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Self-Evaluation and Self-Knowledge

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Just as someone might reference Julia Child for a classic French recipe, most researchers reference William James when it comes to classic definitions of the self. In fact, the "Consciousness of the Self" is the longest chapter in the two volumes of *The Principles of Psychology* (James, 1890/1983). James talked about a number of themes that are still present in modern discussions of the self. But perhaps his most unique contribution can be illustrated with a simple example. Grasp your left wrist with your right hand. Simultaneously, you are the perceiver of the wrist – the way the skin and bones feel to touch – and you are the wrist that is perceived. The subjective (i.e., perceiver) and objective (i.e., perceived) nature of the self was central to James' definition. Therefore, in order to understand the self, we need to characterize the processes that contribute to the self as perceiver and perceived. For example, how does the perceiver self learn about the perceived self? Is there something special about the way we represent knowledge about ourselves? Do we dispassionately gather and represent self-knowledge or are these processes influenced by motivational states? And before James was a psychologist, he was a physiologist. So we might ask – What have we learned by examining more physiological aspects of the self? Decades of research have shed light on answers to these questions and, in the process, raised new questions. We learn about ourselves by drawing on both internal and external sources and take extra pains when representing this information. Research has identified a number of motivations that influence how we gather and represent self-knowledge; we are just beginning to understand how we

balance the relative influence of these various motivations. Neurobiological investigations of self-processes have also just begun and promise to be an informative complement to extant behavioral studies.

SELF: A DEFINITION

What is the self? The self consists of internal, external, and socially perceived attributes that are shaped by a number of factors, including culture, time, and motivation. According to William James (1890/1983), the self is defined by the material, social, and spiritual constituents of the perceived self as well as the perception of these constituents. Perhaps the most tangible aspect of the self is the material self. James argues that external attributes such as possessions and family are just as much material aspects of one's self as one's body (James, 1890/1983). In other words, the "material" of your self includes your physical presence but also the clothes you select, the material goods you buy, and the people you call family. The self is also constituted by how you represent yourself in your own mind as well as the less tangible representations in the minds of other people. In other words, the self is partially represented socially through the identity or reputation that you have in other people's eyes. The self is also represented by what James called "spiritual" aspects of the self, which includes internal attributes that researchers more recently might call personality, attitudes, and consciousness. In other words, the self is reflected by your physical presence as much as

your reputation for lighting up a party or hiding by the wall, your preference for chocolate over vanilla, and your innermost thoughts and strivings. Since this classic definition, research has helped us understand how these aspects of self sometimes correspond to each other and sometimes do not. Furthermore, research has shown that the centrality of these aspects to the definition of selfhood is affected by culture, temporal construal, and motivation (e.g., Markus & Kitayama, 1991; Markus & Nurius, 1986; Sedikides & Gregg, 2008; Swann, Pelham, & Krull, 1989).

Correspondence between external, internal, and social representations of self

The external, internal, and social representations of self are related but not wholly redundant. People's personalities are related to the types of possessions they own, the clothes they wear, and even the material on their websites (Gosling, Ko, Mannarelli, & Morris, 2002). For example, there is a high correlation between the possessions and characteristics of someone's bedroom (i.e., external attributes), what someone says about their own personality (i.e., internal attributes), and what their friends say about that person's personality (i.e., the social self). A team of observers viewed the bedrooms of target individuals and then formed impressions of the target's personality based on these viewings. The impressions formed solely on the basis of the contents of the bedroom were then compared to self-reports provided by the target individual as well as reports provided by friends who knew the target well. The study found that observer report, self-reports, and friend reports agreed significantly on how much a target was extraverted, agreeable, open to new experiences, conscientious, and neurotic. Furthermore, it was shown that observers used bedroom contents to make their judgments of *conscientiousness* and *openness to new experience*. For example, observers rated targets as highly conscientious to the extent that their bedrooms were well lit, organized, and not cluttered with books or CDs. These same external attributes related to self-reported conscientiousness. Similarly, observers rated targets as highly open to new experiences to the extent that their bedrooms were distinctive among the bedrooms viewed and had a variety of diverse books and magazines. Again, these same external attributes correlated with self-reported openness to new experiences.

Another example of the relation between the self's internal attributes, external attributes, and social representations comes from research on the "beautiful is good" stereotype (e.g., Dion, Berscheid, & Walster, 1972; Meier, Robinson, Carter, & Hinsz, 2010). People who are physically attractive are more likely to report desirable personality characteristics and observers use physical attractiveness to judge whether a person is likely to have a desirable personality. In the classic study, participants formed impressions of three target people based on their photographs (Dion, Berscheid, & Walster, 1972). They were then presented with a photograph of an unattractive target, an attractive target, and a target of average attractiveness. Compared to the other two targets, participants judged the attractive target to be more outgoing and sociable.

A recent study complements this research by showing that observers' tendency to use physical attractiveness to judge sociability is consistent with internal perceptions of sociability (Meier et al., 2010). Participants were asked to pose in impromptu photographs and provide self-reported personality ratings. Participants who rated themselves as more sociable (e.g., extraverted or agreeable) were perceived as most attractive by observers. These studies illustrate how external attributes such as possessions or physical appearance relate to internal attributes and affect how the self is represented in the minds of other people.

Differences between external, internal, and social representations of self

However, it is not the case that there is always high correlation between the self's external attributes, internal attributes, and social representations. This principle is illustrated by research examining the ways in which people erroneously make inferences about a target's internal attributes on the basis of the objects in their rooms or the objects they hold in their hand. In the bedroom study described above, observers sometimes used external attributes to judge the target's personality, yet these attributes were not related to what the target or their friends had to say about the target's personality (Gosling et al., 2002). For example, observers tended to associate colorful bedrooms with high levels of *agreeableness* and *conscientiousness*, yet targets who reported high levels of those traits were neither more nor less likely to have colorful bedrooms. Furthermore, stereotyping illustrates how social representations of the self may be driven by external attributes of the self that are not necessarily predictive of the internal attributes. For example, participants are more likely to assume an out-group member is holding a gun or is a threat when holding a gun compared to in-group members in the same context (e.g.,

Correll, Park, Judd, & Wittenbrink, 2002; Greenwald, Oakes, & Hoffman, 2003). These studies are just a few examples that illustrate how the self's external attributes (e.g., possessions, skin color) do not always relate to one's own representations or other's representations of the self (e.g., one's personality or aggression).

Culture and self-definition

External attributes, internal attributes, and social representations may also vary in their centrality or importance for defining the self. For example, culture may impact the extent to which people construe their family members or other social groups to be a part of the self. Cultures vary in their emphasis on the relatively independent or interdependent nature of self-construal (Markus & Kitayama, 1991). Independent self-construals emphasize definitions of self based on the external and internal attributes that distinguish an individual from other people. A person is "acting like themselves" as long as they are allowing their unique configuration of internal attributes to shape their appearance and actions. In contrast, interdependent self-construals emphasize defining the self as part of a larger social entity. In this way, interdependent self-construals emphasize the importance of family and other social groups (considered to be material aspects of the self by James, 1890/1983) as well as how the self is represented in other people's minds (considered to be the social self by James, 1890/1983). From this perspective, the self is largely driven by affiliation with social groups and taking into consideration how other people feel about the self. Self-expression may be less focused on emphasizing unique qualities and more about one's role within the group.

Research has shown that participants from cultures emphasizing independence or interdependence will complete repetitions of the sentence "I am…" in different ways (e.g., Bochner, 1994; Bond & Cheung, 1983). Participants from interdependent cultures are more likely to complete these sentences using social roles or social relationships. For example, they may complete the sentences by noting that they are a father, a son, and a brother. In contrast, participants from independent cultures are more likely to complete these sentences by emphasizing their idiosyncratic personality characteristics. For example, they may complete the sentences by noting that they are intelligent, strong, and talented. This research illustrates how culture can influence how much the material, social, and internal aspects are considered to be central or important in self-definition.

Temporal construal and the self

Recent research additionally suggests that we represent our innermost thoughts and strivings not only as they currently are but also as they have been and how they might be in the future (e.g., Bartels & Rips, 2010; Markus & Nurius, 1986; Trope & Liberman, 2010; Wilson & Gilbert, 2005). And temporal construals affect how we perceive our preferences. If given a choice between earning a smaller amount of money today compared to a larger amount in a year, people need the delayed payoff to be considerably larger to justify having to wait. Similarly, people estimate that they will choose to drink significantly less of an unpleasant liquid to advance scientific knowledge if the drinking will occur today compared to 3 months from now (Pronin, Olivola, & Kennedy, 2008). Why do we make different choices for ourselves depending on whether it has consequences for now or the future? One theory is that we identify more closely with our selves in the present and, therefore, we prefer to acquire benefits and avoid costs for our current selves in comparison to our future selves (Parfit, 1984). In support of this theory, a series of studies found that the more people expected their personality to change in the future, the more they wanted to receive $100 before that change occurred (Bartels & Rips, 2010). These studies illustrate that we believe the perceived self has the potential to change over time.

Summary

James argued that the self is equally defined by its constituents (i.e., the perceived) and by the perception of those constituents (i.e., the perceiver). The self consists not only of our external attributes but also how those external attributes and less tangible internal attributes are represented in our minds and the minds of other people (i.e., our social reputation). Sometimes these aspects of self are predictably related to one another, but sometimes they are not. Culture affects how much we favor different aspects when defining the self and temporal construal affects our perception of the contents of the perceived self.

COSTS AND BENEFITS OF HAVING A SELF

As this chapter will illustrate, a number of cognitive, affective, and physiological resources are devoted to maintaining a sense of self. Is this resource expenditure worth it? What do we gain by having

a sense of self and do we lose anything? A historical account of the evolution of self-definition highlights that there are both costs and benefits to possessing a sense of self (Baumeister, 1987). A sense of self can be advantageous because it gives us a reference point for organizing the large amount of incoming information from our daily lives (Turk et al., 2003), gives us a sense of agency (Haggard & Tskairis, 2009; Wegner, 2003), and allows for higher-order cognitive processing such as planning, goal setting, and perspective taking (Leary, Estrada, & Allen, 2009). We feel that we are the agents of our behavior and our accountability may motivate us to plan our behavior to make sure it fits with our goals. The dialogue we have with our "selves" allows us to consider what we will do and what it will help us accomplish (Leary, Estrada, & Allen, 2009). Additionally, our internal dialogue may help us understand the perspective of other people (Leary, Estrada, & Allen, 2009). We do not have access to other people's internal experiences and we may use our own experience to try to simulate what someone might be feeling or thinking. The ability to take the perspective of other people is beneficial for a number of social outcomes, including self-regulation and moral judgment (Eisenberg, 2010).

On the other hand, as this chapter will illustrate, our sense of self may lead to costly outcomes. For example, we may underestimate or overestimate ourselves and set ourselves up to fail. People underestimate their ability to cope with negative emotional events and may choose to avoid situations or relationships on the basis of that incorrect sense of the self's capabilities (Eastwick, Finkel, Krishnamurti, & Loewenstein, 2008; Wilson & Gilbert, 2005). Overestimation can lead to trouble as well; overconfidently predicting academic success can lead to disengagement from college (Robins & Beer, 2001). In summary, having a sense of self opens up opportunities for sophisticated cognitive processing and self-regulation but may paradoxically undermine these efforts when self-evaluation diverges too much from reality.

PROCESSES OF SELF-EVALUATION

What are the ways in which we evaluate our external attributes, internal attributes, and social representations? Many different theories have been proposed and they are not mutually exclusive because it is likely that we use several different avenues for gaining self-knowledge. Take the example of picking out a melon at the grocery store. Nothing is better than a ripe melon, but with that thick rind making it difficult to see the insides, it can sometimes feel like it is anyone's guess as to which melon is a good choice. So how do you evaluate a melon? Do you pick one up and observe its features to assess whether it appears fresh (smells like a melon, free from blemishes, heavy for its weight)? You could also refer to the people around you. You could ask someone their opinion or look to see how your melon compares to the melons selected by nearby shoppers. A glance at the research shows that all of these strategies are also useful for gaining self-knowledge and some are more useful for particular situations than others.

Self-perception theory

From the perspective of *self-perception theory* (Bem, 1967, 1972), we get to know ourselves in much the same way we get to know others. Just as we might observe someone's action to make inferences about their desires, we may try to understand our attitudes by observing our own behavior. In Jamesian terms, self-perception theory posits that the perceiver self learns about internal attributes by observing external aspects of the perceived self. Research supports the hypothesis that self-knowledge can be derived from behavior (Festinger, 1957; Festinger & Carlsmith, 1959; Nisbett & Wilson, 1977), but people perceive their internal thoughts and feelings to be more diagnostic of themselves than long-term observation of their overt behavior (Andersen & Ross, 1984). For example, one study required participants to rate how much someone else could learn about them from a sample of their thoughts and feelings compared to a sample of their overt behaviors. Participants rated both sources of information to be at least somewhat informative, but the sample of thoughts and feelings was rated as significantly more informative than a sample of overt behavior (Andersen & Ross, 1984).

More recently, research along these lines has moved away from investigating the relative importance of behavioral observation or introspection for gaining self-knowledge. Instead, research has investigated the differences and similarities between the a priori theories and deductive reasoning used to explain one's own behavior and other's people's behavior. Some research has found evidence of differences (e.g., Jones & Nisbett, 1971; Pronin, Lin, & Ross, 2002). In the study mentioned above, participants felt that long-term observation of overt behavior would likely be more informative about another person than it would about themselves (Andersen & Ross, 1984). On the other hand, the way we explain our own behavior is often similar to the way we make sense of other people's behavior (e.g., Knee,

Patrick, & Lonsbary, 2003; Malle, 2006; Nisbett & Wilson, 1977; Plaks, Levy, & Dweck, 2009; Taylor & Koivumaki, 1976). For example, it was originally hypothesized that people considered situational factors much more when explaining their own behavior compared to another person's behavior (Jones & Nisbett, 1971). In other words, if I asked you why you did not hold the door open for a stranger, you would likely look for something special about that particular instance to explain your behavior (e.g., you did not want to be late to meet someone waiting on you). However, if I asked you why someone else failed to hold the door open, you would be more likely to attribute their behavior to something about their disposition (e.g., they are an inconsiderate person). A recent meta-analysis has shown that these differences are not as robust as previously thought (Malle, 2006); people are only likely to make dramatically different attributions in circumstances where information suggests real differences between the self and other people.

The looking-glass self

Self-perception theory explains one way we can evaluate the self in the absence of other people. Yet most of our lives are spent in social settings; so it is reasonable to wonder whether other people play a role in how we come to know ourselves. From the perspective of the "*looking-glass self*," one way that people help us learn about ourselves is by communicating what they see in us. Other people act as looking glasses: i.e., mirrors in which we can observe ourselves. Rather than observing ourselves directly as in self-perception theory, we observe what other people see in us. From this perspective, people are theorized to imagine how they must appear to other people (i.e., reflected appraisals) and internalize those imagined judgments (e.g., Cooley, 1902; Mead, 1934).

Research has shown that people are more likely to incorporate behaviors into their self-view if they believe the behaviors are observed by another person. In one study, participants were told that they would serve as test cases for graduate students training in clinical observation (Tice, 1992). Participants were told to present themselves as emotionally stable, emotionally unstable, or as possessing a task-irrelevant attribute (i.e., athletic). Participants were then randomly assigned to a condition in which they believed that they were either interacting with a graduate student who could see them through a one-way mirror or being recorded so a graduate student could listen to the responses at another time. A telecom was provided and participants responded to a series

of questions which gave them the opportunity to present themselves as instructed. Afterwards, participants were asked if they could do the experimenter a favor and fill out some questionnaires that were presumably unrelated to the first task. The questionnaires included a self-assessment of emotional stability. The study found that participants were most likely to rate themselves in line with the behavior they had portrayed when they believed they had done so while being watched. In other words, participants rated themselves as more emotionally stable when they had portrayed emotional stability in the condition where they believed they were observed than when they thought someone would listen to their responses at a later time. Similarly, ratings of emotional instability were higher when participants believed they had been observed while portraying emotional instability. A follow-up study found that these effects generalize to public compared to private portrayals of other personality characteristics such as *extraversion* (Tice, 1992). This study illustrates that strong cues to imagine how you are being perceived by another person can affect your perception of your personality.

The looking-glass self also implies that your self-evaluations should be consistent with how other people perceive you and that you should be aware of how you are perceived by others. Although the research is correlational in nature, a large body of work has shown a high level of agreement between how someone perceives themselves and how they are perceived by others, at least on certain dimensions (e.g., Albright, Kenny, & Malloy, 1988; Ambady & Rosenthal, 1992; Gosling et al., 2002; Marcus & Miller, 2003; Norman & Goldberg, 1966). For example, students on the first day of class were assigned to groups and physical attractiveness ratings were collected using a round-robin design (Marcus & Miller, 2003). Not only did each group member rate themselves and all other group members on attractiveness but also they reported how their attractiveness was perceived by each group member. The findings show that people's attractiveness ratings are correlated with how other people see them and that people are aware of how they are seen by others in terms of physical attractiveness. Perhaps this is not that surprising. After all, physical attractiveness is somewhat defined by whether other people agree that you are desirable. However, similar results are found for other dimensions of the self. Another study asked students on the first day of class to rate their own personality and the personalities of the other students in the class. When students agreed that someone appeared friendly, that person tended to rate themselves as friendly (Norman &

Goldberg, 1966). Finally, similar neural systems support making self-judgments and imagining how one is perceived by other people (Ochsner et al., 2005; Pfeifer et al., 2009). The neural commonality between these processes suggests that they share at least some of the same psychological mechanisms. Taken together, this research illustrates a close relationship between self-perceptions and how the self is perceived by other people.

More recently, researchers have taken the looking-glass self perspective a step further and suggested that a fundamental function of self-worth is to signal one's social acceptance by other people (e.g., the sociometer hypothesis: Leary, Tambor, Terdal, & Downs, 1995). In other words, rather than having to imagine how other people see the self, self-esteem functions to quickly signal the degree to which the self is positively (or negatively) viewed by others.

Research has shown that self-esteem is multiply determined, both by how others actually feel about the self and perceptions of other people's regard. For example, one study examined how the relation between self-perceptions, other people's perceptions of the self, and perceived social acceptance unfolded over time (Srivastava & Beer, 2005). Participants were randomly assigned to groups and met once a week for 4 weeks to perform various group tasks. Participants rated themselves, their group members, and how they believed they were perceived by their group members on various attributes. The more participants were rated as likeable by their group members in the first group meeting, the more their self-perceptions rose in subsequent weeks. However, this effect was independent of the effect of perceived regard on self-perceptions. In other words, self-perceptions of likeability appear to increase when the self is well-received by other people, but this effect is not wholly accounted for by awareness of how the self is received by others. It is important to note that this study also examined the opposite possibility: i.e., whether people broadcast aspects of themselves that then influence how they are perceived by other people. However, no significant effects were found for initial self-perceptions predicting other-perceptions in later meetings. When considered in relation to the correlational nature of the research demonstrating agreement between the self and others, this study suggests that those correlations may indeed reflect self-perceptions that are influenced by reflected appraisals. In Jamesian terms, the looking-glass self perspective suggests that the perceiver self uses the observations of other people to learn about the perceived self.

Social comparison theory

So far, we have considered our ability to draw on our own observations and other people's observations to learn about the self. A third perspective, *social comparison theory*, states that people learn about themselves by using other people as a referent point for self-evaluation (Festinger, 1954; Goethals & Darley, 1977; Kruglanski & Mayseless, 1990; Mussweiler & Rueter, 2003). From a Jamesian perspective, social comparison theory suggests that the perceiver self learns about the perceived self by comparing it to other people. For example, if you want to get a sense of your athleticism, you might compare your athletic ability to the athletic ability you see in your peers.

We are particularly likely to draw on social-comparative information when we are uncertain about how to evaluate ourselves (see Kruglanski & Mayseless, 1990). However, there is evidence that, regardless of intent, we make social-comparative judgments (Gilbert, Giesler, & Morris, 1995; Stapel & Blanton, 2004) and, in fact, identify people who are a part of our everyday lives that can serve as relatively chronic reference points (Mussweiler & Rueter, 2003). Research has shown that it takes effort to discount social-comparative information even when you are aware that it is not relevant for self-evaluation. For example, one study found that participants under mental load were unable to prevent themselves from referencing the performance of another person even when it was clearly not relevant for self-evaluation (Gilbert, Giesler, & Morris, 1995). Participants viewed a videotape of a confederate performing a personality impression task. Participants were told that the confederate's task performance was due to external factors. Specifically, if they had viewed a confederate who had done well, they were told that the confederate was doing the task for a second time. If the confederate had done poorly, they were told that the confederate had been given misleading information about how to perform the task. Afterwards, each participant then performed the same personality impression task they had just viewed. Then participants had to rate their competence at the task while maintaining an 8-digit number in their minds (or not). For participants who were not under mental load, their own competence was not affected by whether the confederate had done well or poorly on the task. However, participants in the mental load condition tended to rate themselves as though the confederate were an appropriate benchmark for average performance on the task. Even though they were told that the confederate had advantages they did not have, self-competence was lower when the confederate had done well rather than poorly.

These results suggest that we automatically want to use salient social targets as referents for self-evaluation and that it takes extra cognitive resources to discount them.

Furthermore, recent research suggests that for the sake of efficiency, social comparisons may involve a referent that has been repeatedly useful in the past even if it is not optimal for a particular comparison. We may repeatedly compare ourselves to our friends such that we eventually tend to use them as a routine referent in our social-comparative judgments. In a series of studies, researchers found that self-evaluation and information about a friend tend to facilitate one another (Mussweiler & Rueter, 2003). Participants were faster at recognizing the name of their best friend after making a self-evaluation judgment of a personality trait (when compared to making a personality trait judgment for a celebrity). Furthermore, participants were also faster at judging the personality of their friend after making a self-evaluation judgment of personality trait (when compared to making a personality trait judgment for a celebrity). Importantly, these results held even when the self and best friend did not share the personality characteristic. Taken together, these studies illustrate people's inclination to make social comparisons, and that certain people become such routine referents that probing for self-evaluation increases accessibility of information about those other people.

In summary, people gain knowledge about themselves in myriad ways. They may observe their own behavior much in the way they would observe someone else's behavior to make inferences about their internal states. Additionally, other people play a role in our self-evaluation processes. We may learn about ourselves or be particularly likely to internalize our behavior when we consider the perspective of an external observer. We also learn about ourselves by comparing ourselves to other people. In particular, social comparisons appear to be a particular automatic way in which people gain knowledge about themselves.

COGNITIVE REPRESENTATIONS OF THE SELF

The self is multifaceted, and people use different strategies to gain knowledge about these facets. Once we have acquired information about the self, how do we represent it? Could we answer this question with a survey of the basic principles of knowledge representation? Or does the perceiver self operate on the perceived self in unique ways (see Keenan & Baillet, 1980; Kihlstrom & Cantor, 1984)? While self-knowledge does not draw on dramatically different principles, it does showcase the effect of intimacy and frequency on knowledge representation. Research on the representations of self-knowledge suggests that they are particularly elaborate and well-organized. Two examples illustrate the unique ways in which we create and access representations of self-information: the self-reference effect and the relation of episodic memory to person judgment.

The self-referent effect

Are you talented, personable, and happy? Is the president jovial, agreeable, and tidy? Which of these words has more than two syllables: conscientious, intellectual, friendly? Say that you answered all of these questions and 10 minutes later, you had to recall the words you judged. Research has shown that there will be a self-reference effect on your memory. That is, you are much more likely to remember the words you judged in relation to yourself than to other social targets such as political figures or low-level characteristics such as syllabic structure (e.g., Kelley et al., 2002; Markus, 1977; Ochsner et al., 2005; Rogers, Kuiper, & Kirker, 1977). Why is information encoded in relation to the self remembered so much better? Does the self engage a unique cognitive process or is it better understood as an extreme of the factors known to promote memory?

A basic principle of cognition is that people organize and guide knowledge using schemas (e.g., Bartlett, 1932; Neisser, 1967; Taylor & Crocker, 1981) and self-knowledge is no exception (Markus, 1977). From this perspective, the knowledge gained by observing the self, imagining other people's perspectives, and social comparison is organized into a schema devoted to information about the self. Self-schemas tend to include information about the self that we deem important or centrally descriptive of the self (Markus, 1977). Schemas organize the information we currently hold and, furthermore, they influence how we process schema-relevant information that we subsequently encounter (e.g., Baldwin, 1992; Markus, Hamill, & Sentis, 1987; Taylor & Crocker, 1981). The self-referent effect is considered to be one more example of schematic influences on information-processing.

Both the elaborative and organizational properties of self-schemas have been implicated in promoting memory for self-referent information (e.g., Ingram, Smith, & Brehm, 1983; Klein & Kihlstrom, 1986; Rogers, Kuiper & Kircher, 1977; Symons & Johnson, 1997). Self-schemata affect how much information is elaborated during encoding. Information that is more extensively elaborated tends to be better remembered (Craik & Tulving, 1975). Given that information judged

in relation to the self is better remembered, researchers theorize that the self-schema is especially well-developed compared to other schemas (e.g., Markus, 1977; Rogers, Kuiper, & Kircher, 1977). The rich nature of the self-schema creates myriad opportunities to elaborate on the information being encoded. For example, if I ask you to judge whether you are talented, any number of self-associations may be triggered. Encoding the word "talented" becomes more elaborate to the extent that the meaning of "talent" is analyzed in relation to diverse pre-existing self-information. However, if I ask you if the word "talented" has two syllables, then it is not likely to be processed in terms of its meaning, let alone in a diverse manner. Instead, its pronunciation may be briefly analyzed to assess its syllabic content.

In addition to their promotion of elaboration, self-schemas may be used to organize information (Klein & Kihstrom, 1986; Symons & Johnson, 1997) and organization of information promotes memory (Bower, Clark, Lesgold, & Winzenz, 1969). For example, say I ask you to remember the list: ball, carrot, wrench, glove, pea, and hammer. You will find it easier to remember the words if you organize them into three categories: sports equipment; vegetables; and tools (Bower et al., 1969). Researchers suggest that judging information in relation to self organizes the information into categories (e.g., "me" and "not me"). For example, one study asked people to judge one list of words describing body parts in relation to the self ("Can you think of an incident in which you had an injury or illness associated with your neck?") and to categorize another list of words describing body parts on their internal or external nature (Klein & Kihlstrom, 1986). In contrast to the typical superiority of memory for information in a self-reference condition, memory for the words was not significantly different across the two conditions. In other words, the memory advantage for words encoded in relation to the self is similar to words encoded in relation to organizational cues (e.g., categories of internal and external body parts). These studies suggest that we take extra pains when representing the information we gather about ourselves. Of all of the schematic representations created by the perceiver self (the perceiver), the perceived self (i.e., the perceived) is represented through especially elaborate and well-organized schemas.

The role of abstract and episodic information in self-judgment

Beyond representation, is there anything unique about the relation between the perceiver self and the perceived self? Research suggests that we often make judgments about the self using different aspects of knowledge than we use for making judgments about other people (e.g., Klein, Babey, & Sherman, 1997; Klein, Loftus, & Burton, 1989). For example, if I ask you to decide whether the president is artistic, you are likely to form your judgment by searching through your memory for instances that confirm or dispute the president's artistic talent. But if I ask you to decide whether you are artistic, your answer is not likely to involve a search through autobiographical memories.

Why the difference? Over time, we may create summaries or abstractions of episodic information about ourselves but are less likely to do that for others (Klein, Loftus, Trafton, & Fuhrman, 1992). When judging ourselves, we do not rely on autobiographical memories, so it is likely that we access summaries to draw conclusions about ourselves (e.g., Klein, Babey, & Sherman, 1997; Klein, Loftus, & Burton, 1989). For example, self-description judgments are not facilitated by recalling episodic information about the self: i.e., autobiographical memories. In one study, participants were asked to judge personality trait words for their self-descriptiveness (Klein, Loftus, & Burton, 1989). However, before they made each judgment, the participants performed one of three tasks. They generated a definition of the personality trait word, remembered a time they exhibited the personality trait, or made a self-descriptive judgment. If we make self-descriptive judgments by computing our answers from autobiographical memories, then participants should have been faster when making a self-descriptive judgment after recalling an autobiographical memory than after generating a definition of the trait word. However, that is not what the study found. Instead, participants were equally quick to make self-descriptive judgments when generating a trait definition or when recalling an autobiographical memory. Furthermore, when participants performed one of the above tasks before being asking to recall an autobiographical memory, they were no quicker to do so after recalling an autobiographical memory than generating a semantic definition (Klein, Loftus, & Burton, 1989). These studies show that the processes involved in self-description judgments and retrieving autobiographical memories are not redundant.

It is likely that the lack of reliance on autobiographical memory reflects our chronic experience of ourselves across time and situations. In fact, personality judgments of the self in new contexts do rely on autobiographical memories. For example, one study asked participants to perform the tasks above in relation to contexts in which they had either long-term or short-term experiences (Klein et al., 1992). Specifically, participants were asked to recall memories and make self-description judgments in relation to the way they acted at

home with their families or in relation to the way they acted in college. All participants had only about 3 months of experience with their college environments (compared to 18 years of experience in the family environment). The results for judgments made in relation to home matched the results described above: autobiographical recall did not significantly facilitate self-description judgment. However, recalling autobiographical instances from time spent at college did facilitate self-description judgments in the college context. In some sense, these findings are consistent with self-perception theory which emphasizes that we learn about ourselves by observing our behavior. The research on autobiographical memory's facilitative effect on self-description suggests that this theory is particularly relevant for forming impressions of the self in new contexts. Finally, making personality judgments without relying on episodic memory may be mostly unique to the self. For the most part, retrieving episodic memories about one's mother will facilitate personality judgments of her (Klein et al., 1992).

Taken together, the research on the self-referent effect and the role of memory retrieval in self-judgment illustrates unique ways in which the perceiver self operates on the perceived self. In comparison to other kinds of knowledge, we represent knowledge about ourselves in particularly elaborate and well-organized ways. The rich nature of self-knowledge also has implications for how we make self-description judgments. Our experience with ourselves may create abstract representations culled from repeated experiences and, therefore, self-description judgments often do not necessitate the retrieval of autobiographical memories.

MOTIVATION AND SELF-KNOWLEDGE

Are the social-cognitive aspects of the self fully captured by an understanding of how we learn about ourselves and how we represent that knowledge? Not quite. A central theme in diverse disciplines such as psychology, philosophy, and economics is that we are rarely dispassionate when it comes to self-processes. When we evaluate ourselves by observing our behavior, comparing ourselves to other people, or imagining what they think of us, do we passively take in all self-information regardless of whether it is good or bad? If not, what kinds of motivations influence the way we conduct self-evaluation processes and use self-knowledge? Is one motivation more predominant than others? How pervasive are motivational influences: Are there any circumstances in which we tend to remain dispassionate

when evaluating ourselves? These are the kinds of questions that organize a large body of literature on self-perception motives. To date, this research has consistently found evidence for at least three broad motivations that influence self-perception processes and the predominance of their relative influence depends on a number of factors (e.g., Anderson et al., 2006; Kwang & Swann, 2010; Sedikides & Gregg, 2008; Swann, Pelham, & Krull, 1989; Taylor & Brown, 1988; Trope, 1980).

Self-enhancement

Self-enhancement is one motivation that influences self-evaluation processes and cognitive representations of the self (e.g., Alicke et al., 1995; Paulhus, Graf, & van Selst, 1989; Sedikides & Gregg, 2008; Taylor & Brown, 1988). Self-enhancement is the motivation to view the self in a positive manner presumably as a means of protecting self-esteem. A large body of research has shown that people often evaluate themselves in a positively skewed manner: they claim to have more positive traits than negative traits, believe they have done better on a task than indicated by their actual performance, rate themselves as having more desirable personalities than their peers, and attribute their failures to circumstance rather than essential qualities of the self (e.g., Alicke et al., 1995; Beer & Hughes, 2010; Jones & Nisbett, 1971; Klayman et al., 1999; Robins & Beer, 2001; Sedikides & Gregg; 2008; Taylor & Brown, 1988; Taylor & Koivumaki, 1976).

Researchers theorize that such unrealistically positive perceptions of the self are perhaps best explained by the motivation to maintain or inflate self-worth (Sedikides & Gregg, 2008; Taylor & Brown, 1988; but see Chambers & Windschitl, 2004). We want to see ourselves in a positive light and we can accomplish this by influencing what we observe about ourselves, how we compute social comparisons, and imagine how others see us. For example, we can prioritize attention to flattering information about the self or choose to compare the self to people who are worse off. Research has shown that people's positive qualities tend to spring to mind before their negative qualities. They automatically assume they have significantly more positive qualities and fewer negative qualities than other people (e.g., Beer & Hughes, 2010; Paulhus, Graf, & Van Selst, 1989) and select interaction partners who provide positive feedback (Swann, Hixon, Stein-Seroussi, & Gilbert, 1990). Furthermore, people engage in a number of cognitive operations to ensure that they come out favorably when comparing themselves to others. For example, people may

idiosyncratically define a personality trait so that they seem exceptional when compared to others (Alicke et al., 1995; Dunning, Meyerowitz, & Holzberg, 1989). If you want to see yourself as a good cook compared to your friends, you can define a good cook as someone who excels at things you can do (e.g., never burn the food) but downplay the importance of things that you do not do (e.g., developing unique recipes). Additionally, people can enhance their self-worth by comparing themselves to people who are worse off (e.g., Kruglanksi & Mayseless, 1990). For example, students in a medical training program chose more often to compare themselves to peers with poorer performance when they wanted to ensure positive self-appraisals of their own performance (Buunk, Cohen-Schotanus, & van Nek, 2007). These studies suggest that positive information in self-schemas is more easily accessible than negative information.

In summary, self-enhancement motivation may create lopsided representation or greater elaboration of positive information about the self (compared to negative information about the self). We may evaluate ourselves by observing our behavior or imagining what others think of us, but we do not do this dispassionately. Instead, there is evidence that we ensure positive self-views by focusing on the positive aspects of our behavior and the good things that people have to say about us. Additionally, we ensure positive self-views by comparing ourselves on dimensions or to people that emphasize our positive qualities.

Self-verification

We do not always want to enhance our self-view; evidence indicates that we also strive for self-verification (e.g., Kwang & Swann, 2010; Swann, Pelham, & Krull, 1989). Self-verification theory posits that people want to confirm their current conceptions of themselves. From this perspective, people use their self-view to make sense of the world. To the extent that self-views are consistent and predictable, people are able to feel that the world is predictable and coherent, which gives them a sense of control.

At first blush, it may seem like it would be difficult to disentangle the effects of self-enhancement and self-verification motivations on self-evaluations. Most people have moderate to high levels of self-esteem (e.g., Gray-Little, Williams, & Hancock, 1997), so verification of these views would result in evaluations that are positive in nature. The difference between the two theories is most evident for individuals with low self-esteem. If people are striving to verify their self-view, then people with low self-esteem should not exhibit the positively

slanted self-evaluations mentioned above. Indeed, a large body of literature has shown that people with low self-esteem perpetuate their negative self-views by seeking information and environments that reinforce currently held self-views (see Kwang & Swann, 2010). For example, people find it easier to remember information that is consistent with their self-view. In one study, participants who varied in self-esteem were given false feedback about the desirability of their personality (Story, 1998). Participants were much better at recalling the content of the feedback if it matched their own self-views. In other words, participants with low self-esteem found it easier to remember details of their feedback if it indicated they had undesirable personalities.

Furthermore, even people with high self-esteem admit to having flaws, and they will choose interaction partners that confirm these flaws (Swann, Pelham, & Krull, 1989). Participants were pre-screened to have extremely positive self-views of certain personality attributes and negative self-views of other personality attributes. Participants were then told that their personalities had been ostensibly evaluated by three confederates and asked to rate their preference for interacting further with each of the confederates. The evaluation feedback was bogus and varied in how much it verified either positive or negative aspects of self-ratings of personality. Regardless of whether participants had high or low self-esteem, they preferred to interact with people they believed to share their perceptions of both their positive and negative attributes. These studies illustrate our ability to seek and recall information that reinforces current self-views, even when they are negative. We sometimes focus our self-observations on information that reinforces our current self-views and ensure that our imagined evaluations by others come from people who will confirm our current self-views.

Self-assessment

We wondered earlier whether we could be dispassionate when gathering information about ourselves. In addition to striving toward enhancement or verification, there is also evidence that there are times that people do gather information about themselves in order to gain accurate self-knowledge (e.g., Trope, 1986). The benefit of realistic self-assessment is that it helps people understand their capabilities and how to improve on them (this latter benefit is sometimes referred to as self-improvement motivation and treated independently from the motivation to understand the current self: e.g., Taylor, Neter, & Wayment, 1995). Research on self-assessment motivation

has shown that, when given a choice, we prefer feedback compared to no feedback about ourselves (e.g., Dunning, 1995). Our interest in the feedback increases in relation to its objective diagnostic value (Trope, 1975), even when we are aware it may hurt our self-esteem (Trope, 1980). For example, in one study, participants' achievement motivations were measured and several weeks later they completed a battery of six tests that varied in difficulty (Trope, 1975). Participants were then told how much each test had the potential to accurately assess their abilities. When rating their preferences for feedback, participants were most interested in feedback from tests that were presented as highly diagnostic and this was especially true for participants with high achievement motivation. Furthermore, test difficulty did not impact interest in feedback. Research on self-assessment demonstrates our interest in gathering feedback, even when it may not enhance or verify current self-views. From this perspective, a relatively non-defensive curiosity about the self governs at least some of the data gathering and cognitive representation associated with self-evaluation.

Relative influence of each motivation

Self-evaluation processes appear to be pushed around by several different motivations. How should we conceptualize the relative influence of different motivations? Is one predominant over the others or is their influence determined by domain? In a broad sense, research suggests that self-enhancement may be more automatic and affect-driven, whereas self-verification and self-assessment may require more controlled and cognitive processing (e.g., Swann et al., 1990; Trope & Neter, 1994). As mentioned above, people's automatic tendency is to seek self-enhancing information. People's self-description judgments and social comparisons become even more positively skewed when under mental load (e.g., Beer & Hughes, 2010; Paulhus, Graf, & Van Selst, 1989). People under mental load select social interaction partners who enhance their self-view rather than verify them (Swann et al., 1990). However, the automatic tendency towards self-enhancement should not be taken as evidence that it somehow dominates self-evaluation. In fact, there are even certain domains in which self-evaluations are not typically enhanced. For example, people do not inflate their self-perceptions of status on average. One series of studies examined self-perceptions of status in experimentally assigned groups and in naturalistic groups (Anderson et al., 2006). Self-perceptions of status

correlated significantly with group members' judgments. Furthermore, the correlation between self and group-member ratings of status holds for minimally acquainted groups and across time. This illustrates at least one domain in which self-enhancement is not expressed on average. It is unclear whether self-enhancement is simply not automatically engaged in the domain of status or whether cognitive effort is used to attenuate its expression. In other domains, there is evidence that people use additional cognitive effort to accomplish self-verification and self-assessment over self-enhancement. Without the distraction of mental load, people seek interaction partners who verify their negative self-view (Swann et al., 1990). Self-assessment is likely to influence self-evaluations if a cost–benefit analysis reveals that learning something negative about the self will ultimately be useful despite adverse effects on self-esteem (Trope & Neter, 1994).

Beyond differences in automaticity, research continues to investigate factors that influence the activation and expression of self-perception motives. It is tempting to posit that a particular motivation will be pronounced in a domain that is likely to fulfill the goal of the motivation. For example, if people are motivated to assess themselves accurately as a way to promote achievement, then we might except that self-assessment will show a dominant influence on perceptions of achievement-related qualities such as academic ability. However, research has found that people, on average, tend to self-enhance their academic ability (e.g., Robins & Beer, 2001). Furthermore, some research suggests that we are just as likely to respond to the bruise of past and future self-esteem threats with self-enhancement, self-verification, or self-assessment. Participants were presented with descriptions of each motivation and asked to describe the situations in which they had been motivated to enhance, verify, assess, or improve themselves through their self-evaluations (Taylor, Neter, & Wayment, 1995). A narrative analysis of the answers showed that situations of threat, either in the past or future, were equally likely to elicit the different motivations. However, there is evidence that people self-enhance less when recalling a past self-esteem threat when compared to current self-esteem threats (Gramzow & Willard, 2006). Another possibility is that the social nature of self-evaluation might mean that certain relationships tend to elicit particular motivations. A recent meta-analytic review suggests that self-verification motivations may be particularly strong when seeking information in long-term relationships compared to newly forming relationships (Kwang & Swann, 2010). Future research will be beneficial for refining our

understanding of how and when self-evaluation processes and representation of self-knowledge are influenced by various motivations.

NEURAL REPRESENTATIONS OF THE SELF

One of the most recent developments in self-research is a wave of studies investigating the neurobiological basis of self-processes. Classically, neuropsychologists noted that frontal lobe damage was often associated with a disruption in self-processes. Frontal lobe injuries are related to clinical observations of impaired self-insight (Blumer & Benson, 1975). Within the last few years, a wave of recent studies has added complementary empirical data to these clinical observations. In particular, recent lesion studies and neuroimaging in healthy populations suggest that different aspects of self-evaluation draw on different frontal lobe sub-regions.

Self-referent encoding

The earliest neuroimaging work investigated the neural basis of the self-referent effect. A large body of literature has found robust, convergent evidence that the medial prefrontal cortex (MPFC) plays a role in encoding and remembering self-referent information. Participants in neuroimaging studies perform the self-referent paradigms typically used in behavioral research. For example, they might rate personality words for their self-descriptiveness, descriptiveness of a political figure, general social desirability, and number of syllables. These experiments find that rating personality trait words in relation to the self (compared to the conditions mentioned above) tends to increase activation in the medial prefrontal cortex (BA 9/10) (Craik et al., 1999; Fossati et al., 2003; Gillihan & Farah, 2005; Kelley et al., 2002; Kircher et al., 2002; Ochsner et al., 2005). Furthermore, the MPFC activation increases as a function of self-descriptiveness. MPFC activation is highest on average when judging information in relation to the self, and the magnitude of its activation for a particular trial correlates with the extent to which the personality trait is considered to be self-descriptive (e.g., Kircher et al., 2002; Macrae et al., 2004; Moran et al., 2006). The association between self-reference and MPFC activation is not specific to personality words. Research has found a similar association between MPFC activation and self-referent faces (Keenan et al., 2000; Kircher et al., 2000) and objects (Kim &

Johnson, 2010). Some studies have asked participants to observe their own face and the faces of a novel person or a close other. When participants observed their own face compared to the face of another person, they show increased activation in the right frontal lobe (e.g., BA 9/10) (e.g., Keenan et al., 2000; Kircher et al., 2000). Another study required participants to perform a transient ownership paradigm in which objects were either associated with self or another person (Kim & Johnson, 2010). Participants were presented with objects and given rules about which objects to place in a basket assigned to the participant or another person. They were further instructed to imagine that they owned the objects that they placed in their basket. MPFC activation was highest when participants placed objects in their own basket.

Furthermore, MPFC activation is implicated in the memory advantage for self-referent information because its activation predicts which self-referent is subsequently remembered (e.g., Kim & Johnson, 2010; Macrae et al., 2004). For example, one study asked participants to rate personality trait words for their self-descriptiveness (Macrae et al., 2004). Afterwards, participants were given a surprise memory test for the words they had seen during the experiment. Activation in the MPFC increased in relation to words that were later remembered compared to those words that were not remembered. Additionally, the relation between MPFC and self-reference extends to objects. In the transient ownership study mentioned above, participants were given a surprise memory test for objects they had placed in their own basket or the basket of another person. MPFC activation derived from the placement task predicted which of the objects assigned to the participant's basket would be later remembered (Kim & Johnson, 2010)

Motivated self-perception

In contrast to the large body of literature on the neurobiology of self-referent encoding, less attention has been paid to the neurobiology of motivated self-perception (Beer, 2007). In fact, of all of the motivations noted above, only self-enhancement has received any sort of consistent attention in the neural literature. When self-enhancement is operationalized by self-evaluations that diverge from objective indicators (e.g., actual performance, base rates), neuroimaging and lesion studies find a robust association between unrealistically positive self-evaluations and reduced orbitofrontal cortex (OFC) function. However, most of these studies do not include threats to the self, making it

difficult to know whether these studies truly indicate self-evaluations that are enhanced to maintain positive self-worth. The one functional magnetic resonance imaging (fMRI) study that did include a threat manipulation found that unrealistically positive self-evaluations are predicted by increased OFC and MPFC activation.

The earliest hints of neural regions that might support self-enhancement came from analyses of the neural regions that tracked the social desirability of information judged in relation to the self. For example, studies asked participants to rate the self-descriptiveness of desirable and undesirable personality traits (Beer & Hughes, 2010; Moran et al., 2006) or to evaluate the likelihood that good and bad events would happen to them in the future (Sharot et al., 2007). These studies found convergent evidence that ventral anterior cingulate cortex (vACC) differentiates judgments of desirable attributes from judgments of undesirable attributes. The vACC activation increases when people rate desirable compared to undesirable personality traits and when they evaluate the likelihood that they will experience good events in the future compared to bad events. However, claiming that a desirable attribute is self-descriptive does not necessarily indicate the influence of an active self-enhancement motivation (see Beer & Hughes, 2010; Chambers & Windschitl, 2004). People may genuinely be characterized by a desirable quality, and self-enhancement has been shown to involve both the inflation of desirable attributes and the dismissal of undesirable attributes (Beer & Hughes, 2010; Dunning et al., 1989; Taylor & Brown, 1988). Therefore, it was important to further investigate whether vACC played a role when more direct measures of self-evaluations influenced by a self-enhancement motive were implemented.

An emerging body of research has now shown that unrealistically positive self-evaluations tend to be associated with reduced OFC function rather than changes in vACC activation. The relation to reduced OFC function holds when unrealistically positive self-evaluations are operationalized as discrepancies between self-confidence and actual task performance (Beer, Lombardo, & Bhanji, 2010), base rates compared to self-rankings in social comparisons (Beer & Hughes, 2010), attributions for task success compared to task failure (Blackwood et al., 2003), and self-perceptions compared to other perceptions (Beer et al., 2006).

For example, self-evaluations are considered to be unrealistically positive when they are discrepant from objective indicators such as task performance. Overestimation of success on a trivia task is associated with reduced OFC activation (Beer, Lombardo, & Bhanji, 2010). Participants estimated how confident they were that their answers to trivia about average July temperatures in US cities were correct. When participants had answered the actual trivia question incorrectly, a region of medial OFC was negatively modulated by confidence level. In other words, for those incorrect trials where confidence was unwarranted, people tended to recruit OFC activation less often. It is important to note that the relation could not be explained by confidence level alone; OFC did not predict confidence for trials that were answered correctly. Additionally, participants who tended to be more overconfident about their performance on the task were the least likely to activate OFC.

Another way in which people inflate their self-view is by comparing themselves in an unrealistically positive manner to their peer group. Research shows that people tend to believe they have significantly more desirable personality traits and significantly fewer undesirable personality traits than their peers (e.g., Dunning, Meyerowitz, & Holzberg, 1989). Although each person is likely to be unique on some traits, so is the average peer. Therefore, ranking the self as having significantly more desirable traits and fewer negative traits is theorized to reflect a motive to self-enhance (Taylor & Brown, 1988; but see Chambers & Windschitl, 2004). OFC activation is reduced when people make unrealistically positive social comparisons compared to social comparisons that are more realistically calibrated (Beer & Hughes, 2010). Participants were asked to compare themselves to their average peer on 200 personality traits (100 desirable traits, 100 undesirable traits). The more participants rated themselves as having more desirable traits and fewer negative traits than their average peer, the less likely they were to activate OFC during the social-comparative judgments (Beer & Hughes, 2010).

People also make unrealistically positive attributions for their behavior. They tend to take credit for their successes but then dismiss responsibility for failure (Taylor & Brown, 1988). OFC activation is reduced when people choose to account for their behavior in this self-serving manner (Blackwood et al., 2003). Participants were asked to imagine that they had experienced social success (i.e., a friend gives you a gift) or social failure (i.e., a friend refuses to talk to you). Then participants were asked to rate whether they had imagined the situation arising because of something they had done, something their friend had done, or something about the situation. The researchers compared the trials in which participants attributed their imaginary success or failure to self-serving factors (i.e., self for success, friend or situation for failure) compared to non-self-serving factors (i.e., self for failure, friend or situation for success). Taking credit for success and dismissing

self-responsibility for failure was associated with less lateral OFC activation.

Finally, unrealistically positive evaluations of one's task performance are associated with OFC damage. In particular, OFC damage is associated with self-ratings that are more favorable than ratings from judges. Patients with OFC damage overestimate their social skills on a social interaction task when compared to patients with lateral prefrontal cortex damage or healthy control participants (Beer et al., 2006). Participants had to engage in a semi-structured conversation with a stranger. Although all participants reported that social norms dictate that certain kinds of personal information should be held back when speaking with strangers, patients with OFC damage were likely to introduce personal information into the conversation. Patients with orbitofrontal damage were much less likely to note the inappropriateness of their conversation when compared to blind judges' perceptions.

HAVE WE LEARNED ANYTHING PSYCHOLOGICAL FROM THE NEURAL RESEARCH?

The studies above demonstrate a consistent relation between self-enhanced responses and reduced OFC function, but what do they mean in a psychological sense? The nascent nature of social neuroscience investigations of the self have laid important groundwork on understanding how different frontal lobe regions are involved in different aspects of self-processes. However, there is much research left to be done in order to understand the psychological significance of the neurobiology underlying self-evaluation and its motivations. For example, two intriguing possibilities are emerging from the current research.

First, although vACC activation is not related to direct measures of positively skewed self-evaluations, there is reason to believe that vACC may be sensitive to the influence of motivational states on self-evaluation. In these studies reviewed above, vACC differentiated desirable traits from undesirable traits even though participants were not asked to evaluate the traits for their desirability, just their self-descriptiveness. Furthermore, the extent to which vACC differentiates desirable judgment stimuli from undesirable judgment stimuli is modulated by how much we care about viewing the target of the judgment in a positive light. The vACC is especially likely to differentiate desirable from undesirable attributes when we are judging attributes we consider to be highly descriptive of ourselves (Moran et al., 2006)

and people we care about (Hughes & Beer, 2011a). Research on gambling has found that the vACC detects the potential for reward (e.g., Rogers et al., 2004). One possibility is that, in the case of social cognition, vACC plays a role in detecting which attributes are likely to be rewarding and this function is especially engaged when judging the self or people we want to cast in a positive light.

Second, it may be that positively skewed self-evaluations are shaped by at least two distinct mechanisms (Chambers & Windschitl, 2004). The neural profile of unrealistically positive self-evaluations is different depending on whether the self-evaluations are a response to an immediate threat or not. For example, when a threat manipulation is integrated into social comparison judgments (Beer & Hughes, 2010), a different neural profile predicts inflation of desirable traits and dismissal of negative traits (Hughes & Beer, 2011b). Specifically, participants made social-comparative judgments either after they had received feedback that their peers did not find them attractive (i.e., a threat condition) or did find them attractive (Hughes & Beer, 2011b). When participants received threatening social feedback, they were significantly more likely to rate themselves as desirable compared to an average peer. Individual differences in unrealistically positive social comparisons were *positively* associated with OFC activation and positively associated with activation in an additional neural region, the MPFC (Hughes & Beer, 2011b). If unrealistically positive social comparisons are related to different patterns of neural activation depending on whether they are a response for coping with an immediate threat, then it is possible that different mechanisms achieve social comparisons that cast the self in a flattering light when self-esteem concerns are engaged or especially heightened. These are just two examples of the psychological advances that can be achieved through neural investigations of self-processes. Future research is needed to build on these findings and raise new insights.

THE SELF OR JUST PEOPLE IN GENERAL?

Finally, research on the self begs the question of whether the processes discussed thus far characterize the self or extend more broadly in social cognition. In other words, how special is the self? In a broad sense, it is surprising that researchers often study either the self or other people, because an examination of the literature suggests that there are many parallels in the underlying

social-cognitive processes. As discussed previously, there is evidence that many of the a apriori theories and heuristics that we use to evaluate ourselves are also in operation when we evaluate others (e.g., Knee, Patrick, & Lonsbury, 2003; Malle, 2006; Nisbett & Wilson, 1977; Plaks, Levy, & Dweck, 2009). The progress of research has permitted meta-analyses that show that classically held differences between self-evaluation and other evaluation are not as robust or extensive as previously thought (Malle, 2006). In addition to these similarities, research suggests that we should expect that the processes that influence self-evaluation and evaluation of others to be particularly similar when the other person is someone we know intimately or someone we perceive to be similar to the self (e.g., Klein et al., 1992; Mitchell, Banaji, & Macrae, 2005; Mitchell, Macrae, & Banaji, 2006; Murray, Holmes, & Griffin, 1996; Neff & Karney, 2005; Symons & Johnson, 1997).

Highly elaborated and well-organized schema for self and close others

For example, the rich elaboration and organization that characterizes self-schemas likely extends to our schemas for people close to us. The memory advantage we gain by encoding information in relation to the self is almost as strong as when we encode information in relation to a close other (e.g, Maki & McCaul, 1985; Ochsner et al., 2005; and see Symons & Johnson, 1997 for a meta-analysis). In other words, if I ask you to judge whether a series of personality traits describes someone close to you such as your spouse, friend, daughter, son, sibling, or parent, then you are likely to remember these personality trait words almost as well as you would remember traits you rated in relation to yourself. And this memory would be even greater than if you judged the relevance of the trait words to a familiar, but not intimate, other person such as a politician (e.g., Maki & McCaul, 1985).

Judgments about self and close others driven by abstract representation

Similarly, the rich development of schemas for close others may also be indicated by similarities in the way we judge ourselves and the highly descriptive personality traits of close others. We do not rely on the retrieval of episodic information to judge whether a personality trait describes us; research shows that the retrieval of episodic

information is also not needed when we judge personality traits we deem to be highly descriptive of people we know well. As mentioned previously, autobiographical memory retrieval tends to facilitate personality judgments of one's mother but not the self. The one exception to this finding is that retrieving these memories does not facilitate judgments of the personality traits that are most characteristic of one's mother (Klein et al., 1992). These results suggests that we form abstract representations of the most central aspects of our close other's personalities.

Neural similarities underlie representations of self and close others

Finally, the similarity in the richness of cognitive representation of the self and close others is mirrored at the neural level. There is evidence that a common neural system supports self-evaluation and evaluation of close others (for reviews, see Gilihan & Farah, 2005; Ochsner et al., 2005) and similar others (Mitchell, Banaji, & Macrae, 2005; Mitchell, Macrae, & Banaji, 2006). For example, the significantly higher activation in MPFC associated with trait judgments about the self (Kelley et al., 2002) disappears when self-judgments are compared to judgments of close others such as a romantic partner (e.g., Ochsner et al., 2005). Additionally, the neural systems involved in evaluating a relatively unknown person may overlap with the neural systems involved in self-evaluation to the extent that the person is perceived as similar to the self (Mitchell, Banaji, & Macrae, 2005; Mitchell, Macrae, & Banaji, 2006). For example, one study required participants to evaluate the intangible mental states or overt physical aspects of unknown social targets. Participants were presented with a series of faces and asked to judge whether the face looked pleased (mental state) or symmetric (physical aspect). Afterwards, participants rated the extent to which they estimated the faces from the task to reflect people who were similar or dissimilar to themselves. The ventral MPFC activity associated with making judgments about strangers' mental states tended to increase to the extent that participants believed the stranger to be similar to themselves (Mitchell, Banaji, & Macrae, 2005). The researchers suggest that, in the absence of other information, we may engage the self-system to evaluate novel others, but only to the extent that the self seems like a reasonable proxy for understanding a novel person. Together, these studies illustrate the commonality between cognitive representations of self and close others or other people we perceive to be similar to the self.

Motivated perceptions of both the self and close others

The similarity between self and close others also extends to the type of motivations that may shape the content of cognitive representations and judgments. Just as people exhibit a number of behaviors that indicate their motivation to see themselves in a positive light, they exhibit similar behaviors in relation to their close others (e.g., Murray & Holmes, 1997; Neff & Karney, 2005; Suls, Lemos, & Stewart, 2002; Taylor & Brown, 1988; Taylor & Koivumaki, 1976). For example, we can perceive the social desirability of our romantic partner or friend's personality in a fashion that is as lopsided as our perceptions of the social desirability of our own personalities. The positive skew is specific to close others; we tend to have more even-handed perceptions of the desirability of an unknown, typical person's personality (Suls, Lemos, & Stewart, 2002). Similarly, we are much more likely to excuse away the poor social behavior of ourselves, our friends, and our spouses to situational factors than we are for strangers or people we dislike. For example, a series of studies asked participants to consider poor social behavior such as showing up late to an appointment, having an argument, and ignoring others at a party (Taylor & Koivumaki, 1976). Participants then rated the likelihood that dispositional and situational factors would motivate themselves, their spouses, and acquaintances to act in these ways. The poor social behavior was significantly more likely to be attributed to situational factors for the self and spouses.

Furthermore, similar neural regions support the mechanisms used to accomplish the flattering views of ourselves and the people we care about. People's unrealistically positive social-comparative judgments are associated with reduced OFC activation, regardless of whether the judgments are for the self (Beer & Hughes, 2010) or for a romantic partner and roommate (Hughes & Beer, 2011a). For example, participants compared their romantic partners and assigned roommates to their average peer on a series of 200 personality traits (100 desirable, 100 undesirable). OFC activation was reduced to the extent to which participants considered their romantic partners or roommates to have significantly more desirable personality traits and significantly fewer undesirable personality traits than the average peer.

Finally, self-evaluation and other evaluation share more than enhancement motivations. There is also evidence that just as we influence social environments to confirm our self-view (e.g., choosing to interact with people who confirm our self-view: Swann, Pelham, & Krull, 1989), we also structure environments to confirm our views of other people (e.g., Darley & Gross, 1983;

Word, Zanna, & Cooper, 1974) even when we have not consciously accessed those views (Chen & Bargh, 1997). For example, when participants interviewed out-group members (compared to in-group members) for an ostensible job, they tended to cut the interview short, invested less in the interaction, and committed more speech errors (Word, Zanna, & Cooper, 1974). A second set of participants were then trained to use the poorer interview style when interacting with in-group applicants. Under those conditions, the in-group applicants came across as less competent and more nervous. These studies illustrate the ways in which motivational influences known to operate in self-evaluation can extend to evaluations of other people.

CONCLUSION

From a social-cognitive standpoint, William James long ago pointed out that the self is an interesting case that includes both the perceiver and perceived. In the Jamesian recipe for the self, we are as much our physical presence as we are our innermost strivings and social reputations. Recent research has built on this notion and discovered that our perceiver self gathers information about the perceived self in myriad ways, including observing the self through one's own eyes and the eyes of others as well as comparing the self to others. The information we acquire through these processes form self-schemas that tend to be particularly elaborate and well-organized. Although we sometimes gather and represent self-information in an even-handed manner, we are also motivated to enhance or verify our self-view. Recent research has helped us move away from considering the frontal lobes to be a catch-all for any self-processes. Instead, we are beginning to learn about how frontal lobe sub-regions vary in their involvement in different self-processes and the motivations that influence them. Finally, the processes and motivations that shape self-evaluation often extend to evaluations of people close to us or people we perceive to be similar to the self. Future research is needed to further deepen our understanding of the self and two important areas are to understand how we balance competing motivational influences and the psychological significance of the neural architecture of self-processing.

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