. Landau et al. (2011), however, provided one example of how a mediation study elucidates the factor involved. They examined self-perception in terms of physical expansion by focusing on linguistic metaphors that describe the self in terms of an expanding or contracting entity (e.g., "he needs to grow"). Landau et al. (2011) hypothesized that exposing people to an image of an expanding figure versus a static or fragmented figure would cause people to report feeling more self-actualized. They further predicted that accessibility of the concept of expansion (e.g., thoughts like "grow" or "broaden") would mediate the effect. They found that participants exposed to an expanding (vs. a static or fragmented) figure perceived themselves as more self-actualized, and this effect was mediated by accessible thoughts related to the concept of expansion.

Landau et al. (2011) provided an example of how to test for a mediating variable that relies on the explanatory process of schema theories. Sun et al. (2011) examined a moderating variable in their search for explanations of conceptual metaphors' impact on person perception. Recall that they found people believed they were better than others on a general knowledge test when presented with the test in a higher versus lower location in space (i.e., a high vs. low floor in an office building). In a follow-up study, the effect disappeared when these researchers presented the ranking question (i.e., what percentage of people would have fewer correct answers than you) in a vertical manner such that higher percentages were at the bottom rather than top of a piece of paper. Thus, verticality's influence on power or ability was eliminated when participants were presented with a "power is down" figure, which likely interrupted one's chronic "power is up" representation (for related work, see Meier et al., 2011; Chapter 7, this volume).

Process-oriented research like the studies by Landau et al. (2011) and Sun et al. (2011) are a welcome addition to this literature. Nevertheless, several additional interesting questions remain. For example, the results of the study by Sun et al. may lead one to wonder when and how contextual factors play a role in verticality's effect on person perception processes. Whereas Sun et al. found that verticality increased one's own judgment of ability compared to similar others, Meier and Dionne (2009) found that a verticality manipulation affected people's attractiveness ratings of strangers. What promotes the likelihood of a source concept like verticality prompting one metaphor-related behavior (ability) versus another (attraction)? Answers to questions like these are necessary for a more thorough understanding of the pathways that lead from metaphoric manipulations to cognitive, affective, or behavioral effects on person perception.

Promises

Existing conceptual metaphor research in person perception is associated with some potential pitfalls. These pitfalls, however, do not yet overshadow the promise CMT has for social cognition. The key promise is its potential breadth in terms of explanation and application. This potential is based on the simple fact that humans are body-based beings. As far as we can tell from contemporary scientific inquiry, our minds cannot exist apart from our bodies. Therefore, our thinking, acting, and feeling occur within the confines of our bodies. This is true regardless of whether we play a slot machine, partake in a provocative debate, or vote for a political candidate. This deep connection between body and mind suggests that propositions about the operation of schemas in ways that are devoid of the body fail to capture life as it is lived. Metaphor and embodiment research has led some to suggest that current models of artificial intelligence will never truly mimic human intelligence because they do not have the ability to consider information from sensorimotor systems (Barsalou, 1999). The mind-body connection has deep implications for the potentially widespread influence of CMT in psychology in general and person perception in particular.

Metaphoric descriptions of self and others had once been examined under the umbrella of folk theories of personality. Folk views are based on commonsense ideas of how people perceive others in everyday naturalistic settings. Such folk views, however, have been shown to have considerable merit (Gibbs & Beitel, 1995; Haas, 2002; Mehl, Gosling, & Pennebaker, 2006). CMT adds novel predictive power to folk views because it provides an underlying framework for why common perceptual-based descriptions of people often ring true. For example, consider two very different sets of studies. Meier, Moeller, et al. (2012) found that people who have a stronger liking for sweet foods were also higher in the prosocial personality trait of

agreeableness. Bargh and Shalev (2012) found that people who prefer taking more and longer baths were also higher in loneliness. Thus, both sets of studies found that individual differences in source domain preferences (i.e., sweet taste and physical warmth) were associated with related personality traits in ways consistent with everyday linguistic metaphors for describing others (e.g., “sweetie” or “cold”).

Work in neuroscience may eventually be able to partially explain some of the work discussed in this chapter. Gallese, Keysers, and Rizzolatti (2004), Gallese and Sinigaglia (2011), and Glenberg (2010) have suggested that the human brain, like those of primates, has developed a *mirror mechanism* that allows experiential insight into others’ minds. This mirror mechanism (a collection of mirror neurons) maps a sensory representation of another’s sensation, action, or emotion, onto the observer’s own mental representation of that same sensation, action, or emotion. This mapping, or simulation of another’s experience, allows for the perceiver to make accurate inferences and predictions of behavior. Lakoff (2008) contended that such mirror neurons are multimodal and allow us to simulate actions or behaviors without actually engaging in them. The discovery of mirror neurons provides another advance in the mechanisms that may help explain not just why language is metaphoric but also how abstract concepts in areas such as person perception are literally grounded in neural activity representing bodily experiences.

CMT, then, holds considerable promise for deriving accurate person perceptions because metaphors abound in describing self and others. Asch (1946, 1958) pointed out the extensive use of metaphor in person description decades ago, but even he would likely be surprised by the manner in which such descriptions are being used to study and understand actual social behavior.

SUMMARY AND CONCLUSION

A necessary aspect of human interaction is the perception of self and others. Person perceptions are not always accurate and are subject to internal and external influences. An influential view reveals that person perception judgments are often made on the basis of accessible knowledge related to the judgment at hand (e.g., priming hostility may lead individuals to perceive others as hostile). Common metaphors (e.g., “she’s a sweetheart”) suggest that person perception may be influenced by less direct, yet broader, conceptual mappings. Our chapter reveals just how widespread conceptual metaphor influences are on the perception of self and others. Indeed, evidence exists in diverse realms such as social status, evaluation, religiosity, anger, mate value, and personality characteristics such as agreeableness and psychological warmth. CMT offers considerable promise for widening the understanding of the factors that influence person perception. The current literature, however,

is in its infancy, and we contend that future work should more readily focus on the identification of the mediators and moderators that cause people to be more or less likely to use conceptual metaphor to understand themselves and others. Even though there are some shortcomings in the existing literature, this burgeoning area holds considerable promise for what is likely to be a major addition to the study of person perception.

REFERENCES

- Ackerman, J. M., Nocera, C. C., & Bargh, J. A. (2010). Incidental haptic sensations influence social judgments and decisions. *Science*, *328*, 1712–1715. doi:10.1126/science.1189993
- Andersen, S. M., & Chen, S. (2002). The relational self: An interpersonal social-cognitive theory. *Psychological Review*, *109*, 619–645. doi:10.1037/0033-295X.109.4.619
- Andersen, S. M., Glassman, N. S., Chen, S., & Cole, S. W. (1995). Transference in social perception: The role of chronic accessibility in significant-other representations. *Journal of Personality and Social Psychology*, *69*, 41–57. doi:10.1037/0022-3514.69.1.41
- Asch, S. E. (1946). Forming impressions of personality. *The Journal of Abnormal and Social Psychology*, *41*, 258–290. doi:10.1037/h0055756
- Asch, S. E. (1958). The metaphor: A psychological inquiry. In R. Tagiuri & L. Petrullo (Eds.), *Person perception and interpersonal behavior* (pp. 86–94). Stanford, CA: Stanford University Press.
- Banerjee, P., Chatterjee, P., & Sinha, J. (2012). Is it light or dark? Recalling moral behavior changes perception of brightness. *Psychological Science*, *23*, 407–409. doi:10.1177/0956797611432497
- Bargh, J. A. (2006). What have we been priming all these years? On the development, mechanisms, and ecology of nonconscious social behavior. *European Journal of Social Psychology*, *36*, 147–168. doi:10.1002/ejsp.336
- Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology*, *71*, 230–244. doi:10.1037/0022-3514.71.2.230
- Bargh, J. A., & Shalev, I. (2012). The substitutability of physical and social warmth in everyday life. *Emotion*, *12*, 154–162. doi:10.1037/a0023527
- Barsalou, L. W. (1999). Perceptual symbol systems. *Behavioral and Brain Sciences*, *22*, 577–660.
- Barsalou, L. W. (2008). Grounded cognition. *Annual Review of Psychology*, *59*, 617–645. doi:10.1146/annurev.psych.59.103006.093639
- Bartholow, B. D., Anderson, C. A., Carnagey, N. L., & Benjamin, A. J., Jr. (2005). Interactive effects of life experience and situational cues on aggression: The

- weapons priming effect in hunters and nonhunters. *Journal of Experimental Social Psychology*, 41, 48–60. doi:10.1016/j.jesp.2004.05.005
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, 12, 1–49. doi:10.1017/S0140525X00023992
- Buss, D. M. (1994). *The evolution of desire: Strategies of human mating*. New York, NY: Basic Books.
- Chasteen, A. L., Burdzy, D. C., & Pratt, J. (2010). Thinking of God moves attention. *Neuropsychologia*, 48, 627–630. doi:10.1016/j.neuropsychologia.2009.09.029
- Chatterjee, A. (2001). Language and space: Some interactions. *Trends in Cognitive Sciences*, 5, 55–61. doi:10.1016/S1364-6613(00)01598-9
- Christensen, T. L., Djurhus, C. B., Clayton, P., & Christiansen, J. S. (2007). An evaluation of the relationship between adult height and health-related quality of life in the general UK population. *Clinical Endocrinology (Oxford)*, 67, 407–412.
- Correll, J., Park, B., Judd, C. M., & Wittenbrink, B. (2002). The police officer's dilemma: Using ethnicity to disambiguate potentially threatening individuals. *Journal of Personality and Social Psychology*, 83, 1314–1329. doi:10.1037/0022-3514.83.6.1314
- Coslett, H. B. (1999). Spatial influences on motor and language function. *Neuropsychologia*, 37, 695–706. doi:10.1016/S0028-3932(98)00116-X
- Crawford, L. E., Margolies, S. M., Drake, J. T., & Murphy, M. E. (2006). Affect biases memory of location: Evidence for the spatial representation of affect. *Cognition and Emotion*, 20, 1153–1169. doi:10.1080/02699930500347794
- Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology*, 56, 5–18. doi:10.1037/0022-3514.56.1.5
- Favazza, A. (2004). *PsychoBible: Behavior, religion, and the holy book*. Charlottesville, VA: Pitchstone.
- Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition: Their meaning and use. *Annual Review of Psychology*, 54, 297–327. doi:10.1146/annurev.psych.54.101601.145225
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. *Advances in Experimental Social Psychology*, 23, 1–74. doi:10.1016/S0065-2601(08)60317-2
- Fiske, S. T., & Taylor, S. E. (2008). *Social cognition: From brains to culture*. New York, NY: McGraw-Hill.
- Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology*, 84, 148–164. doi:10.1037/0022-3514.84.1.148

- Fitzsimons, G. M., & Shah, J. Y. (2009). Confusing one instrumental other for another: Goal effects on social categorization. *Psychological Science*, *20*, 1468–1472. doi:10.1111/j.1467-9280.2009.02475.x
- Förster, J., & Liberman, N. (2007). Knowledge activation. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (2nd ed., pp. 201–231). New York, NY: Guilford Press.
- Frank, M. G., & Gilovich, T. (1988). The dark side of self- and social perception: Black uniforms and aggression in professional sports. *Journal of Personality and Social Psychology*, *54*, 74–85. doi:10.1037/0022-3514.54.1.74
- Frieze, I. H., Olson, J. E., & Good, D. C. (1990). Perceived and actual discrimination of male and female managers. *Journal of Applied Social Psychology*, *20*, 46–67. doi:10.1111/j.1559-1816.1990.tb00377.x
- Gallese, V., Keysers, C., & Rizzolatti, G. (2004). A unifying view of the basis of social cognition. *Trends in Cognitive Sciences*, *8*, 396–403. doi:10.1016/j.tics.2004.07.002
- Gallese, V., & Sinigaglia, C. (2011). What is so special about embodied simulation? *Trends in Cognitive Sciences*, *15*, 512–519. doi:10.1016/j.tics.2011.09.003
- Gibbs, R. W., & Beitel, D. (1995). What proverb understanding reveals about how people think. *Psychological Bulletin*, *118*, 133–154.
- Gibbs, R. W., Jr. (1994). *The poetics of mind: Figurative thought, language, and understanding*. Cambridge, England: Cambridge University Press.
- Gibbs, R. W., Jr. (2006). *Embodiment and cognitive science*. New York, NY: Cambridge University Press.
- Giessner, S. R., & Schubert, T. W. (2007). High in the hierarchy: How vertical location and judgments of leaders' power are interrelated. *Organizational Behavior and Human Decision Processes*, *104*, 30–44. doi:10.1016/j.obhdp.2006.10.001
- Glenberg, A. M. (2010). Embodiment as a unifying perspective for psychology. *Interdisciplinary Reviews: Cognitive Science*, *1*, 586–596.
- Goldstein, B. E. (2010). *Sensation and perception* (8th ed.). Belmont, CA: Wadsworth, Cengage Learning.
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. K. L. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, *74*, 1464–1480. doi:10.1037/0022-3514.74.6.1464
- Haas, H. A. (2002). Extending the search for folk personality constructs: The dimensionality of the personality-relevant proverb domain. *Journal of Personality and Social Psychology*, *82*, 594–609.
- Harzing, A. W. (2007). *Publish or perish*. Retrieved from <http://www.harzing.com/pop.htm>
- Hassin, R. R., Ferguson, M. J., Shidlovsky, D., & Gross, T. (2007). Waved by invisible flags: The effects of subliminal exposure to flags on political thought and behavior. *Proceedings of the National Academy of Sciences of the United States of America*, *104*, 19757–19761. doi:10.1073/pnas.0704679104

- Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133–168). New York, NY: Guilford Press.
- Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology*, *13*, 141–154. doi:10.1016/S0022-1031(77)80007-3
- Ijzerman, H., & Semin, G. R. (2009). The thermometer of social relations: Mapping social proximity on temperature. *Psychological Science*, *20*, 1214–1220. doi:10.1111/j.1467-9280.2009.02434.x
- Judge, T. A., & Cable, D. M. (2004). The effect of physical height on workplace success and income: Preliminary test of a theoretical model. *Journal of Applied Psychology*, *89*, 428–441. doi:10.1037/0021-9010.89.3.428
- Klinesmith, J., Kasser, T., & McAndrew, F. T. (2006). Guns, testosterone, and aggression. *Psychological Science*, *17*, 568–571. doi:10.1111/j.1467-9280.2006.01745.x
- Kunda, Z. (1999). *Social cognition*. Cambridge, MA: MIT Press.
- Lakens, D., Semin, G. R., & Feroni, F. (2011). Why your highness needs the people: Comparing the absolute and relative representation of power in vertical space. *Social Psychology*, *42*, 205–213. doi:10.1027/1864-9335/a000064
- Lakoff, G. (2008). The neural theory of metaphor. In R. W. Gibbs, Jr. (Ed.), *The Cambridge handbook of metaphor and thought* (pp. 17–38). New York, NY: Cambridge University Press. doi:10.1017/CBO9780511816802.003
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago, IL: The University of Chicago Press.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenges to western thought*. New York, NY: Basic Books.
- Landau, M. J., Meier, B. P., & Keefer, L. A. (2010). A metaphor-enriched social cognition. *Psychological Bulletin*, *136*, 1045–1067. doi:10.1037/a0020970
- Landau, M. J., Vess, M., Arndt, J., Rothschild, Z. K., Sullivan, D., & Atchley, R. A. (2011). Embodied metaphor and the “true” self: Priming entity expansion and protection influences intrinsic self-expressions in self-perceptions and interpersonal behavior. *Journal of Experimental Social Psychology*, *47*, 79–87. doi:10.1016/j.jesp.2010.08.012
- Lee, S. W. S., & Schwarz, N. (2011). Wiping the slate clean: Psychological consequences of physical cleansing. *Current Directions in Psychological Science*, *20*, 307–311. doi:10.1177/0963721411422694
- Loh, E. S. (1993). The economic effects of physical appearance. *Social Science Quarterly*, *74*, 420–438.
- Mehl, M. R., Gosling, S. D., & Pennebaker, J. W. (2006). Personality in its natural habitat: Manifestations and implicit folk theories of personality in daily life. *Journal of Personality and Social Psychology*, *90*, 862–877. doi:10.1037/0022-3514.90.5.862

- Meier, B. P., & Dionne, S. (2009). Downright sexy: Verticality, implicit power, and perceived physical attractiveness. *Social Cognition, 27*, 883–892. doi:10.1521/soco.2009.27.6.883
- Meier, B. P., Hauser, D. J., Robinson, M. D., Friesen, C. K., & Schjeldahl, K. (2007). What’s “up” with God?: Vertical space as a representation of the divine. *Journal of Personality and Social Psychology, 93*, 699–710. doi:10.1037/0022-3514.93.5.699
- Meier, B. P., Moeller, S. K., Riemer-Peltz, M., & Robinson, M. D. (2012). Sweet taste preferences and experiences predict pro-social inferences, personalities, and behaviors. *Journal of Personality and Social Psychology, 102*, 163–174. doi:10.1037/a0025253
- Meier, B. P., Moller, A. C., Chen, J., & Riemer-Peltz, M. (2011). Spatial metaphor and real estate: North-south location biases housing preference. *Social Psychological and Personality Science, 2*, 547–553. doi:10.1177/1948550611401042
- Meier, B. P., & Robinson, M. D. (2004). Why the sunny side is up: Associations between affect and vertical position. *Psychological Science, 15*, 243–247. doi:10.1111/j.0956-7976.2004.00659.x
- Meier, B. P., & Robinson, M. D. (2005). The metaphorical representation of affect. *Metaphor and Symbol, 20*, 239–257. doi:10.1207/s15327868ms2004_1
- Meier, B. P., Robinson, M. D., & Clore, G. L. (2004). Why good guys wear white: Automatic inferences about stimulus valence based on color. *Psychological Science, 15*, 82–87. doi:10.1111/j.0963-7214.2004.01502002.x
- Meier, B. P., Robinson, M. D., Crawford, L. E., & Ahlvers, W. J. (2007). When “light” and “dark” thoughts become light and dark responses: Affect biases brightness judgments. *Emotion, 7*, 366–376. doi:10.1037/1528-3542.7.2.366
- Meier, B. P., Schnall, S., Schwarz, N., & Bargh, J. A. (2012). Embodiment in social psychology. *Topics in Cognitive Science, 4*, 705–716. doi:10.1111/j.1756-8765.2012.01212.x
- Mirabile, C. S., Jr., Glueck, B., & Stroebel, C. F. (1976). Spatial orientation, cognitive processes, and cerebral specialization. *Psychiatric Journal of the University of Ottawa, 1*, 99–104.
- Nosek, B. A., Smyth, F. L., Hansen, J. J., Devos, T., Lindner, N. M., Ranganath, K. A., . . . Banaji, M. (2007). Pervasiveness and correlates of implicit attitudes and stereotypes. *European Review of Social Psychology, 18*, 36–88. doi:10.1080/10463280701489053
- Oppenheimer, D. M., & Trail, T. E. (2010). Why leaning to the left makes you lean to the left: Effect of spatial orientation on political attitudes. *Social Cognition, 28*, 651–661. doi:10.1521/soco.2010.28.5.651
- Palma, T. A., Garrido, M. V., & Semin, G. R. (2011). Grounding person memory in space: Does spatial anchoring of behaviors improve recall? *European Journal of Social Psychology, 41*, 275–280. doi:10.1002/ejsp.795
- Payne, B. K. (2001). Prejudice and perception: The role of automatic and controlled processes in misperceiving a weapon. *Journal of Personality and Social Psychology, 81*, 181–192. doi:10.1037/0022-3514.81.2.181

- Peña, J., Hancock, J. T., & Merola, N. A. (2009). The priming effects of avatars in virtual settings. *Communication Research*, *36*, 838–856. doi:10.1177/0093650209346802
- Previc, F. H. (1998). The neuropsychology of 3-D space. *Psychological Bulletin*, *124*, 123–164. doi:10.1037/0033-2909.124.2.123
- Ronquillo, J., Denson, T. F., Lickel, B., Zhong-Lin, L., Nandy, A., & Maddox, K. B. (2007). The effects of skin tone on race-related amygdala activity: An fMRI investigation. *Social Cognitive and Affective Neuroscience*, *2*, 39–44. doi:10.1093/scan/nsl043
- Rozin, P. (2009). What kind of empirical research should we publish, fund, and reward? A different perspective. *Perspectives on Psychological Science*, *4*, 435–439. doi:10.1111/j.1745-6924.2009.01151.x
- Schnall, S., Benton, J., & Harvey, S. (2008). With a clean conscience: Cleanliness reduces the severity of moral judgments. *Psychological Science*, *19*, 1219–1222. doi:10.1111/j.1467-9280.2008.02227.x
- Schubert, T. W. (2005). Your highness: Vertical positions as perceptual symbols of power. *Journal of Personality and Social Psychology*, *89*, 1–21. doi:10.1037/0022-3514.89.1.1
- Schubert, T. W., & Semin, G. R. (2009). Embodiment as a unifying perspective for psychology. *European Journal of Social Psychology*, *39*, 1135–1141. doi:10.1002/ejsp.670
- Schwartz, B., Tesser, A., & Powell, E. (1982). Dominance cues in nonverbal behavior. *Social Psychology Quarterly*, *45*, 114–120. doi:10.2307/3033934
- Sherman, G. D., & Clore, G. L. (2009). The color of sin: White and black are perceptual symbols of moral purity and pollution. *Psychological Science*, *20*, 1019–1025.
- Slepian, M. L., Weisbuch, M., Rule, N. O., & Ambady, N. (2011). Tough and tender: Embodied categorization of gender. *Psychological Science*, *22*, 26–28. doi:10.1177/0956797610390388
- Smith-McLallen, A., Johnson, B. T., Dovidio, J. F., & Pearson, A. R. (2006). Black and white: The role of color bias in implicit race bias. *Social Cognition*, *24*, 46–73. doi:10.1521/soco.2006.24.1.46
- Song, H., Vonasch, A., Meier, B. P., & Bargh, J. A. (2012). Brighten up: Smiles facilitate perceptual judgments of facial lightness. *Journal of Experimental Social Psychology*, *48*, 450–452. doi:10.1016/j.jesp.2011.10.003
- Strull, T. K., & Wyer, R. S., Jr. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology*, *37*, 1660–1672. doi:10.1037/0022-3514.37.10.1660
- Sun, Y., Wang, F., & Li, S. (2011). Higher height, higher ability: Judgment confidence as a function of spatial height perception. *PLoS ONE*, *6*, e22125. doi:10.1145/2039239.2039248
- Tolaas, J. (1991). Notes on the origin of some spatialization metaphors. *Metaphor and Symbolic Activity*, *6*, 203–218. doi:10.1207/s15327868ms0603_4

- van Quaquebeke, N., & Giessner, S. R. (2010). How embodied cognitions affect judgments: Height-related attribution bias in football foul calls. *Journal of Sport & Exercise Psychology, 32*, 3–22.
- Waytz, A., & Mitchell, J. P. (2011). Two mechanisms for simulating other minds: Dissociable neural bases for self-projection and mirroring. *Current Directions in Psychological Science, 20*, 197–200. doi:10.1177/0963721411409007
- Webster, G. D., Urland, G. R., & Correll, J. (2012). Can uniform color color aggression? Quasi-experimental evidence from professional ice hockey. *Social Psychological and Personality Science, 3*, 274–281. doi:10.1177/1948550611418535
- Wilkowski, B. M., Meier, B. P., Robinson, M. D., Carter, M. S., & Feltman, R. (2009). “Hotheaded” is more than an expression: The embodied representation of anger in terms of heat. *Emotion, 9*, 464–477. doi:10.1037/a0015764
- Williams, L. E., & Bargh, J. A. (2008a). Experiencing physical warmth influences interpersonal warmth. *Science, 322*, 606–607. doi:10.1126/science.1162548
- Williams, L. E., & Bargh, J. A. (2008b). Keeping one’s distance: The influence of spatial distance cues on affect and evaluation. *Psychological Science, 19*, 302–308. doi:10.1111/j.1467-9280.2008.02084.x
- Williams, L. E., Huang, J. Y., & Bargh, J. A. (2009). The scaffolded mind: Higher mental processes are grounded in early experience of the physical world. *European Journal of Social Psychology, 39*, 1257–1267. doi:10.1002/ejsp.665
- Wyer, R. S., Jr., & Srull, T. K. (1986). Human cognition in its social context. *Psychological Review, 93*, 322–359. doi:10.1037/0033-295X.93.3.322
- Zhong, C. B., & Leonardelli, G. J. (2008). Cold and lonely: Does social exclusion feel literally cold? *Psychological Science, 19*, 838–842. doi:10.1111/j.1467-9280.2008.02165.x
- Zhong, C. B., & Liljenquist, K. (2006). Washing away your sins: Threatened morality and physical cleansing. *Science, 313*, 1451–1452. doi:10.1126/science.1130726