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The Evolutionary Psychology of Envy

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At first glance, envy appears to be a maladaptive emotion. A great deal of subjective distress, workplace angst, and sibling rivalry owes themselves to this potentially destructive emotion. Envy, however, is as ubiquitous as it is socially undesirable. Young children and adults alike are quick to take note when something is "not fair," although, over time, they become more adept at keeping such observations to themselves. The recognition of another's advantage and the feelings of unfairness and hostility that sometimes follow are an important part of what it means to be human. Despite its reputation as being distasteful, tacky, petty, and downright gauche, it is likely that envy has played an important role in humans' quest for the resources necessary for successful survival and reproduction over the course of evolutionary time. In this chapter we provide an evolutionary psychological account of envy. First we explore the hypothesized function of envy by detailing the adaptive problems for which it is hypothesized to be an evolved solution. Then we address how an evolutionary account of envy organizes existing empirical discoveries about the nature of envy. We close with suggestions for future directions of envy research that are made possible when viewing this emotion from an evolutionary psychological perspective.

Resource Competition

The process of natural selection is inherently competitive, selecting for individual phenotypes—and the genes that code for them—based on their ability to outperform existing alternate forms in domains that affect fitness. This process is reflected in our social landscape in which individuals must continually struggle to acquire fitness-relevant resources or positions that others are simultaneously attempting to acquire. For example, in the domain of mate choice, there are fewer individuals who embody the characteristics that men and women most desire in their romantic partners than there are individuals who would like to mate with them (Buss, 2003). Individuals must compete

for access to these "high mate value" mates and only a lucky few will emerge victorious. Because highly desirable mates exist in limited supply—as is true for any scarce resource—those individuals able to capture the hearts of these individuals necessarily do so at the expense of their competitors. This is true whether one is pursuing a desirable mate, navigating a status hierarchy, or attempting to secure a coveted new job. Whether or not people are aware of it or whether they do it directly or indirectly, they continually compete with friends, family, and rivals to gain access to valuable resources necessary for survival and reproduction. This is as true now as it was for distant ancestors. How people stack up relative to others decides a number of important outcomes in life (Alicke & Zell, chap. 5, this volume; Festinger, 1954; Suls & Wheeler, 2000).

Given the reliably competitive nature of human social landscapes, it is likely that the human mind contains a number of psychological features that bestowed our ancestors with the ability to keep tabs on how well they were performing relative to their rivals. One such set of features that have been well-studied by psychologists are the psychological processes responsible for the social comparisons (Buunk, Zurriaga, Gonzalez-Roma, & Subirats, 2003). When competing for access to scarce resources, an individual's optimal behavioral strategy critically depends not only on the qualities and talents of oneself but also on those of one's relevant social competitors. Thus, it is likely that selection has shaped a rich array of cognitive adaptations designed to approximate how one stacks up compared to one's rivals. Indeed, many researchers have demonstrated that social comparisons between oneself and comparable others are ubiquitous and play an instrumental role in individuals' self-evaluations (Festinger, 1954; Stapel & Blanton, 2007; Suls & Wheeler, 2000), making the relationship between social comparison and envy inherently intertwined (as convincingly argued by Alicke & Zell, chap. 5, this volume). People's feelings of success and failure at life's pursuits are formed by comparing their own performances to those of others.

The use of social comparisons as a tool for estimating the optimal amount of effort that must be put forth to successfully acquire the resources necessary for survival and reproduction is likely the result of decision rules selected for in humans' evolutionary past (Frank, 1999). Employing the decision rule "do better than your nearest competitor" when directing goal-setting behaviors would have prompted individuals to put forth sufficient effort to outperform rivals in resource acquisition, but not more than necessary. Alternative decision rules such as "always do the best you can" or rules relying on absolute benchmarks such as "acquire enough food to prevent starvation" or "be attractive enough to acquire a mate" do not specify at what point one can relax and move on to solving other adaptive problems and are open to exploitation by rules able to incorporate information about rivals' behaviors. Given the nature of the evolutionary process, the adaptive goal should not be to better oneself in general, but to be better than rivals with whom one is competing for access to the same resources in a given domain. Once achieved, the individual can go on to solve adaptive problems in other domains.

Because the fitness consequences related to resource acquisition in a number of domains are inherently dependent on one's performance relative to social competitors, individuals' responses to their self-comparisons are not expected to be received neutrally.

Enter the emotions. From an evolutionary psychological perspective, the emotions are component parts of a coordinated internal response system shaped by selection to alert the bearers that something has occurred in the internal or external environment that requires attention (Cosmides & Tooby, 2000). When a person compares favorably to others on a given dimension that has been historically linked to fitness, it is typically met with a positive affective response. It feels good to outperform competitors. Such responses increase the probability that the individual will continue engaging in behaviors responsible for these successes. Conversely, when social comparisons reflect poorly on one's relative performance in a fitness-relevant domain, it is typically met with subjective distress. Individuals appear to be acutely attuned to diminutions in rank on attributes that could have a negative impact on their reproductive success (Kalma, 1991; Mazur & Booth, 1999).

Regarding subjectively upsetting emotions specifically, strategic interference theory posits that these emotional responses—although upsetting—serve the following important adaptive functions (Buss, 1989a): (1) temporarily screening out information that is less relevant to the adaptive problem being faced and focusing attention on the source of strategic interference, (2) prompting storage of the relevant information in memory, (3) motivating action to reduce the strategic interference, and (4) motivating action to prevent future such interference. The human mind likely contains numerous psychological adaptations that have been selected by the evolutionary process based on their ability to signal strategic interference. As described in a recent paper (Hill & Buss, 2006), we hypothesized that envy is one such emotional adaptation that has been shaped by selection to signal strategic interference in the quest for resource acquisition.

The Evolution of Envy Research

Organizing Existing Bodies of Knowledge

Envy is typically defined by researchers as being a subjectively unpleasant mix of discontentment and hostility occurring in response to unfavorable social comparisons. This emotion is especially likely to occur when the envying individual holds an inferior position in a domain of high personal relevance (Feather & Sherman, 2002; Parrott & Smith, 1993; Salovey & Rodin, 1984; Silver & Sabini, 1978; Smith & Kim, 2007). Given the importance of social competition in survival and reproductive success, evolution by selection likely would have favored adaptations designed to generate subjective distress in response to being outperformed by rivals. It has been recently hypothesized that envy is one such adaptation (Hill & Buss, 2006). Over the course of evolutionary time, individuals experiencing envy in response to advantages possessed by others would have been more likely to invest effort in acquiring the same advantages for themselves than those not experiencing envy. In turn, these individuals would have heightened their own probability of resource acquisition success, likely out-reproducing their rivals. It is reasoned that the emotion of envy owes itself to the wisdom of our ancestors: it is the result of millions of years of selection for traits facilitating successful social competition. Although

envy often results in subjective distress, we propose that this type of emotional distress functions to motivate adaptive action (Buss, 1989a).

The hypothesis that envy is a functional component of humans' evolved resource competition psychology offers new insights into many of the well-documented design features of envy. In particular among these are the feelings of hostility and ill will that characterize an envious response to another's advantage. Because envy results from social comparative processes (which often determine how individuals evaluate themselves), alternative accounts of envy have had little difficulty predicting and explaining why discontentment with oneself should be an important part of the envy experience (Smith, 1991; Smith & Insko, 1987; Tesser, 1991). However, researchers have had a harder time understanding why ill will also typifies the emotion of envy (Smith, Parrott, Ozer, & Moniz, 1994). This is an important feature of envy to understand, because envy —according to its proper definition and scholarly tradition—contains hostile feelings that can lead to hostile actions (Smith et al., 1994; Smith & Kim, 2007). Some research suggests that invidious comparisons will often create a subjective sense that the envied person's advantage is unfair, which, in turn, creates the feelings of ill will (Smith et al., 1994). This account, however, cannot explain why feelings of hostility and ill will that accompany envy experienced in response to deserved advantages.

From an evolutionary perspective, the feelings of ill will that accompany envy are a predicted feature of this emotion, occurring regardless of the perceived deservedness of a competitor's advantage. Envy is hypothesized to have been shaped by selection to facilitate successful social competition for access to resources that affect fitness. A central component of successful resource competition is rendering oneself more deserving of the resources one is competing for relative to others who are striving to achieve the same goal (Buss, 1988a). This is true across domains of resource competition, whether attempting to enhance relative standing in the eyes of potential mates or trying to appear more competent than one's coworkers in the workplace in front of one's boss. Relative self-enhancement can be achieved through two basic strategies: (1) making oneself more attractive or appealing, and (2) rendering the competition less attractive or appealing (Buss & Dedden, 1990). Researchers have shown that envy-produced hostility typically manifests itself in indirect ways, such as derogation of the envied person to a third party (Salovey & Rodin, 1984; Silver & Sabini, 1978). Individuals are able to diminish the social effects of their competitors' advantage by making them appear less advantaged in the eyes of their peers and, more importantly, in the eyes of those who possess the resources for which the individuals must compete. Ill will—and the corresponding belief that one is more deserving of an advantage than one's rival—likely represent adaptive design features of envy serving to facilitate the motivational component of envy.

Similarly, understanding envy in terms of its adaptive function also provides new insight into the oft-noted secretive nature of this emotion (Heikkinen, Latvala, & Isola, 2003; Smith & Kim, 2007). People often do not like to admit they are feeling envious. So reluctant are men and women to admit feeling envious in response to another's advantage that researchers studying this emotion must often rely on measuring other emotions that are closely tied to enviousness without containing the word envy (e.g., hostility;

Smith & Kim, 2007). Why are people so loathe to admit feeling envious? An evolutionary psychological perspective on this emotion provides insight into the very secretive nature of this emotion.

Strategic interference theory posits that the negative affect associated with another's advantage results from an internal alarm signaling that one is being outperformed in an important domain of resource competition. Keeping this information private is likely important not only for face-saving purposes, but is also critical to preventing future competitive failures. This is true for several reasons. First, the admission of feeling envious sends a signal to all interested parties that the envious individual has been outperformed by a rival. An individual's true competitive formidability in a given domain of resource acquisition is not public information available to all who seek it. Rather, it must be deciphered by others based on available social and phenotypic cues. This ambiguity of one's relative position in a given domain of resource competition can be manipulated to one's advantage through careful impression management. Concealing the enviousness that one feels toward rivals leaves the possibility open for the individual to influence others' perceptions of the individual's successes and failures to his or her advantage, potentially mitigating any social damage resulting from unfavorable social comparisons with the advantaged rival.

Consider a man who loses out on a coveted promotion to a coworker. If this man were to admit feeling envious of his coworker's advantage, he would be announcing his relatively lower position to others, highlighting his weaknesses. However, by concealing his enviousness, he leaves open the possibility of mitigating the status damage related to this loss by feigning disinterest in the position (perhaps citing its unhealthy work/life balance) or pretending not to have applied for it in the first place. Because the majority of socially relevant others do not have perfect information about the true nature of the man's interest in the promotion, he can potentially influence others impressions of his failure in its attainment. Suppressing envy felt toward his coworker's success also opens the possibility for the man to influence others' perceptions of the coworkers' deservedness of the status increase. He may casually suggest to relevant others that his coworker's success was the result of an influence outside the person (Salovey & Rodin, 1984; Silver & Sabini, 1978). For instance, he may mention that his coworker is the boss's nephew, potentially lessening the social damage of his lower status position. Such attempts to verbally manipulate others' impressions of his rival (and, in turn, others' impressions of his own relatively lower position) would not be as effective if others were aware of his enviousness. Being up-front about envying his coworker would preclude the successful use of verbal derogation tactics, because others—knowing the true motivation behind the gossip—would be less inclined to believe him. Being openly envious of advantaged rivals also decreases the likelihood of being able to covertly co-opt the resources from the rival. For instance, if a woman is envious of her roommate's romantic partner, it would be in her best interest not to let her roommate in on her feelings. Keeping her envy covert leaves the possibility open for the woman to try to spend time with the coveted mate without raising the suspicions of her romantic rival.

Directing New Avenues of Research

An evolutionary perspective on envy does more than organize existing bodies of knowledge about envy. By guiding research in a more domain-specific way, an evolutionary psychological approach to envy also allows researchers to make informed predictions about the domains in which individuals are expected to experience envy. Just as the existence of a "g" or general intelligence does not negate the importance of specific cognitive abilities, such as spatial rotation and verbal fluency, the existence of a "g" or general factor in enviousness does not negate the importance of differentiated well-being in specialized domains.

Researchers have long noted that people reserve their feelings of enviousness for those who are similar to themselves—save for their advantage in the desired domain—and for advantages that are in self-relevant domains (Parrott, 1991; Salovey & Rodin, 1984; Salovey & Rothman, 1991; Schaubrook & Lam, 2004; Tesser, 1991). That is, a core part of one's self worth must be linked to doing well in the domain of comparison. However, what researchers have been less clear about is how self-relevance is determined. An evolutionary framework makes clear predictions about the domains that should have high self-relevance to men and women, predicting a relatively strong, positive relationship between personal relevance and the importance of a given adaptive problem. The more closely a domain's historical relevance to reproductive success, the more that one's successes and failures relative to one's rivals in that domain would be expected to elicit envy. We predict, for instance, that a man would feel more envious in response to being outperformed in economic resource acquisition than he would if a rival were able to bake a better soufflé than he (unless the latter ability had a bearing on the former).

An evolutionary perspective also predicts that the relevance of a given domain of self-comparison to men's and women's envy feelings should be sex differentiated in those domains where the sexes have faced qualitatively different adaptive problems (Hill & Buss, 2006). For instance, in the domain of mate competition, the primary way in which men have been able to directly increase the fitness benefits available to them from mate choice has been by gaining sexual access to young, healthy, and fertile women (Buss, 1994; Symons, 1979; Williams, 1975). Conversely, a primary avenue by which women have been able to increase the fitness benefits available to them from mate choice has been by securing a partner who is able and willing to invest in themselves and their offspring (Buss, 1994; Symons, 1979; Trivers, 1972). Accordingly, researchers have demonstrated that women place greater a premium than do men on their potential mates' financial prospects and economic resources, whereas men's mate preferences reflect a preference for those cues most reliably correlated with these traits, namely a woman's youth and attractiveness (Buss, 1989b, 1994; Kenrick & Keefe, 1992; Singh, 1993; Symons, 1979). Applying this evolutionary logic to the exploration of envy predicts, for instance, that women should experience greater envy in response to same-sexed peers being more attractive than themselves, whereas a rival's having access to a greater

amount of financial resources than themselves should be more likely to elicit envy in men. Existing empirical research supports these predictions (Hill & Buss, 2006).

An evolutionary account of envy also predicts that the situations with the greatest potential to elicit envy will change throughout the lifetime based on corresponding changes in the importance of solving different adaptive problems throughout development. A rival's ability to attract and gain sexual access to short-term mates might elicit a strong envy response to a man when he is in his twenties and in prime "mating mode." Forty years later, however, this same man would be more likely to respond enviously to news of an acquaintance's grandchild being accepted into medical school. An evolutionary perspective on envy also predicts that individuals should experience the most frequent and intense envy experiences during the time in their lives when the fitness consequences associated with resource acquisition are the strongest. That is, it is likely that the frequency and intensity of envy experiences wax and wane with the reproductive curve. One's experiences with envy should peak during their peak reproductive years (which is slightly earlier for women than men) and should then slowly decline with age. Future research exploring the relationship between envy and the relative importance of the different adaptive problems that must be solved at different points in development may uncover new knowledge about the different factors that influence envy throughout the lifetime.

Using an evolutionary framework in the scientific study of envy also provides a theoretical grounding from which to derive new predictions about heretofore undocumented features of envy and its role in motivating various behavioral outputs. Researchers interested in the behaviors that envy motivates have noted that envy seems to motivate at least three categories of behavior: submission, ambition, and destruction. Submissive reactions to another's superiority may act to prevent one from being harmed by one's competitors (Allan & Gilbert, 2002; Buss, 1999; Campos, Berrett, Lamb, Goldsmith, & Stenberg, 1983). In some contexts, the envy eliciting event may simply provide the motivation that one needs to get working to achieve the same outcomes for themselves (i.e., "white" or "competitive" envy; Frank & Sunstein, 2001; Matt, 2003; McAdams, 1992; Palaver, 2004). In yet other circumstances, envy motivates attempts to reduce the relative advantage of the envied rival (Berke, 1988; Elster, 1998; Neu, 1980; Smith, 1991; Zizzo & Oswald, 2001; i.e., "black" or "destructive" envy). Exploring envy in a more domain-specific manner would allow researchers to make predictions about the behavioral output that envy will motivate in different contexts.

This evolutionary psychological view of envy as cognitive mechanism designed to facilitate successful resource competition predicts that the behavioral strategies motivated by envy should vary depending on what behavioral strategy or set of strategies are optimal given personal and environmental constraints. For instance, if a man experiences envy in response to his neighbor's new, larger house, there are a number of ways that he might be motivated to respond. The first would be to work harder to try to acquire the same advantage for himself. Alternatively, he may choose to move to a different neighborhood, where his own home will look more impressive. Yet another option would be to somehow devalue or destroy the neighbor's home. The optimal behavioral

strategy that envy will likely motivate in response to such an advantage depends on the costs and benefits associated with each. For instance, for a man living in an average in city in the United States, it is likely that the most effective behavioral response to the described advantage would simply be to work a little harder to acquire such a home or to move to a different neighborhood (see Frank, 1985, for the importance of choosing the right pond). If the individual in question lives in a poor tribal village where there is a low likelihood of being able to acquire the materials necessary for reaching such an objective, the optimal behavior may be to remove the others advantage altogether (i.e., destroying or defacing the home). Envy takes different trajectories and assumes different intensities due to differences in social structure (Lindholm, chap. 13, this volume). Economists have noted that workers in the United States typically respond to a coworker's income or status advantage by working harder themselves. Workers in peasant societies—where resources are scarce and there is an absence of multiple acceptable pathways to success—tend to respond to envy by trying to undercut or destroy their rivals advantage (Lindholm, chap. 13, this volume. More research is needed to test these predictions in a more comprehensive way.

How Should Individuals "Cope" With Envy?

The emotion of envy can be damaging to subjective well-being (Smith, Combs, & Thielke, chap. 16, this volume). No one can deny the subjective distress that sometimes follows a friend or rival's gaining an advantage that a person would like for himself or herself. The feelings of resentment in response to another's perceived advantage have soured relationships between siblings, destroyed friendships, and chilled relations among coworkers. Feelings of upset and hostility can be so visceral and unpleasant that the individual would rather terminate the relationship than continue to experience this uncomfortable reminder of the other's advantage.

Despite the damage that envy can have on well-being, it may serve an important function in social competitions (Alicke & Zell, chap. 5, this volume). An evolutionary account of envy predicts that individuals experiencing envy in response to another's advantage are being appropriately alerted to the advantage and motivated to commence corrective action. Over the course of evolutionary time, individuals who did not feel subjective discomfort in these situations would likely have been out-competed by their more envious counterparts. Although envy often results in subjective distress, this type of emotional distress functions to motivate adaptive action (Buss, 1989a). Knowing what envy has been designed to do may lead to promising new avenues for research on how to best cope with feelings of envy (Exline & Zell, chap. 17, this volume; Salovey & Rodin, 1991).

If, as we have hypothesized, envy has been shaped by selection to alert individuals to being outcompeted in evolutionarily important domains of resource competition, perhaps conscious attempts to change one's perceptions of who one's social competitors are have the effect of keeping one's envy in check. Because individuals judge their

own success in a number of domains based on how they are performing relative to their rivals, researchers need to determine whether decreasing media exposure, choosing to surround oneself with others who are similarly endowed in wealth and beauty, or helping less fortunate people has the effect of buffering individuals from experiencing envy. Knowing what envy has been designed to do means that individuals who are attempting to cope with envy might best do so by identifying the advantage that their competitor has that they would like access to and then develop a course of action for achieving it themselves. Rather than coping with envy, the individual is solving the problem that envy has altered them to fix. Just as the best course of action to remedy a toothache is to remove the decay (rather than developing coping techniques to deal with the pain), the best way to fix envy is to solve the adaptive problem that it is signaling needs to be solved.

Conclusions

Evolutionary psychology provides insights into the circumstances that are predicted to elicit envy and the types of behavioral strategies that are expected to be motivated by envy. Although little research has yet been done on envy from an evolutionary perspective, early research from this perspective appears promising (Hill & Buss, 2006). First, an evolutionary perspective serves heuristic value in leading researchers to domains likely to be of critical importance to understanding envy—those tributary to solving statistically recurrent problems of survival and reproduction. Second, it leads to hypotheses not produced by other perspectives. None but an evolutionary perspective, for example, would lead to the prediction that the degree to which men and women will experience envy will positively correspond to their reproductive curve. Third, an evolutionary perspective provides a powerful metatheory for organizing existing knowledge about envy and its design features that have been documented in the literature. In at least these three ways, an evolutionary perspective can make important conceptual and empirical contributions this important domain of human emotion.

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