SELF-ENHANCEMENT AND SELF-PROTECTION MOTIVATION: FROM THE LABORATORY TO AN EVOLUTIONARY CONTEXT

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Abstract. Existing data suggest that the self-enhancement and self-protection motivations (which elevate or protect the positive self-concept) exert a pivotal influence on self-evaluation and behavior. Moreover, these motivations are more potent than the self-assessment motivation (which works to increase the accuracy of the self-concept) or the self-verification motivation (which works to confirm the self-concept). The data also suggest that the self-enhancement and self-protection motivations serve crucial mental health functions and that these functions are apparent across different cultures. This article relates these findings to the possible evolutionary utility of these motivations. It is argued that self-enhancement and self-protection motivations were evolutionarily selected, because they offered personal, relational, and group-rank advantages to species members who possessed these traits.

Keywords: self-enhancement, self-protection, valuation motivation, mental health, culture, evolution.

This article focuses on the self-enhancement and self-protection motivations. We will define these constructs, briefly describe a series of laboratory experiments that establish their fundamental role in self-evaluation and behavior, and use the results of these experiments as a springboard to offer ideas about the potential evolutionary genesis of these motivations.

SELF-ENHANCEMENT AND SELF-PROTECTION: VALUATION MOTIVATION

Definitions

Self-enhancement is defined as the motivation to maintain or elevate positive aspects of one's self-concept. Self-protection is defined as the motivation to protect positive aspects of one's self-concept against threatening information. Collectively, we will refer to these motivations as *valuation motivation* (SEDIKIDES and SKOWRONSKI, 2000).

Behavioral, Cognitive, and Affective Manifestations of Valuation Motivation

The impact of valuation motivation is routinely observed in behavior, cognition, and affect. Perhaps the most obvious evidence of the operation of valuation motivation lies in peoples' behaviors in the real world, whether in the pursuit of books promoting the latest diet, health club memberships, exercise equipment promoting fitness, surgery designed to enhance one's appearance, or drugs designed to advance the self. The laboratory provides similar evidence of the powerful influence of valuation motivation on behavior. For example, in the domain of self-presentation, the results of numerous studies suggest that people present themselves to others in a self-advantageous manner (LEARY 1995). In the social comparison domain, several studies suggest that people tend to prefer to associate with successful others, with the proviso that the success is not in a domain that overshadows the person's own performance in that same domain (TESSER 1988). Self-handicapping studies demonstrate that people will sometimes engage in self-destructive behaviors, if those behaviors serve to protect perceptions of their ability. Self-handicapping behaviors are especially likely to occur when self-perceptions are overly, and perhaps unwarrantedly, positive (JONES and BERGLAS 1978; for a recent update, see ARKIN and OLESON 1998).

Valuation motivation has also been shown to affect cognition across a number of different areas. For example, consider the judgments that people make about themselves and about constructs that have high self-relevance. People rate themselves as better-than-average on a remarkable range of attributes, including intelligence, leadership, funniness, sociability, physical appearance, and athleticism (ALICKE 1985). People also regard their possessions and relationships as superior to those of others (BEGGAN 1992; MARTZ et al. 1998), while at the same time being convinced that they self-enhance less than others (PRONIN, YIN and ROSS 2002). In addition, people eagerly acknowledge their own crucial role in successful outcomes, but blame others or circumstances for failures (CAMPBELL and SEDIKIDES 1999). Moreover, people report overly optimistic expectancies: They believe that positive life events are more likely to happen to them than to others and that negative life events are less likely to happen to them than to others (WEINSTEIN 1980). This optimism about the future extends to judgments about affect. That is, individuals deem positive affect terms to be more self-descriptive than negative affect terms, and they regard positive affect terms as more likely to be self-descriptive in the future than the present (STAATS and SKOWRONSKI 1992).

A plethora of cognitive processes and strategies have now been shown to contribute to the development and maintenance of these overly positive and self-serving beliefs. These include the selective pursuit of favorable feedback, the selective forgetting of threatening feedback, the tactical construal of negative feedback, and the use of self-serving (e.g., downward) social comparisons (for reviews, see BAUMEISTER, 1998; DUNNING, 1999; SEDIKIDES and GREGG, 2003).

The content of autobiographical memory is also likely to be shaped and distorted by valuation motivation. The results from several studies now suggest that the affect associated with positive memories generally fades less rapidly than the affect associated with negative memories (SKOWRONSKI et al., in press; WALKER et al., in press). Moreover, people remember many more positive than negative autobiographical events (WALKER, SKOWRONSKI and THOMPSON 2003). These findings lend support to the notion that autobiographical memory is often seen through "rose-colored glasses," an outcome that can obviously serve to enhance perceptions of the self. However, a memory bias in favor of positive information is not always the rule. As WILSON and ROSS (2003) note, sometimes recollections of the past are unwarrantedly tinted with negativity, particularly when such negativity contributes to current positive self-perceptions (e.g., "look at what I had to overcome to be the success that I am today").

Finally, behavior and cognition that occur in the service of valuation motivation can have affective consequences. One body of research, for example, has shown that behaviors which serve to minimize discrepancies between a current state and a goal can lead to emotions such as contentment or elation. In contrast, behaviors that do not reduce the discrepancy between one's current state and one's goals can lead to sadness or anger (GONNERMAN et al. 2000; HIGGINS, 1999). Such behaviors are presumably propelled by valuation motivation. Other research has demonstrated that self-other comparisons can have either positive or negative affective consequences, depending on the nature of the comparison and its outcome (TESSER, MILLAR and MOORE 1988).

Valuation Motivation Is More Powerful Than the Self-Assessment and Self-Verification Motivations

Along with valuation motivation, at least two additional motivations influence self-evaluation: self-assessment and self-verification. One of the questions that is addressed in the literature, and that is relevant to the present article, concerns the relative power (or pre-eminence) of these motivations. That is, which of the two motivations is a more powerful determinant of behavior, cognition and affect in circumstances when the two motivations conflict? Before answering that question, we will first briefly define and describe the operation of the self-assessment and self-verification motivations.

Definitions

Self-assessment is defined as the motivation to form an accurate image of the self (positive or negative). Self-verification is defined as the motivation to preserve self-views (positive or negative).

Cognitive and Behavioral Manifestations of Self-Assessment and Self-Verification Motivations

The literature suggests that the self-assessment motivation is predominantly reflected in peoples' cognition and behavior. For example, consider how the self-assessment motivation might affect peoples' task perceptions and task choices. From a self-assessment perspective, people should care about and pursue accurate feedback. Hence, high (as opposed to low) diagnosticity tests should be desirable, because they provide an individual with relatively accurate feedback about the attribute being tested. For example, when attempting to gauge one's intelligence level, a standardized and well-validated IQ test will supply more veridical information about a test-taker's intelligence than a cross-word puzzle in a tabloid newspaper. Hence, the IQ test should be the preferred task. The results of several studies support this suggestion,. Specifically, it has been shown that people in whom the self-assessment motivation is activated regard high diagnosticity tasks as more attractive than low diagnosticity tasks, report a preference for those high diagnosticity tasks, and indicate greater willingness and stronger intentions to work on them. Furthermore, when given the opportunity, people choose high diagnosticity tasks, construct them, and are more likely to persist on them (for reviews, see SEDIKIDES and STRUBE 1997; TROPE 1983, 1986).

    People's motivation to verify their self-views has also been shown to have an effect on cognition and behavior. Consider how the self-verification motivation might affect task perceptions and task choices. From a self-verification perspective, people should care about and pursue feedback that provides support for their current self-views. Hence, self-verifying (as opposed to self-discrepant) information should be desired and pursued. Indeed, people selectively attend to and recall self-confirming (as opposed to self-disconfirming) information, solicit and interpret ambiguous feedback as consistent with their self-conceptions, make causal inferences that bolster their self-perceptions, and often behave in a self-corroborating manner (for reviews, see SEDIKIDES and STRUBE 1997; SWANN 1990; SWANN, RENTFROW and GUINN 2003).

Motivation vs. Motivation: Comparative Testing

When considered in isolation and tested independently, each of the motivations described above can be shown to have a substantial influence on self-evaluation. However, one might wonder about the relative strength of these motivations. Which is the pre-eminent human motivation? Comparative tests address this question, and the results of such tests have generally concluded that valuation motivation is the most powerful of the self-evaluation motivations. We review some of the relevant studies, first describing the research in which valuation motivation is pitted against self-assessment motivation, and then describing the research comparing the relative strengths of valuation motivation and self-verification motivation.

Grudge match #1: Valuation motivation versus self-assessment motivation. A person is often in the rather agreeable position of being able to choose, in private, the sort of information that they want to know about themselves. For example, they can decide which personality test to download from the internet, which self-help book to read, or which friend to consult. These choices may vary depending on whether a person desires a reality check or positive affirmation.

These situations have been simulated in experimental settings (SEDIKIDES 1993). In one experimental paradigm used in this area of research, participants were presented with a set of questions that varied in diagnosticity, and were instructed to choose a subset of questions that they would ask themselves to find out if they, indeed, had the underlying trait. The questions pertained to traits that were either positive and important (e.g., trustworthy: "Do my friends and family confide their problems to me?"), negative and important (e.g., unkind: "Would I ignore someone's request to open a door, if their hands were full?"), positive and unimportant (e.g., predictable: "Do I have a daily routine?"), and negative and unimportant (e.g., complaining: "Do I exaggerate problems?"). If participants were motivated by self-assessment, then they should have selected the most highly diagnostic questions to ask themselves, regardless of the implications of these traits for their personality. Hence, participants' question selection strategy should not have been influenced by how positive or negative the trait under consideration is. On the other hand, if participants were motivated by valuation motivation, then participants would not want to know if they possessed negative important traits: The truth would simply be too painful. This implies that participants should have selected high diagnosticity questions to find out if they had positive important traits (e.g., trustworthy), but low diagnosticity questions to find out if they had negative important traits (e.g., unkind). The results of research exploring these ideas demonstrated the relative strength of the valuation motivation. Participants asked themselves high diagnosticity questions to find out if they possessed positive important traits, but low diagnosticity questions to find out if they possessed negative important traits.

The relative strength of valuation motivation versus self-assessment motivation was examined in another experimental setting. This setting simulated cases of externally-provided (rather than self-generated) feedback (Green and Sedikides 2004; Sedikides and Green 2000). Examples of externally-provided feedback are results of one's performance on a standardized test, opinions that knowledgeable others hold about the individual, or the outcome of a job interview. Participants received bogus feedback, ostensibly on the basis of a previously administered personality test. The feedback was in the form of high diagnosticity behaviors that participants were likely to perform. The behaviors exemplified either important traits (e.g., trustworthy) or unimportant traits (e.g., modest). In addition, half of the behaviors were positive (e.g., trustworthy: "Would follow through on a promise made to friends"; modest: "I take the focus off myself and redirect it to others"), and half were negative (e.g., untrustworthy: "I often lie to my parents"; immodest: "I like to show off in front of others"). Furthermore, the feedback referred either to the self or to another person ("Chris") who was said to have taken the personality test. After exposure to the feedback items, participants were instructed, without forewarning, to recall as many behaviors as possible.

If participants were motivated by self-assessment, they should have manifested *superior recall* of their own negative and important behaviors relative to recall about Chris' behaviors. This is because of the assumed underlying cognitive processes at work. Negative feedback about important self-attributes is particularly unsettling and likely to throw recipients into a state of uncertainty. In order to alleviate uncertainty, participants may process this sort of feedback deeply, by: (1) going over it repeatedly, (2) comparing and contrasting the behaviors with similarly presented ones, and (3) rethinking their meaning. The results of such effortful processing should be good memory for such behaviors. On the other hand, if participants were motivated by valuation, they should have manifested *poorer recall* for negative and important behaviors for themselves than for Chris. Because participants are threatened by such behaviors, they should avoid attending to or thinking about them, process them in a shallow manner, and thus, recall them poorly. In this series of experiments, it was found that participants do indeed recall feedback that threatens important aspects of the self poorly, lending support to the idea that individuals are motivated more by valuation than they are by self-assessment.

Taken collectively, the results from studies using the self-generated feedback and externally-provided feedback paradigms indicate that valuation is the pre-eminent motivation, overpowering the motivation to engage in self-assessment.

Grudge match #2: Valuation motivation versus self-verification motivation. The self-generated feedback paradigm has also been used as comparative test of valuation motivation versus self-verification motivation. In a study conducted by Sedikides (1993), participants selected a subset of behavioral questions to ask themselves to determine whether or not they had a trait, after which the participants answered

each question with "yes" or "no." It was assumed that these answers reflected participants' attempts to either confirm or disconfirm possession of the trait implied by each behavior. If participants were motivated by self-verification, they should have been equally likely to confirm performance of behaviors reflecting both positive and negative traits important to their self-concept. The valence of the trait relevant to each behavior should not have influenced participants' answers to each behavior question. However, if participants were motivated by valuation, they should have been especially likely to confirm performance of behaviors reflecting self-important positive traits, but to disconfirm performance of behaviors reflecting self-important negative traits. The results attested to the pre-eminence of valuation motivation. Participants wholeheartedly confirmed performance of behaviors that reflected their self-important positive traits and strongly disconfirmed performance of behaviors that reflected their self-important negative traits.

The relative strength of valuation versus self-verification motivations was also examined in an externally-provided feedback setting (SEDIKIDES and GREEN 2004). Participants who had previously described themselves either in positive (i.e., trustworthy, kind) or negative (i.e., untrustworthy, unkind) terms received fabricated feedback. This feedback related to positive and negative behaviors that participants were likely to perform and which were highly diagnostic of the behavior-relevant trait. Some time after delivery of the hypothetical behaviors, participants were instructed, without forewarning, to recall the behaviors.

Behavioral processing motivated by self-verification predicts a clear pattern of results. Participants with a positive self-view (i.e., trustworthy, kind) should display superior recall for positive behaviors (i.e., trustworthy, kind), but participants with a negative self-view (i.e., untrustworthy, unkind) should display superior recall for negative behaviors (i.e., untrustworthy, unkind). A different pattern of results is predicted if people are motivated by valuation. Regardless of the valence of their self-view, participants should display superior recall for *positive* behaviors. Indeed, the data showed that participants recalled positive behaviors better than negative behaviors, suggesting that valuation motivation is stronger than self verification.

In summary, then, research using both the self-generated information and the externally-provided feedback paradigms provide evidence that valuation motivation is more powerful then the self-verification motivation.

IS VALUATION MOTIVATION PANCULTURAL?

It has been argued that valuation motivation is restricted to Western culture. Evidence used to support this argument comes from studies that have shown that people from Eastern cultures are more likely to self-efface than to self-enhance than people

from Western cultures (HEINE, this issue; HEINE, LEHMAN, MARKUS and KITAYAMA, 1999).

However, SEDIKIDES, GAERTNER and TOGUCHI (2003) have recently challenged the argument that differences in the apparent tendency toward self-enhancement across cultures reflects differences in the action of the valuation motivation across those cultures. Instead, Sedikides et al. argue that the data from both cultures reflect the operation of valuation motivation, but that Westerners' and Easterners' differing cultures dictate that this self-enhancement be manifest on the aspect of the self-concept that is emphasized within each culture. Hence, for Westerners, individualistic self-views (e.g., leader, original, self-reliant) are important and are promoted by valuation motivation. In contrast, for Easterners collectivistic self-views (e.g., cooperative, loyal, respectful) are important and are promoted by valuation motivation.

Thus, this argument implies that self-enhancement will occur in both cultures, but will be manifested differently across cultures. More specifically, individualistic traits should be enhanced among Westerners, and collectivistic traits should be enhanced among Easterners. Moreover, these differences are not merely limited to culture, but can also apply to differences in people within a culture. Hence, those members of a culture for whom individualism is important can be expected to self-enhance on traits relevant to that individualistic construct, whereas those members of a culture for whom collectivism is important can be expected to self-enhance on traits relevant to that collectivist construct. Indeed, SEDIKIDES et al. (2003) demonstrated that this exact pattern of strategic self-enhancement both between-cultures (i.e., American vs. Japanese participants) and within-culture (i.e., Americans high in independent self-construal vs. Americans high in interdependent self-construal). That is, American and independent self-construal participants rated themselves as superior (i.e., above average) on individualistic traits, whereas Japanese and interdependent self-construal participants rather rated themselves as superior on collectivistic traits. These results have been corroborated by meta-analytic findings (SEDIKIDES, GAERTNER and VEVEA, in press) and by other investigations (BROWN and KOBAYASHI 2002; KOBAYASHI and BROWN 2003; KURMAN 2001).

Collectively, then, these data are inconsistent with the notion that the importance of valuation motivation varies dramatically across cultures. Instead, the data suggest that valuation is a universal human motivation that is manifested differently across cultures.

The "What for" Question

Given the strength, prevalence, and cross-cultural universality of valuation motivation, it is worth asking the "what for" question. What are the functions of this motivation? The answer to that question seems to be pretty straightforward, as valuation

motivation is related to positive life functioning in a host of different ways. For example, research has conclusively demonstrated that valuation motivation is associated with crucial mental health criteria, such as: (1) being capable of setting and progressing toward goals; (2) being capable of productive and creative work; (3) being able to form and maintain fulfilling relationships; (4) being able to change and grow as well as adapt to setbacks; (5) experiencing mastery and optimism as well as purpose in life; (6) feeling good about one's self; and (7) being happy, as well as less anxious and defensive (ARMOR and TAYLOR 1998; BONANO et al. 2002; SNYDER 2002; PYSZCZYNSKI et al. 2004; TAYLOR et al. 2000). In fact, the relation between self-enhancement and mental health is not only positive, but linear (TAYLOR et al. 2003). Furthermore, feelings of optimism and hope are correlated with physical health and improved academic and athletic performance (FARRAN, HERTH and POPOVICH 1995; SNYDER 2002).

Importantly, the functions of valuation motivation generalize across cultures. For example, self-serving attributions, self-enhancing social comparisons, self-efficacy, and optimism are negatively associated with depression and positively associated with self-esteem and life satisfaction in individualistic cultures (United States) as well as collectivistic cultures such as China (ANDERSON 1999), Hong Kong (STEWART et al. 2003), Korea (CHANG, SANNA and YANG 2003), and Singapore (KURMAN and SIRAM 1997). Also, working in an occupational setting that support autonomy predicts satisfaction of the basic self-determination needs (i.e., autonomy, competence, relatedness), which in turn predict task motivation and psychological adjustment in both individualistic (United States) and collectivistic (Bulgaria) cultures (DECI et al. 2001). Finally, in a study conducted across 55 nations, only individualism correlated with subjective well-being, even when controlling for other predictors (DIENER, DIENER and DIENER 1995).

In short, given the data, one cannot help but conclude that valuation motivation is crucial to the maintenance of dispositions and behaviors that allow one to function adequately in a given situation.

Is the Answer to the "What For" Question Found in Evolution?

The functional importance, pervasiveness, pre-eminence, and universality of valuation motivation opens the door to an evolutionary account of its genesis. Before we proceed, however, we would like preemptively to dispel or clarify several concerns.

TELLING EVOLUTIONARY TALES:
TRAPS FOR THE UNWARY AND HOW THOSE TRAPS MIGHT EVENTUALLY BE AVOIDED

When venturing into evolutionary explanations one must be cognizant of traps that await the unwary. For example, the fact that a trait is currently widespread in a population does not necessarily imply that the trait was adaptive in the species' evolutionary history. For example, a trait can itself be non-adaptive, but might be genetically linked to a trait that is highly adaptive. In such situations, when evolution selects the adaptive trait it may also select the non-adaptive, but genetically linked, trait.

A second trap concerns functionality. The fact that a trait appears to serve a given function for a species in its current environment does not necessarily imply that those were the functions that the trait served in the species' evolutionary history. A trait might have a given function in one environmental context, but might serve an entirely different function if the environmental context changes or if a new function for the trait emerges in that same context. One example is the insect's wing: some speculate that the wing originally developed as a way for an insect to dispel heat, but that the development of these heat-dispelling appendages gave an additional evolutionary advantage to insects because of their gliding and, later, flying properties.

Our interest in the area is sufficiently keen that such problems will not prevent us from offering some speculations about the extent to which evolution may have ensured, through natural selection, the survival of individuals with strong valuation motivation. However, at the same time, we remind ourselves (and ask readers to remain cognizant of) these potential traps. We also note that these problems are empirically tractable, at least in theory. For example, one principle of evolution is that new traits often have their genesis in existing traits, and are modifications of those traits. GOULD's (1980) example of the genesis of the Panda's thumb and its derivation from the radial sesamoid bone, a bone in the wrists of most mammals, is an excellent example of this idea. It might be similarly possible to construct an evolutionary history for the development of the human self-evaluation motivations. For example, new developments in animal psychology make it theoretically possible to explore whether non-humans possess personality traits that might be enhanced by valuation motivation (GOSLING, KWAN and JOHN 2003). The cross-species possession of a characteristic, such as valuation motivation, and variation in the level of that characteristic within different environments based on the extent to which that trait confers adaptiveness in each environment (as might occur in cross-species studies), offer supporting evidence for the notion that a characteristic can be selected by evolution.

Of course, such cross-species evidence may not be available. It may be the case that valuation motivation is a uniquely human quality (although, given the history of

"uniquely human" claims that have been debunked throughout history, we see this as less likely). This may have occurred because of mechanisms of evolution that revolve around "fortunate accidents" (e.g., mutations, favorable matings). These may have produced the capacity for valuation motivation, which, due to its functional significance, spread rapidly through the human population. However, even these traits do not emerge from nothingness, but can potentially be linked to the trait (e.g., via genetic analysis) that existed before the mutation or mating. Moreover, even though it might be difficult to obtain data concerning the evolutionary genesis of the trait from cross-cultural studies or from anthropological studies, it might be possible to link individual differences in the strength of valuation motivation to differences in the genetic sequences that are responsible for the production of such motivation. Alternatively, it might be possible to link abnormalities in the genetic sequence that is involved in determining valuation motivation to abnormalities in motivation strength (or its appearance or absence).

The fact that independent evidence for the biological and evolutionary bases of the self-evaluation motivations can be potentially obtained at some point is crucial in our view. If such evidence can never be mustered, then the theoretical ideas that we propose would be difficult to disconfirm. The thought that these ideas will eventually be able to be evaluated in light of the data, even if that ability is not yet made manifest, allows us to proceed with at least a modicum of confidence that we are not just spinning bedtime tales for small children. Paradoxically, the thought that we could be proven wrong is no small comfort for us. Hence, without further ado, we turn to a discussion of the possible evolutionary functions served by valuation motivation (SEDIKIDES and SKOWRONSKI 1997, 2000, 2003).

EVOLUTIONARY PRESSURES

We propose that a functional approach to understanding valuation motivation needs to be set in evolutionary context, particularly in terms of the selection pressures exerted on the *Homo* species. Moreover, we hypothesize that such pressures were both ecological and social.

Potential ecological pressures. Many ecological selection pressures are associated with food acquisition, regardless of whether that acquisition comes from foraging (e.g., searching for food, recognizing food, handling food) or hunting (e.g., constructing weapons, stalking, evading). Evolutionary theorists have argued that strong selection pressures were placed on the ancestors of the human species as a result of the need to acquire food. For example, these theorists have suggested that hunting, in particular, prompted the development of an increasingly sophisticated perceptual (e.g., fast and accurate registration of a moving image, mental rotation) and memory

(e.g., split-second recognition, large storage capacity, flexible categorization, abstraction, cognitive mapping) systems. Furthermore, hunting facilitated the evolution of both automatic and controlled cognitive processing, with the former involved in the speedy recognition and evaluation of prey and predators (SCHALLER, this issue), the latter involved in the deliberate appraisal of novel situations.

The development of these capabilities has implications for the self. The effective processing of environmental stimuli in a hunting context often involves the incorporation of self-relevant constructs. For example, a hunter might wonder whether the pursuit of prey is "worth it" because of concerns about costs to the self. Thus, a hunt might be terminated if one's energy expenditure is deemed too great relative to the magnitude of the reward, or if the danger involved in pursuit of large prey might be deemed too high, even if the potential reward is great.

The self is also involved in evaluating the consequences of one's food procurement efforts. The outcomes of one's food endeavors can be compared to the goals one held about these endeavors. The act of goal matching or goal achievement can consequently result in positive self-evaluation (e.g., high self-esteem) or positive self-relevant emotions (e.g., pride). Non-matching or failure, on the other hand, can result in negative self-evaluation (e.g., low self-esteem) or negative self-relevant emotions (e.g., shame). Those feelings, in turn, can affect the scope and ambition of subsequent goal setting.

Potential social pressures. Social selection pressures refer to challenges that are part of group living. This type of living involves intragroup interactions (e.g., feeding, grooming, fighting) and interpersonal relationships (e.g., rules regulating who does what to whom, how often, and under what circumstances). Relationship rules among individuals in a species are sometimes based on variables such as kinship, age, and gender. From a cognitive perspective, these variables are rather mentally undemanding, because behavior is often specified by the governing social cue (e.g., submitting to the group leader).

However, the cognitive demands of group living increase substantially when the cues that govern social relationships are relatively unstable and flexible. Such is the case, for example, when personal history (e.g., prior cooperation or competition) is important in determining one's relations with others. Personal history variables, such as past cooperation and competition with individuals or specific subgroups, can lead to cognitive complexity. This complexity may occur because the maintenance of such relationships depends on judgment and recall to a far greater extent than those relations governed by relatively fixed and inflexible environmental cues, such as the age or gender of others. Moreover, the absence of such fixed cues may lead to patterns of alliances and competitors that shift rapidly across time and circumstance. To navigate such complexity effectively, one has to remember who did what to whom (or for whom), the circumstances of the behavior, and the potential alternative

choices that might have been involved. For example, consider the mental complexity that accompanies cooperation in such flexible social environments. Cooperation can take many forms, ranging from the formation and maintenance of dyadic alliances (i.e., friendships) to the formation and maintenance of multi-person alliances (i.e., coalitions). Choosing such alliance partners may require complex and abstract cognitive calculations, such as the type of relationship desired, the competitive potential of the ally and his or her rivals, the potential loyalty of the ally, and the risk of injury to the self from rivals if support from the ally (or allies) was denied. Additionally, within-group cooperation can require role differentiation, effort coordination, conformity with rules, commitment, and the presence of a sanction system (i.e., social exclusion).

More generally, then, one can argue that successful group living in a context in which behavior is not tied to simple cues that govern social interaction, such as behaviors inflexibly tied to age or rank, presents an incredibly complex cognitive task. Effective behavior in such circumstances presupposes numerous cognitive and behavioral skills, including: (1) monitoring the rank and physical prowess of rivals as well as loafers and cheaters; (2) monitoring the sexual receptivity and fitness level of potential mating partners; (3) estimating one's competitive advantage vis-a-vis that of rivals, (4) knowledge of how conspecifics view both the self and others; (5) ability to monitor and change the impression one presents to others; (6) capacity to deceive; and (7) the ability to make a favorable impression on newcomers to the group.

These cognitive demands may have facilitated the capacity to perceive the self as others do. We speculate that this capacity was adaptive in that it helped individuals to navigate a complex social environment. Similarly, these demands may have also facilitated the capacity to make self appraisal judgments from another person's perspective. This capacity involves having an awareness that others may see you in a positive or negative light, as well as an understanding of why they may evaluate you in this way.

This is demanding enough in the context of a single individual. It becomes exponentially more difficult to be able to do this simultaneously for others in one's group. To be able to carry out this practice in a flexible social environment, an individual needs to keep track of how each group member evaluates him or her, and of how such evaluations might change or have changed. In addition, an individual needs to generate plans to attempt to modify these evaluations, if they are undesirable, through tactics such as deception or the adoption of different public personas to suit different conspecifics.

Our main point, then, is that cognition in a free-flowing social environment would be facilitated if individuals had the cognitive capability to think about the self, and others, in abstract ways, to understand how others might view the self, and to gener-

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Our main point, then, is that cognition in a free-flowing social environment would be facilitated if individuals had the cognitive capability to think about the self, and others, in abstract ways, to understand how others might view the self, and to gener-

ate behaviors that can effectively manipulate these others' impressions. One additional consequence of this social activity might be changes to the self. That is, in the long run, these public personas, along with social reactions to them, might be internalized (LEARY et al. 1998; LEARY et al. 2003).

It should also be noted that the ability to manage the social world effectively may be reflected in the emotional responses an individual has to their own efforts. For example, the success an individual has in managing their relationships with others (evidenced through the receipt of positive social feedback) may be reflected in such outcomes as high self-esteem, pride, optimism, energy, and determination to carry on. On the other hand, failure (e.g., negative social feedback) in attempts to manage one's relationships may be reflected in such outcomes as low self-esteem, guilt, embarrassment, pessimism, and behavioral disengagement.

HYPOTHESES CONCERNING THE ADAPTIVE VALUE OF VALUATION MOTIVATION

We speculate that valuation motivation helps individuals to cope with the formidable selection pressures that have derived from their attempts to function effectively in the ecological niche occupied by early humans. That is, evolution favors those with relatively high levels of valuation motivation. This is not necessarily a new idea – others have similarly speculated that valuation motivation evolved in response to both individual-level (i.e., ecological) pressures and group-level (i.e., social) pressures confronting early humans (DUNBAR, this issue).

However, we would like to add specificity to the discussion, speculating about the manner in which valuation motivation may have promoted individual functioning. We argue that valuation motivation conferred three adaptive advantages, in that it promoted the adaptiveness of an individual's self-system, improved an individual's ability to interact with others, and benefited an individual's standing in the group as well as the group itself. By accomplishing these four tasks, we speculate that valuation motivation increased the fit of an individual to the ecological niche occupied by their species, and hence, was a trait that was selected and dispersed to offspring via an enhanced probability of reproduction. In the three sections that follow, we discuss these three adaptive advantages in more detail.

Valuation motivation and the self-system. We hypothesize that valuation motivation is crucial to effective decision making behavior. For example, valuation motivation is adaptive in that it leads individuals to select tasks (e.g., hunting, alliance formation, challenge to higher-ranked conspecifics) that have a subjectively high probability of success and to avoid tasks that have a subjectively high probability of failure. Even taking into consideration the fact that these judgments may be poorly

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calibrated, any substantial degree of accuracy in these judgments is likely to produce at least some success experiences. Moreover, the impact of valuation motivation in this domain may cause individuals to misperceive ambiguous outcomes as successes.

These successes (or perceived successes) are likely to have both emotional and motivational consequences. Many of these consequences involve perceptions of effective agency. Such perceptions fuel active engagement in daily activities, facilitate planning, foster persistence in the face of adversity, and contribute to physical health and prowess. In addition, experiencing successes and the consequent feelings of agency can contribute to a strong and stable self-concept and the evolution of a stable set of goals. This is especially true, we believe, when these successes involve a social component. That is, we speculate that success leads an individual to have clear cognitive representations of their own goals, of others' expectations of him or her, and of the personal and interpersonal consequences of their own actions. Such interpersonal consequences are discussed in the next section.

The potential relational advantage conferred by valuation motivation. As noted earlier in this article, valuation motivation is positively associated with numerous indices of mental health (e.g., high self-esteem, optimism, happiness, feelings of mastery and agency) and negatively associated with numerous indices of mental distress (e.g., depression, anxiety, neuroticism, hostility). Valuation motivation is also positively associated with physical health and prowess. It seems reasonable to speculate that such qualities would be noticed by others. That is, mentally healthy, self efficacious, confident, and physically strong individuals would be more likely than their distressed and weak counterparts to be considered likeable, resourceful, and interpersonally attractive. Hence, those high in valuation motivation are more attractive to others (and are more likely to form positive interpersonal bonds with others) than those who are low in valuation motivation. This pattern will be exacerbated by perceivers' tendency to view those high in valuation motivation as potential benefactors in alliances (e.g., via effective resource-finding or effective protection). The derived hypothesis is that high valuation motivation will be related to an individual's perceived mate value and contribute to their mating success.

Valuation motivation and potential benefits for group standing and group success. We suggest that valuation motivation has implications for group standing. A self-efficacious, mentally healthy, and interpersonally successful group member likely was perceived as someone who is deserving of the group's trust to carry out effectively important collective tasks. Trust and acceptance promote an individual's chances to moving up the ranks in the group and to assume a leadership role. Benefits from such a role would include increased probability of reproductive success and decreased probability of sanctions (e.g., social exclusion, bodily harm) directed either at the individual or at his/her offspring.

To the extent that a group leader is successful, the group that is led by that leader should also be successful. We suggest that, if a group leader is successful, the group's members will also be mentally healthy and self-efficacious. It might also be the case that, if a group leader is successful, the group members will have a sense of purpose and direction, an aura of group optimism, and an illusion of group superiority. These attributes will contribute to success in intergroup competition.

This line of reasoning applies not only to specific groups in specific times, but it also relates to mechanisms of evolution. That is, a line of recent evolutionary theorizing (CAPORAEL 1997; WILSON 1998; WILSON and SOBER 1994) has explored the controversial notion that natural selection, although operating predominantly at the individual level, may also operate at the group level. Hence, the evolutionary advantage of valuation motivation may have potentially been driven by individual and group mechanisms. Effective individuals and groups may have had a reproductive advantage because of the actions of effective and high-valuation leaders.

SUMMARY

Although self-assessment and self-verification do influence human cognition and behavior, valuation motivation exerts the strongest influence. Moreover, this influence is widespread, as evidenced by its cross-cultural emergence. The emotions, cognitions, and behaviors prompted by valuation motivation are associated with good mental and physical health, and these functions are also evident in cross-cultural studies. Encouraged by the prevalence, predominance, and functional importance of valuation motivation, we explored its potential evolutionary adaptiveness.

We conclude that this motivation was adaptive, because it was crucial to the achievement of personal goals (e.g., overcoming ecological hindrances). Furthermore, we hypothesize that high levels of this motivation gave individuals direct interpersonal and reproductive advantages (i.e., by increasing the individual's perceived mate value). We also suggest that valuation motivation enables an individual to better cope with the complex social pressures (e.g., alliance formation, competition with rivals) derived from the flexible and complex social world of the human species. These lines of argument suggest to us that valuation motivation was a crucial adaptation that was selected by evolution. We also propose that these ideas are empirically tractable, and can be pursued on many levels. Both behavioral studies (e.g., linking valuation motivation to adaptive functioning) and biological studies (e.g., linking valuation motivation levels to specific genes or gene abnormalities) provide fruitful avenues of investigation that can be undertaken to investigate the hypotheses outlined in the present article.

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