

The Effects of Scarcity and Self-Esteem on the Experience of Envy

by

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## ABSTRACT

Envy may be an emotion shaped by evolution to resolve large resource disparities in zero-sum ancestral environments. Previous research has found evidence for two types of envy: benign envy, which drives greater effort and self-improvement; and malicious envy, which drives hostility toward the better-off target. We predicted that perceived resource scarcity would stoke either type, moderated by individual differences. Specifically, we predicted that high self-esteem would steer people toward benign envy and self-improvement, whereas narcissism would spark malicious envy. After completing the Rosenberg self-esteem scale and the Narcissism Personality Inventory (NPI-16), participants were randomly assigned to either read an article detailing severe cuts to university financial aid budgets (scarcity) or an article summarizing various forms of financial aid (control). Each article ended with the same envy-inducing paragraph about a particularly affluent scholarship-winner, after which participants completed a measure of both envy types, capturing feelings, appraisals, and behavioral tendencies. Results show that self-esteem predicts less malicious envy, while narcissism and scarcity predict more. Self-esteem and narcissism interact such that self-esteem dampens the effect of narcissism on malicious envy. Self-esteem predicted benign envy when narcissism was low, but not when it was high.

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## Chapter 1

### INTRODUCTION

Envy has been defined as an unpleasant emotional reaction to another's superior achievement, resources, or qualities (Smith & Kim, 2007). At its core, envy rests on an unfavorable, upward social comparison (van de Ven, Zeelenberg, & Pieters, 2009). It appears to be a culturally universal capacity (Schoeck, 1969), and seems to occupy a familiar role in everyday discourse. While some research has explored the characteristics of envy, little is known about the factors that drive it. The present research investigates two factors that may influence the experience of envy – scarcity and self-esteem.

The present theoretical account of envy rests on three core features. First, the social comparison between Person A (envious person) and Person B (target) must be *unfavorable* to Person A. That is, Person A must have less than Person B in the relevant domain. Second, the domain or object must be *relevant* to Person A. That is, they must desire or value it, or otherwise care about the gap between themselves and Person B. A man who has no wish to become a musician is unlikely to envy a piano grand master's skill. Consistent with this feature, Parrott & Smith (1993) found that longing, or desiring what the target has, is characteristic of envy. Finally, envy is an *unpleasant* or painful emotional state. More specifically, envy often includes feelings of inferiority, resentment, and hostility (Smith & Kim, 2007). A positive reaction to another's greater achievement in some domain does not count as envy. Such a response would most likely count as *admiration*. Admiration lacks not only the negative sting of envy,

but van de Ven, Zeelenberg, and Pieters (2009) also find that admiration is less likely to involve a self-relevant domain and an explicit social comparison.

Envy is sometimes paired with jealousy in theoretical taxonomies of emotion (e.g., Lazarus, 1991). These two emotions are distinct, however, in that jealousy is rooted in the threat of losing someone to another, whereas envy is rooted in an unfavorable social comparison. Parrott & Smith (1993) report that jealousy is distinctively characterized by distrust, righteous anger over betrayal, and uncertainty. They find that envy is more characterized by feelings of ill will and inferiority, perhaps accompanied a sense of guilt over the ill will.

## Chapter 2

### THEORIZED ADAPTIVE FUNCTION OF ENVY

A functional approach to emotions research views many emotions as evolved mechanisms that served to enhance fitness in the environment of evolutionary adaptedness (EEA; for a thorough treatment, see Tooby & Cosmides, 2000). By this account, emotions are part of a computational architecture that weighs situational variables and motivates appropriate behavioral responses – “appropriate” in the sense that such responses were statistically more likely to yield fitness-enhancing outcomes in the EEA for a given trait. Discrete emotions (e.g. anger, fear, anticipatory enthusiasm) are viewed as superordinate programs that coordinate responses to specific types of problems or situations. For example, Sell, Tooby, and Cosmides’ (2009) recalibrational theory of anger posits that anger is a superordinate program designed to regulate conflicts of interest between individuals by inflicting costs or withholding benefits. These twin strategies are meant to cause the target of the anger to place more weight on the angry individual’s welfare.

We posit that envy may solve two related problems: a personal deficit of resources, and unfair or unequal resource distribution within the group. At the intrapersonal level, the realization that another person has more resources than oneself is an important signal, indicating that it is possible to have more resources or skills than one currently possesses. Envy should then facilitate resource acquisition by promoting the strategies or effort necessary to achieve the desired resource level. An emotional mechanism that motivates greater resourcefulness

and effort in the face of relative poverty is clearly adaptive. At the interpersonal level, group living in ancestral environments required cooperation in many domains: hunting, gathering, perhaps even child rearing. An unequal distribution of cooperatively secured resources – such as the kill from a hunt – would signal a violation of group fairness norms. Such violations could jeopardize future cooperative relationships. An envy mechanism would serve to counteract such unequal distributions, by sparking action against those persons with unfairly secured excess resources. Over the long term, such a regulatory mechanism would serve to discourage cheating and might lead to greater group cohesion, thus enhancing the chance of survival of group members.

This functional account has implications for the prototypical eliciting situations that should facilitate envy, as well as the action tendencies that should follow. The ancestral environment was a world of scarce resources (Minc, 1986), where survival pressures were fiercely salient. At an individual level, we expect that scarcity will make resource inequity more salient – one should be more aware of one's own resource level, as well as that of others, in a resource-scarce environment. Thus, envy should be more common in conditions of scarcity. Indeed, there is evidence that malice toward those with surplus resources was common in times of scarcity and poverty (Colson, 1979). A key feature of this account of envy is that it involves two possible action tendencies: self-improvement and/or malice toward the target of envy. Both strategies are geared toward equalizing resource distribution, but via different mechanisms.



Moreover, we expect that perceived scarcity will tend to stoke perceptions of unfairness in response to inequity. Since there are fewer resources to go around, one's attribution of self-responsibility for an unfavorable inequity should diminish. Put another way, one would have to hold oneself to an even higher standard than normal to place one's own limitations as the cause of the inequity. Thus, it is more likely that perceived scarcity would, at least initially, drive perceptions of unfairness, rather than self-assessment and self-improvement.

## Chapter 3

### MALICIOUS VS. BENIGN ENVY

The two motivational profiles outlined above hint at two different subtypes of envy. Indeed, there is support for such a distinction. Drawing on the presence in the Dutch vocabulary of two distinct words for envy, van de Ven, Zeelenberg, and Pieters (2009) distinguished the features of *malicious* and *benign* envy. Based on cluster analyses of participants' open-ended recalled experiences of envy as such, their findings suggest that both subtypes of envy rest on an explicit social comparison (unlike admiration or resentment). Where they differ, however, is that malicious envy is uniquely characterized by an assessment of injustice/unfairness and by low perceived control, whereas benign envy is characterized by assessments of fairness and higher perceived control (Smith et al., 1994; van de Ven et al., 2009). This is consistent with Heider's (1958) account of improving the self or "failing" the other.

Perceptions of fairness in the context of resource allocation are well-anchored in our species, and in fact predate us. Notably, Brosnan and de Waal (2003) find that capuchin monkeys and chimpanzees (Brosnan, 2006) reject unequal rewards in laboratory experiments. If a monkey witnesses another monkey receiving a better payment (grapes vs. cucumber) for the same effort, it is more likely to refuse to cooperate in subsequent trials than a monkey who received an equal payment. Moreover, such participants are more likely to *refuse* the unequal rewards – that is, they are willing to forfeit the food payment altogether, even though they readily consume this food in all other circumstances.

Consistent with this analysis, other researchers have also found that perceived unfairness predicts feelings of envy accompanied by hostility (Cohen-Charash & Mueller, 2007; van de Ven, Zeelenberg, & Pieters, 2009).

When presented with the fact of another's greater resources, the fairness of the arrangement has logical implications for an adaptive response. If the inequity is perceived as unfair, one's own strategies, qualities, and identity are not at issue. Redoubling one's efforts would not change the unfairness of the inequity, which might be entirely out of one's control. In this case, hostile or aggressive actions toward the target may be more effective than self-improvement at balancing resources. In studies across three Western countries, van de Ven et al (2009) found that benign envy was associated with a "moving up" motivation, aimed at self-improvement, and malicious envy with a "pulling down" motivation, aimed at lowering the target's position. Those experiencing benign envy were more likely to want to be near the other and to try harder to achieve their goals, whereas those experiencing malicious envy were more likely to want to harm or degrade the other.

Although benign envy is clearly a more prosocial response to resource inequity than malicious envy, van de Ven et al (2009) find that benign envy is still a negative emotion, as participants reported feeling unpleasant and frustrated whether they experienced benign or malicious envy.

## Chapter 4

### SELF-ESTEEM

Although perceptions of scarcity and unequal resource distribution are predicted to increase envy generally, and perceptions of fairness and control are expected to influence the path to malicious or benign envy, trait-level individual differences may also play a role in the experience of these emotions. We predict that *self-esteem* will influence one's propensity toward envy as such, as well as the type of envy experienced. Importantly, our account draws heavily from heterogeneous conceptions of self-esteem.

Kernis' (2003) innovative conceptualization of distinguishes between secure vs. fragile of self-esteem. This account frames self-esteem along four dimensions. Secure self-esteem is genuine – one's publicly expressed positive self-regard is congruent with privately held feelings toward oneself. It is stable – one's self-esteem does not fluctuate wildly from day to day. It is congruent – explicit (conscious) self-esteem is consistent with implicit (non-conscious) indicators. Finally, and most important for our purposes, secure self-esteem is noncontingent – it does not depend on certain outcomes or favorable social comparisons.

Persons with fragile self-esteem are preoccupied with their achievements and how those achievements stack up to the expectations of others and oneself (Deci & Ryan, 1995). Unfavorable social comparisons are especially threatening to those with fragile self-esteem (Wood, et al., 1994). Paradise and Kernis (1999) found that women with highly contingent self-esteem were more angry in

response to an insulting evaluation. Additionally, they were more likely to want to retaliate against and hurt the insulter. There is also evidence that negative feedback is more broadly threatening to the self when self-esteem is fragile. Schneider and Turkat (1975) found that people high in defensive self-esteem responded to negative feedback by enhancing their self-presentation beyond the scope of the feedback.

Fragile self-esteem has much in common with narcissism, which is characterized by grandiosity and entitlement (Brown, Budzek, & Tamborski, 2009), and aggressive reactions to criticism and unfavorable social comparisons (Horton & Sedikides, 2009). Negative feedback is more threatening to the self-worth of narcissistic individuals (Morf & Rhodewalt, 2001). This contingent nature of feelings of self-worth is consistent with the aforementioned findings on fragile self-esteem. Moreover, narcissism has several components, including Leadership/Authority, Superiority/Arrogance, Self-Absorption/Self-Admiration, and Exploitation/Entitlement. Rhodewalt and Morf (1995) report that the latter two in particular correlate with hostility. This is informative in light of the fact that narcissism positively correlates with self-esteem (Morf & Rhodewalt, 2001). Indeed, Rhodewalt and Morf report that the Exploitation/Entitlement component of narcissism does not correlate with self-esteem as measured by the Janis-Field feelings of inadequacy scale. This implies that feelings of entitlement are not characteristic of high self-esteem.

The pervasive Rosenberg Self-Esteem Scale (Rosenberg, 1965) does not differentiate between secure vs. fragile self-esteem, or between self-esteem and

narcissism. Given the lack of a comprehensive self-report measure of secure vs. fragile self-esteem, measures of narcissism may prove fruitful as proxy measures of fragile self-esteem. By measuring both self-esteem and narcissism, interactions between the two constructs may expose the differential effects of secure vs. fragile self-esteem. In particular, high self-esteem combined with low narcissism should cohere with secure self-esteem. Similarly, high self-esteem in conjunction with high narcissism coheres with fragile self-esteem.

Since malicious envy is characterized by hostility toward the target, those with fragile self-esteem should be more prone to malicious envy than those with secure self-esteem. The fragility of narcissism should also find the reality of a better-off or more successful other to be more threatening to the self. As noted earlier, malicious envy is also characterized by appraisals of unfairness and low perceived control. The latter is theoretically similar to Ryff's (1989) *environmental mastery*. Ryff found that those high in self-esteem were high in environmental mastery. Using Ryff's (1989) measure of psychological well-being, Paradise and Kernis (2002) found that high *stable* self-esteem individuals were higher in environmental mastery and autonomy than those with unstable – but still high – self-esteem. Therefore, when individuals with secure self-esteem do experience envy, they may retain a greater sense of control or efficacy. If so, they should tend to experience benign, rather than malicious, envy.

## Chapter 5

### THE PRESENT STUDY

The present study investigated scarcity, self-esteem, and narcissism as interacting predictors of malicious and benign envy. Participants completed measures global self-esteem and narcissism, then read a news article that included either a scarcity prime or control passage, and an envy induction. Finally, participants completed a self-report envy measure, tapping into both malicious and benign envy.

Hypothesis 1: Scarcity will increase both benign and malicious envy.

Hypothesis 2: Self-esteem will dampen the effect of scarcity on malicious envy.

Hypothesis 3: Self-esteem will predict lower malicious envy overall, but this effect will vary depending on levels of narcissism.

3a: Self-esteem will predict less malicious envy most strongly when narcissism is low, and least strongly when narcissism is high.

Hypothesis 4: Self-esteem will predict greater benign envy, but this effect will vary depending on levels of narcissism:

4a: Self-esteem will predict greater benign envy most strongly when narcissism is low, and least strongly when narcissism is high.

## Chapter 6

### METHODS

#### *Participants*

234 participants were recruited from the Arizona State University undergraduate psychology participant pool. 36 participants who failed both of the items in a basic recall quiz about the induction article were excluded from analyses, reducing  $N$  to 198 (142 females, 56 males. Mean age was 19.0 ( $SD = 2.19$ ), and approximately 73% of participants were White / Caucasian.

#### *Design*

This study employs a between-subjects design (Prime: scarcity vs. control), with two continuous individual difference predictors (self-esteem and narcissism).

#### *Procedure*

Participants were recruited for an online study titled “Personal Experiences and Relating to Others.” In one online session, participants completed a basic demographic questionnaire, the Rosenberg Self-Esteem Scale, the Narcissism Personality Inventory (NPI-16), and several other self-report measures. After completing these measures, participants were randomly assigned to read one of two purported ASU State Press news articles: “Please read carefully through the following article. It’s a draft State Press article that has not yet been published. After you’ve read it, we’ll ask you about your reaction to the issues presented.”



In the Scarcity condition, participants read an article detailing severe cuts to financial aid budgets at ASU. In the control condition, participants read an article summarizing various forms of financial aid (e.g. merit vs. need-based), making no mention of budget cuts. Both articles ended with the same passage about a particularly affluent scholarship winner. The following passage (gender-matched to the participant) served as our envy induction:

*Jennifer (John) Stone, a freshman Microbiology major, came in with a National Merit Scholarship. A Chandler native, Jennifer feels lucky to have won a scholarship based on her academic performance in high school. Her parents own several restaurants, and could have easily covered her college costs. By winning the scholarship for tuition and dorm fees, however, Jennifer is able to reap other benefits: "I saved my parents a lot of money by getting the scholarship. Because of that, I was able to do a summer science program in France, which cost over \$10,000 with expenses." Jennifer also noted that she doesn't need to worry about working to be able to make ends meet and afford extras.*

Immediately after reading the news article, participants completed a 37-item envy questionnaire (labeled as article feedback) spread across three screens assessing feelings, appraisals, and action tendencies respectively. Finally, participants completed a two-item manipulation check, asking whether ASU

enrollment levels should be increased/decreased, and their opinion of how present ASU funding levels compare to other universities.

### *Measures*

*Envy Self-Report Measure* (Appendix A). This 37-item scale is designed to capture malicious and benign envy, along with universal features of envy as such. It captures feelings (16 items), appraisals (13 items), and action tendencies (8 items). The action tendencies were broken into benign and malicious subscales (4 items each), and are the focus of our analyses. Sample items include “I wish something bad would happen to her” (malicious), and “I’m going to win a scholarship of my own” (benign). Participants are asked to rate each item according to whether it reflects their current state/appraisal, using a 5-point scale ranging from 1 (*not at all*) to 5 (*extremely*). The malicious action tendencies subscale demonstrated acceptable reliability, Cronbach  $\alpha = .74$ , and the benign action tendencies subscale fared similarly, Cronbach  $\alpha = .72$ . Feelings of envy correlated with malicious envy action tendencies,  $r = .16, p < .05$  and benign envy action tendencies,  $r = .15, p < .05$ . Similarly, core envy appraisals correlated with malicious envy action tendencies,  $r = .18, p < .01$  and benign action tendencies,  $r = .18, p < .05$ .

*Rosenberg Self-Esteem Scale* (Rosenberg, 1965). This 10-item scale is a well-established and validated measure of global self-esteem (Blascovich & Tomaka, 1991). Participants are asked to respond according to how they feel about themselves most of the time. Our version employs a 5-point Likert-type

scale, ranging from 0 (*Disagree Strongly*) to 4 (*Agree Strongly*). Scores are computed as the mean of all item scores (after accounting for reverse-coded items). It demonstrated high reliability in this sample, Cronbach  $\alpha = .89$ .

*Narcissism Personality Inventory – 16* (Ames, Rose, & Anderson, 2005). This is a compact measure of narcissism, employing 16 paired-choice items. Sample pair: “I find it easy to manipulate people” (narcissistic) and “I don’t like it when I find myself manipulating people” (non-narcissistic). Narcissistic responses were coded as 2, and non-narcissistic responses were coded as 1. Scores are computed as the mean of all item codes. It demonstrates fair reliability in this sample at  $\alpha = .71$ .

## Chapter 7

### RESULTS

This sample reported mean self-esteem scores of 2.86 ( $SD = .79$ ) on a 0-4 scale, and mean narcissism scores of 1.38 ( $SD = .21$ ) on a 1-2 scale, with “2” indicating selection of the narcissistic option. The mean score for malicious envy action tendencies was 1.23 ( $SD = .53$ ), and 3.04 ( $SD = .91$ ) for benign envy action tendencies, both using the same 1-5 scale. (Correlations between all these variables are reported in Table 1.) Notably, malicious envy is not normally distributed, with a skewness of 2.96 ( $SE = .17$ ) and a kurtosis of 9.61 ( $SE = .64$ ). Scores on this variable are positively skewed – of the 199 responses collected, 144 participants reported no malicious action tendencies. That is, they answered *1* – *Not at all*, in response to each of the four items. The remaining 55 participants endorsed at least some degree of malicious envy. There were no main effects of participant sex on either of the dependent variables reported below, nor any interactions between participant sex and target sex.

Table 1  
*Pearson correlation matrix of key variables (N = 187)*

	Narcissism	Malicious Envy	Benign Envy
Self-esteem	.343***	-.214**	.139*
Narcissism		.215**	.001
Malicious Envy			.068

\*  $p = .053$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### *Malicious Envy Action Tendencies*

A simultaneous regression analysis was performed, including scarcity, self-esteem, and narcissism as predictors of malicious envy. The scarcity manipulation increased malicious envy, as hypothesized,  $\beta = .17$ ,  $t(181) = 2.45$ ,  $p < .05$ . Self-esteem predicted lower malicious envy,  $\beta = -.32$ ,  $t(181) = -4.38$ ,  $p < .01$ , while narcissism, predicted greater malicious envy  $\beta = .31$ ,  $t(181) = 4.28$ ,  $p < .01$ , both as predicted (overall  $R^2 = .17$ ). Next, all possible interaction terms were added to the model. The only significant interaction is the self-esteem X narcissism interaction,  $\beta = -.17$ ,  $t(177) = -1.99$ ,  $p < .05$ ,  $R^2 = .24$ . All three main effects remain significant in the full model (see Table 2 for full regression results). Treating narcissism as the moderator, simple slopes of the relationship between self-esteem and malicious envy were calculated at three levels of narcissism: mean – 1 *SD*; mean; mean + 1 *SD*. The slopes are  $-.04$  (*ns*),  $-.16$  ( $p < .05$ ), and  $-.27$  ( $p < .05$ ), respectively (Figure 1). Examination of the slopes reveals that self-esteem exerts a downward influence on levels of malicious envy when narcissism is high, countering the main effect of narcissism. At mean levels of narcissism, we see the same effect of self-esteem, albeit less steep. Finally, at low levels of narcissism, malicious envy is already near its floor, and thus there is little room for self-esteem to have a downward effect.

Table 2  
*Summary of multiple regression results for malicious envy action tendencies (N = 185)*

	Model 1		Model 2	
	$\beta$	$t$	$\beta$	$t$
Scarcity	.167*	2.445	.170*	2.421
Self-Esteem	-.316***	-4.376	-.228*	-2.027
Narcissism	.313***	4.282	.223*	2.312
Scarcity X Self-Esteem			-.140	-1.313
Scarcity X Narcissism			.158	1.701
Self-Esteem X Narcissism			-.174*	-1.990
Scarcity X Self-Esteem X Narcissism			-.078	-.908
$R^2$	.171		.243	

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

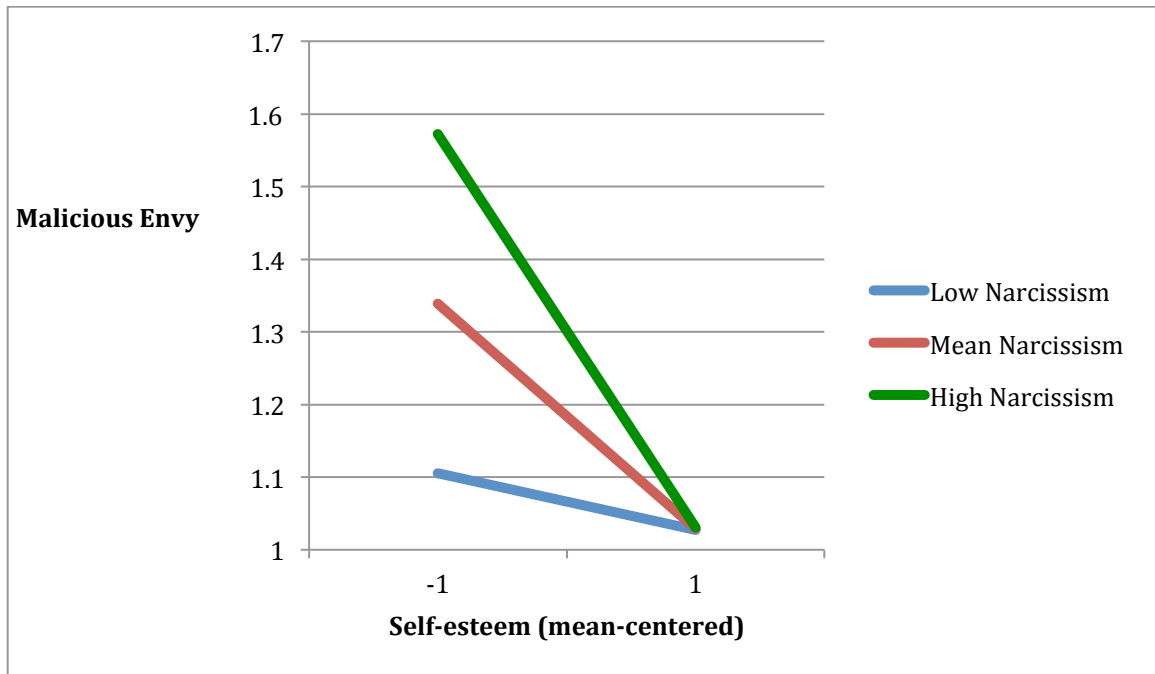


Figure 1. Simple slopes for self-esteem x narcissism interaction on malicious envy.

The extreme positive skew of malicious envy action tendencies calls into question whether linear regression is an appropriate model for this data. Residuals for the model were not normally distributed, violating an assumption of linear regression. A dichotomous logistic regression was performed to validate the accuracy of the linear regression coefficients. (Logistic regression does not assume normality or homoscedasticity of the residuals.) In this case, the malicious envy DV was dichotomized as follows: reporting no malicious envy action tendencies = 0, reporting any degree of malicious envy action tendencies = 1. This dichotomization is not arbitrary in the manner of a median split. Rather, it maps to a theoretically meaningful and data-driven distinction between the majority of participants who reported no malicious envy at all, and those who endorsed at least some degree of it. Dichotomization results in a loss of power, but logistic

regression protects against loss of power slightly better than least squares regression on a dichotomized outcome variable (Taylor, West, & Aiken, 2006).

Logistic regression computes the probability of the outcome “1” – here the probability of reporting any malicious envy. Odds ratios, the key statistic of interest, indicate the odds of reporting malicious envy at a given value of the predictor, over the odds of reporting malicious envy at a value of the predictor *one unit lower*. Odds ratios  $> 1$  indicate greater odds of experiencing malicious envy at the higher value of the predictor compared to the lower value. The logistic regression analysis yields the same main effects as the linear regression: Scarcity predicts a higher probability of malicious envy (odds ratio, 2.29), as does narcissism (odds ratio, 19.20). Self-esteem predicts a lower probability of reporting malicious envy (odds ratio, 0.47). There is not a significant self-esteem x narcissism interaction in the logistic regression (see Table 3 for full results).



Table 3  
*Summary of logistic regression results for malicious envy action tendencies (N = 185)*

	Model 1			Model 2		
	B	SE	Odds ratio (Exp(B))	B	SE	Odds Ratio (Exp(B))
Scarcity	.830	.355	2.294*	.791	.358	2.205*
Self-Esteem	-.754	.246	.470**	-.739	.249	.478**
Narcissism	2.955	.952	19.197**	2.96	.960	19.302**
Self-Esteem X Narcissism				-1.783	1.189	.168

\*  $p < .05$ . \*\*  $p < .01$ .

### *Benign Envy Action Tendencies*

A simultaneous regression analysis was performed, regressing benign envy action tendencies on all predictors and interaction terms. There were no main effects of scarcity, self-esteem, or narcissism. However, there is a significant self-esteem X narcissism interaction,  $\beta = -.10$ ,  $t(179) = -3.48$ ,  $p < .01$ . Treating narcissism as the moderator, simple slopes of the effect of self-esteem on benign envy were calculated at three levels of narcissism: mean – 1 *SD*; mean; mean + 1 *SD*. The slopes are .37 ( $p < .01$ ), 0 (*ns*), and -.37 ( $p = .07$ ), respectively (Figure 2). Examination of the slopes reveals that self-esteem drives benign envy action

tendencies upward, but only when narcissism is low. Conversely, when narcissism is high, self-esteem drives benign envy downward.

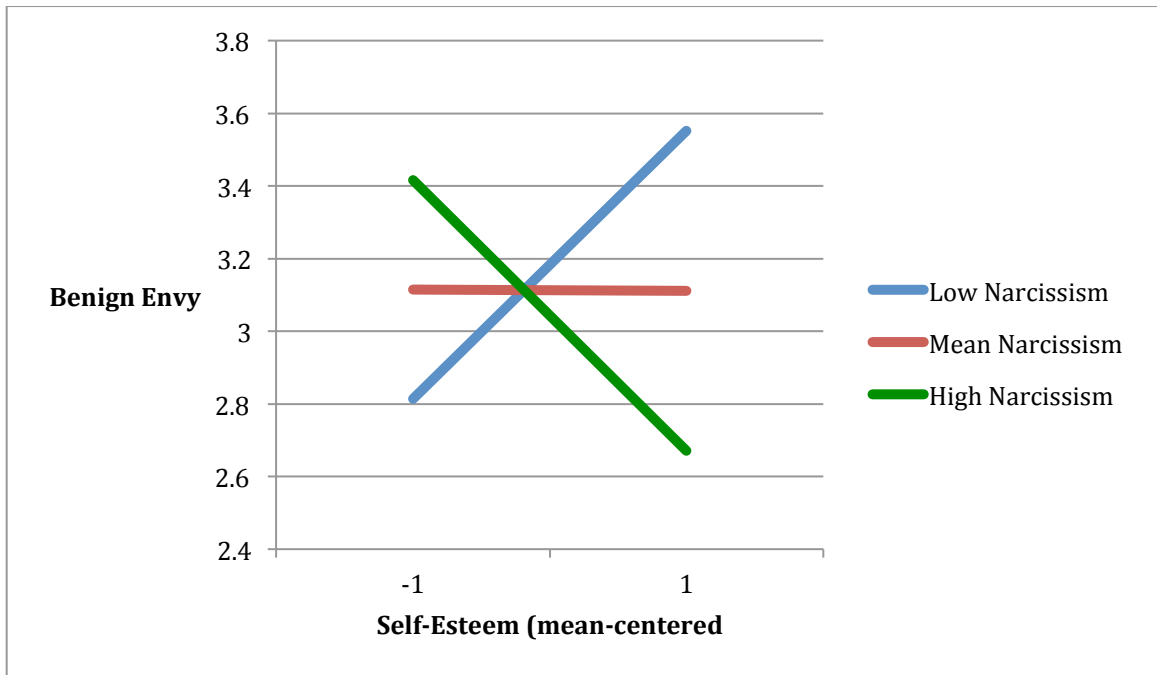


Figure 2. Simple slopes for self-esteem x narcissism interaction on benign envy.

*Summary of multiple regression results for benign envy action tendencies (N = 179)*

	$\beta$	$t$
Scarcity	-.021	-.715
Self-Esteem	.000	-.011
Narcissism	-.022	-.748
Scarcity X Self-Esteem	.026	.816
Scarcity X Narcissism	.002	.066
Self-Esteem X Narcissism	-.097**	-3.482
Scarcity X Self-Esteem X Narcissism	.084**	3.170

\*\*  $p < .01$ .  $R^2 = .09$

## Chapter 8

### DISCUSSION

The goal of the present study was to expose some of the situational and dispositional factors that drove malicious vs. benign envy. We hypothesized that scarcity would drive both types of envy upward. In this study, it only increased malicious envy, with no effect on benign. In concrete terms, looming cuts to financial aid budgets did not increase participants' motivation to obtain their own scholarship or work harder to achieve their goals. This result may expose one of the limitations of the envy induction used in this study. Once students are already enrolled in a university, scholarships may no longer be much of a concern, since such aid is usually arranged at the time of admission. Moreover, cuts to aid budgets make the task of securing a scholarship much harder. These two facts in combination may explain the failure of this scarcity induction to drive benign envy. The effect of scarcity on demand for a good or service (Cialdini, 2009) doesn't operate here because the good may not be in much demand to begin with, and there is no implicit descriptive norm indicating demand – budgets were cut, rather than supplies being exhausted by demand. The scarcity induction did increase malicious envy, which is not constrained by the difficulty of obtaining a scholarship in a budget-slashed environment. Malicious envy, or hostility toward the affluent student, is essentially *free* relative to benign envy.

We also hypothesized that self-esteem would predict less malicious envy, and it did. We attribute this to the greater self-confidence captured in self-esteem. Self-esteem did not, however, interact with scarcity. This was our dampening

hypothesis – that self-esteem would dampen the effect of scarcity on malicious envy. Since most participants did not report any malicious envy, such an interaction is more difficult to expose. Future studies may have more success on this front by using more focused measures of secure self-esteem.

We hypothesized a self-esteem x narcissism interaction. However, the nature of the interaction was surprising. We hypothesized that self-esteem would have its strongest effect on malicious envy when narcissism was low, and a weaker effect when narcissism was high. Instead, we found the opposite pattern – self-esteem had its strongest effect when narcissism was high. Interestingly, this finding does not undercut our theoretical framework. Rather, it emerges out of the fact that when narcissism is low, malicious envy is already at its floor (approx. 1.1 on a 1-5 scale). There is no significant downward movement possible, and thus no room for self-esteem to have an effect. As a partial proxy for fragile self-esteem, narcissism proved to be a more decisive predictor than we expected, at least when self-esteem was low. Self-esteem had its strongest effect when narcissism was high. That is, self-esteem dampened the influence of narcissism on malicious envy, exerting a more dominant influence than we expected. Examination of scatter plots reveals that this effect was not driven just by people high in both narcissism and self-esteem. Rather, we find that there are some participants who score low on self-esteem and high on narcissism. This combination was not featured in our hypotheses, and it may rest on a self-view that features the Exploitative/Entitled aspect of narcissism combined with low ratings of self-worth.

The highest levels of malicious envy occur when self-esteem is low and narcissism high. Even then, malicious envy scores are not high in absolute terms (approx. 1.6 on a 1-5 scale). The malicious envy items were quite strong, with “I wish I could hurt her somehow” and “I wish something bad would happen to her”. It appears that most participants were uncomfortable endorsing such strong malice, even to a slight degree. The bottom-heavy distribution of malicious envy makes interpretation of the observed effects somewhat tentative. Benign envy, on the other hand, showed much broader distribution. The interaction between self-esteem and narcissism results from a significant upward effect of self-esteem on benign envy when narcissism is low. This high self-esteem, low-narcissism combination represents secure self-esteem in our framework. As predicted, secure self-esteem yields greater achievement motivation, rather than hostility toward the envy target.

The results are intriguing given that self-esteem and narcissism are positively correlated with each other, yet move malicious envy in opposite directions. While both measures tap into positive or praiseworthy self-assessments, narcissism represents more of a comparative self-view. For example, the narcissistic choices from the paired choice items include “I am more capable than other people” and “I am an extraordinary person”. This is a more unequivocal perspective than the “at least on an equal plane with others” phrasing from the Rosenberg inventory. Thus, a story about an extraordinarily affluent and academically successful student may create more tension for a narcissistic individual – it strains the perception of oneself as more capable or worthy than

others. It makes sense that a narcissistic individual would be motivated to see the situation as unfair, and to target the other rather than redouble one's efforts.

Future research should focus on obtaining more variance in malicious envy measures, perhaps by drawing from recalled personal experiences of envy rather than elicitors based on a remote stranger. Also, future research may benefit from experimentally manipulating the appraisal dimensions theorized to drive malicious envy: perceived fairness and self-confidence. Such manipulations will help clarify the interplay between trait self-esteem factors and situational mediators of the envy experience.

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APPENDIX A

ENVY SELF-REPORT MEASURE

## Feelings

Think back to Jennifer, the scholarship winner in the article. The following words describe different feelings you might have. Please rate how you feel when you think about Jennifer and her situation.

1	2	3	4	5
Not at all		Somewhat		Extremely

- 1) Frustrated.
- 2) Ashamed.
- 3) Nervous.
- 4) Enthusiastic.
- 5) Angry.
- 6) Sad.
- 7) Motivated.
- 8) Happy.
- 9) Confident.
- 10) Inspired.

The following items also relate to your thoughts and feelings regarding Jennifer. Please think about the extent to which each statement is true for you, and answer according to the following scale, choosing a number from 0 to 6:

1	2	3	4	5
Not at all		Moderately		Absolutely

#### Appraisals

- 1) I wish I had as much as she has.
- 2) She has more than I have.
- 3) It matters to me that I have less than her.
- 4) She got what she has fairly.
- 5) I'm confident that someday I can have as much as she has.
- 6) I'm confident that I'll be able to achieve what I want in life.
- 7) It's unfair that she has what she has.
- 8) I'll never be able to live the way she does.
- 9) Some people get so much more than they deserve.
- 10) She deserves to lose some of her aid.
- 11) I admire her.
- 12) She seems very driven.
- 13) Her achievement is impressive.

#### Action tendencies

- 1) I'm going to try harder to achieve my goals.
- 2) I'm going to win a scholarship of my own.
- 3) I would like to be her friend.
- 4) I feel like putting more effort into school.
- 5) I wish something bad would happen to her.
- 6) I wish I could hurt her somehow.
- 7) I wish I could bring her down to my level.
- 8) I wish I could take away her scholarship.