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**Social Cognition and Self-Cognition:  
Two Sides of the Same Evolutionary Coin?**

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Embodiment is not a new construct. For example, William James (1890/1983, p. 333) wrote: "My thinking is first and last and always for the sake of my doing" (also see Fiske, 1992). Of course, modern notions of embodiment go well beyond these words (Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005). Specifically, to say that mental systems are embodied means that the *nature*, *content*, and *use of* mental structures and the *processes* that govern their operation may all be constrained by the nature of peoples' bodies and the environments they inhabit.

Given the emphasis of embodiment on environment, the link that Kaschak and Maner (in press) forge between embodiment and evolution in the context of social cognition is eminently sensible (also see Schaller, 2008). One of evolution's central tenets is that changes in a species are partially determined by the extent to which the "equipment" brought by the species fit demands of the local environment. Important evolutionary pressures on early hominids probably came from the hominid social environment (Sedikides & Skowronski, 1977). Given this assumption, an evolutionary approach to embodied social cognition suggests that: (a) reproductive success (broadly defined as the chances of one's survival, the survival of one's progeny, and the survival of one's kin) was partly determined by an individual's ability to think about the local social environment; (b) such success could have been promoted by enhanced social cognition capabilities; but (c) the evolutionary paths down which such enhancements could proceed were constrained by, but also reflect, the basic architecture of hominid bodies and the social environments that the hominids inhabited.

One implication of this line of thought is that, via the action of evolution, humans

should be biologically equipped to perceive, and respond to, their social environments. Support for this proposition comes from the study of developmental disabilities. For example, those exhibiting the genetic disorder Williams' syndrome are hypersocial: verbal, polite, unafraid of strangers, and interested in contact with others—especially adults. In social interactions, they also evince hyperfocus on others' eyes (Riby & Hancock, 2008). Such characteristics obviously suggest that social interaction and the experience of social emotions are partially regulated by genetics.

Studies of autism yield similar insights. Autistics have difficulty understanding others' internal states in the effortless way shown by non-autistics. This difficulty may reflect deficits in mental modules dedicated to understanding others' goals and motives and in modules designed to facilitate empathy (Chakrabarti & Baron-Cohen, 2008). Indeed, such deficits can be specific to understanding other humans, and not be reflective of a general deficit. For example, Temple Grandin, a high-functioning autistic, reported that she sometimes felt like “an anthropologist on Mars” and that understanding other people required considerable mental effort. This did not characterize all elements of her life. She was an expert in animal science and reportedly had a great feeling for and appreciation of animals. For example, she said: “When I'm with cattle, it's not at all cognitive. I know what the cow's feeling” (Sacks, 1995, p. 268).

Such social cognitive operations and deficits will ultimately be traced to specific elements of brain structure and function. Consider the case of “mirror neurons,” which are especially active during processing of social events. Evidence points to a link between mirror neurons and autism: when imitating others, autistic children exhibit lowered

mirror neuron activity in comparison to non-autistics (Dapretto, 2006). Evidence also points to a link between motor neuron activity and empathy: After hearing the sound of paper being ripped, people who are highly empathic show especially strong activity both in the mirror system for hand actions and the mirror system for emotions (Gazzola, Aziz-Zadeh, & Keysers, 2006).

### *The Self-Protection and Self-Enhancement Motives*

In addition to their ideas linking thought to evolution, Kashak and Maner's (in press) statement that "Adaptive systems of perception and action are inextricably linked to the operation of fundamental adaptive motives" (p. 15) caught our attention. We have written extensively about a similar idea when considering evolutionary bases of the self-protection and self-enhancement motives (Sedikides & Skowronski, 1997, 2000, 2003; Skowronski & Sedikides, 2007). We review some of our arguments, and data that support them, in the remainder of this article.

We define self-protection as the motive to defend the self from an unfriendly social environment and thus maintain the positivity of the self-concept. We define self-enhancement as the motive to advance the self in the social environment and thus elevate the positivity of the self-concept.

These motives are powerful. The self-protection motive propels individuals to avoid unflattering feedback, minimize its implications, doubt the veridicality of the feedback and the intelligence of the evaluator, poorly remember the feedback, blame others for failure, make excuses, shield themselves against the shame of performing poorly by manufacturing convenient excuses, and compare themselves with inferior others

(Campbell, & Sedikides, 1999; Sedikides & Green, 2000; Sedikides & Gregg, 2003; Skowronski, Betz, Thompson, & Shannon, 1991; Walker, Skowronski, & Thompson, 2003). The self-enhancement motive propels individuals to pursue flattering feedback, globalize its implications, praise its accuracy and the wisdom of the evaluator, construe it as positive even when it is ambiguous, remember it well, credit themselves for dyadic or group successes, exaggerate their virtues, emphasize their superiority over others, present themselves favourably to others, and compare themselves with superior others (Alicke & Sedikides, in press; Sedikides & Gregg, 2008; Sedikides & Strube, 1997; Sedikides, Gregg, & Hart, 2007; Skowronski et al., 1991; Walker et al., 2003).

The motives are ubiquitous: Both act to influence self-thought, regardless of culture (Gaertner, Sedikides, & Chang, 2008; Mikulincer, Florian, & Hirschberger, 2003; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004; Sedikides, Gaertner, & Toguchi, 2003; Sedikides, Gaertner, & Vevea, 2005, 2007a, 2007b; Yamaguchi et al., 2007). Finally, the motives influence self-thought more than competing motives, such as the motive to reduce uncertainty via accurate self-assessment or the motive to verify existing self-beliefs. For example, during self-information acquisition, individuals ask less diagnostic questions about negative characteristics than positive characteristics, even when the negative characteristics are chronic and self-defining (Sedikides, 1993). As another example, individuals evidence poorer memory for negative feedback than positive feedback, even when the negative feedback pertains to chronic and self-defining characteristics (Sedikides & Green, 2004).

### *An Evolutionary Approach to Self-Protection and Self-Enhancement*

In prior work, we conceptualized self-protection and self-enhancement as evolutionary adaptations (Sedikides & Skowronski, 2000; Sedikides, Skowronski, & Dunbar, 2006; Sedikides, Skowronski, & Gaertner, 2002). We speculated that these adaptations evolved in response to both ecological and social pressures. Ecological pressures refer to the standard kinds of ideas that are often included in evolutionary theories. These include such tasks as maintaining safety and procuring food. Clearly, mental characteristics and motives could potentially be shaped by such forces.

However, much as for Kashak and Maner (in press), especially intriguing was the idea that significant evolutionary pressure could come from challenges associated with group living. These challenges could have prompted effective monitoring of one's status in the group via enhanced ability to: attend to situations; remember the time and type of interaction one had with a specific person or subgroup; mentally simulate consequences of interactions with others (an ability mentioned by Kashak and Maner); detect changes in the rank of potential competitors; deceive higher-ranked competitors, thus avoiding punishment; track the sexual receptivity and fitness of potential mates; exhibit physical and social prowess to attract potential mates; cheat, and detect cheaters. Other behaviors and motives responsive to group pressures could involve coordination of individual effort, conformity to the group majority, group loyalty, fear of social exclusion, and engagement in coalition formation.

Collective delineation of these potential abilities implies that group living can be hard. Indeed, data suggest that group living may be related to enhanced thinking powers.

For example, in primate species, group size and brain size are positively associated: Species that have a terrestrial lifestyle and live in large groups have bigger brains than do other species. This association holds even when controlling for other lifestyle differences, such as diet. An explanation for this association may be the enormous complexity associated with intragroup relationships. Social skill and social intelligence would help navigate the complexities of group life, potentially contributing to reproductive fitness (Byrne & Whiten, 1988).

In a complex group-life context, the self-protection and self-enhancement motives could produce numerous adaptive benefits. These motives may have driven individuals to avoid tasks with a high risk for failure (and hence a threat to the self) and to select challenging tasks with a high probability of success and (hence an enhancement to the self). Forgetting failures and remembering successes, making self-serving inferences and attributions, holding beliefs about the relative superiority of the self compared to other group members, engaging in downward social comparisons, and presenting the self advantageously to others could be additional strategies that served to guard, maintain, or elevate self-esteem, affect, and, more generally, psychological health. Indeed, in this context, it is suggestive that high self-esteem facilitates adaptive functioning. It is associated with active engagement in daily activities, planning, optimism, improved coping, and better psychological or physical health (Sedikides & Gregg, 2008; Sedikides, Gregg, & Hart, 2007).

From an evolutionary perspective, we also surmise that self-esteem could have promoted attempts at reproductive activity. An individual with high self-esteem probably

had heightened appeal as a mate, thus improving the individual's chances of reproductive success: A confident, happy, active, and outgoing partner is an attractive partner.

Enhanced self-esteem may also enhance reproductive success via group processes. To understand this point, first assume that high group status is associated with successful mating. Second, assume that the offspring of high-status individuals are less likely to be socially excluded or to be neglected or abandoned by the group, and hence, are especially likely to survive. Thus, if self-esteem works to enhance group status, it could also work to enhance reproductive success. Indeed, self-esteem may have facilitated both dyadic and group-level interactions to make an individual a more effective group member.

Moreover, group members may perceive a high-self esteem individual as a safe bet for the accomplishment of important, group-wide tasks and for positions of responsibility within the group hierarchy. Thus, high self-esteem may have maximized opportunities for advancement in the group hierarchy and minimized social exclusion. Both outcomes seemingly improve chances for reproductive success.

In the long run, the group itself may have benefited from the action of the self-protection and self-enhancement motives. High self-esteem in group members could have promoted a high level of group activity, a sense of group purpose and direction, and an aura of group optimism and morale, as well as the perception of group cohesiveness under decisive leadership. In addition, high self-esteem could have made the group more effective in intraspecies and interspecies competitive encounters. High individual self-esteem in group members may also allow the group to engage effectively in both careful, protective planning (e.g., maintaining a climate of vigilance to thwart the possibility of



hostile actions from other groups) and bold endeavors (e.g., daring hunting and gathering expeditions in the face of imminent danger from antagonistic groups).

### *Concluding Remarks*

Kaschak and Maner (in press) have offered interesting ideas about the evolutionary genesis of social cognition and about the extent to which social cognition may be embodied. However, many of the same ideas that Kaschak and Maner offer in support of the evolutionary development of social cognition, and about its embodiment, can also be offered in support of the development of self-cognition and the emergence of the social motives of self-protection and self-enhancement. This suggests that it will be advantageous to consider whether social cognition and self-cognition are two sides of the same coin, using very much the same processes and structures, or whether they developed in parallel as separate mental modules, each receptive to evolutionary pressures but each specific to its own domain. Regardless of the answer, such consideration will provide enlightenment as to the nature of social and self thought, the structures and processes that are involved in such thought, and the ultimate genesis of the capacity to engage in such thought.

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