Personality and Social Psychology Bulletin

Understanding the Social Costs of Narcissism: The Case of the Tragedy of the Commons

W. Keith Campbell, Carrie Pierce Bush, Amy B. Brunell and Jeremy Shelton

The online version of this article can be found at:

Published by:

⑤SAGE

http://www.sagepublications.com

On behalf of:

SP SP

Society for Personality and Social Psychology, Inc.

Additional services and information for *Personality and Social Psychology Bulletin* can be found at:

Email Alerts: http://psp.sagepub.com/cgi/alerts

Subscriptions: http://psp.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

Citations http://psp.sagepub.com/cgi/content/refs/31/10/1358

Understanding the Social Costs of Narcissism: The Case of the Tragedy of the Commons

W. Keith Campbell
Carrie Pierce Bush
Amy B. Brunell
University of Georgia

Jeremy Shelton
Lamar University

Two studies examined narcissism and behavior in a commons dilemma. Study 1 used a four-person, laboratory-based task and Study 2 used a dyadic task. Participants were told that they represented one of four (Study 1) or two (Study 2) forestry companies and then were asked to harvest timber from a renewable forest. Narcissism was found to be positively related to acquisitive goals and harvesting more timber in the initial round. The more narcissists harvesting in the competitive group of four (Study 1) or dyad (Study 2), the less timber was harvested overall and the more rapidly the forest was depleted. Within competitive groups and dyads, however, narcissists harvested more than the nonnarcissists competing with them. In all, narcissism provided a benefit to the self, but at a long-term cost to other individuals and to the commons.

Keywords: *narcissism; commons dilemma; self-esteem; self-concept; groups*

Narcissism may be best conceptualized as a dynamic self-regulatory system where positive self-views are maintained and enhanced in large part by using the social environment (for a theoretical review, see Morf & Rhodewalt, 2001). According to this perspective, narcissists approach life as an arena for achieving status, success, and admiration, each of which leads to a positive self-concept. Central to this conceptualization of narcissism is a trade-off: Narcissists' efforts to enhance the self are linked to losses and distortions in their own life and the lives of others.

On the positive side of the ledger, narcissists generate and maintain positive feelings surrounding the self, including high levels of positive affect, low levels of negative affect, and high self-esteem (Morf & Rhodewalt, 2001; Rose & Campbell, 2004). On the negative side of the ledger, there are at least four costs: First, narcissists need to distort reality into a form conducive to self-enhancement. Evidence for this includes narcissists' inflated global self-evaluations (e.g., Gabriel, Critelli, & Ee, 1994), task performance ratings (e.g., John & Robins, 1994), and fantasy life (Raskin & Novacek, 1991). Second, narcissists need to seek out positive social feedback (e.g., Buss & Chiodo, 1991; Wallace & Baumeister, 2002) and disparage or attack those who provide negative feedback (e.g., Bushman & Baumeister, 1998; Kernis & Sun, 1994). Third, narcissists may experience performance deficits over the long term that occur when the illusion of success interferes with obtaining real success (Campbell, Goodie, & Foster, 2004; Robins & Beer, 2001). Fourth, narcissists experience significant interpersonal costs in the pursuit of status and esteem. In a sense, narcissists trade interdependence and closeness for individual status and esteem. Evidence for this includes narcissists' global ratings of self compared to close others (Campbell, Rudich, & Sedikides, 2002), dyadic task performance ratings (e.g., Campbell, Reeder, Sedikides, & Elliot, 2000), romantic relationship choices (Campbell, 1999), and diminished likeability in the eyes of others over time (Foster, Shrira, & Campbell, 2003; Paulhus, 1998).

© 2005 by the Society for Personality and Social Psychology, Inc.

1358

In this article, we focus on an additional and under-studied cost of narcissism. Specifically, we examine the cost of narcissism that will be borne by the broader social and physical environment. Of importance, we examine narcissism both at the individual and the group level. The notion that there is a social cost of narcissism is not a new one (see Lasch, 1979) but it has not yet been subject to direct empirical attention. To this end, we use a classic social situation that pits the short-term interest of the self with the long-term interests of the other and the environment: the commons dilemma (Hardin, 1968). We predict that narcissists will show gains at the individual level. These gains, however, will be at significant cost at the group level; that is, others competing with the narcissist and the commons itself will suffer.

Narcissism

It is important to note that we are studying the personality trait of narcissism; we are not examining narcissistic personality disorder (NPD). NPD is a rare character disorder that affects less than 1% of the general population (American Psychiatric Association, 1994). Trait narcissism is based on the clinical criteria for NPD but applies to the continuum of normal functioning. In this article, we will use the term "narcissists" to describe those in the upper end of this continuum.

Narcissism involves inflated views of the self, a relative lack of interest in interpersonal closeness and intimacy, and a variety of strategies for maintaining these positive self-views (for a recent review, see Morf & Rhodewalt, 2001). Narcissists believe that they are smarter, more creative, and more attractive than others, even though these beliefs are largely groundless (e.g., Campbell et al., 2002; Gabriel et al., 1994). Narcissists also perceive themselves to be unique or special (Emmons, 1984), and this may be associated with a high degree of psychological entitlement (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004). Of importance, narcissists do not believe that they are more moral or caring than others—a characteristic that separates narcissists from individuals with high self-esteem (Campbell et al., 2002).

To maintain their inflated self-beliefs, narcissists use a variety of interpersonal strategies. Narcissists brag and draw attention to themselves (Buss & Chiodo, 1991), adopt "colorful" personae (Hogan & Hogan, 2002), strive to associate with high-status others (Campbell, 1999), and act in an extraverted and entertaining way (Paulhus, 1998). These strategies may work well in the short term but they tend to deteriorate over time as others "see through" the narcissists' act (Paulhus, 1998). This lack of long-term effectiveness in narcissists' self-regulatory strategies might be partially caused by narcissists' willingness to blame others for misfortunes while at the same time striving for public successes (e.g., Wallace

& Baumeister, 2002). There is a wealth of empirical data demonstrating that narcissists are willing to blame coworkers (Campbell et al., 2000; Gosling, John, Craik, & Robins, 1998; John & Robins, 1994) or evaluators (Kernis & Sun, 1994) for their personal failures. Narcissists also may diminish their interpersonal likeability by adopting a competitive orientation toward others (e.g., Bradlee & Emmons, 1992; Emmons, 1984; Morf, Weir, & Davidov, 2000) and by putting less motivation into developing intimate or caring relationships (Carroll, 1987). Narcissists are more interested in their own status and success than their emotional closeness to others. These interpersonal strategies are even mirrored in narcissists' internal psychological life. For example, narcissists fantasize about fame and power (Raskin & Novacek, 1991) and take individual credit for their success but privately blame situational factors for failure (Farwell & Wohlwend-Lloyd, 1998; Rhodewalt & Morf, 1998).

Taken together, these findings make it apparent that the narcissist's character is well suited for exploiting others in the name of individual short-term gain. Narcissists will focus on their own interests to the exclusion of others' interests when given the opportunity to do so, such as in a commons dilemma.

Social Dilemmas

The classic social dilemma involves pitting the short-term interests of the self against the long-term good of the group and the common resource (Hardin, 1968). When short-term selfish choices are made, the results can be devastating to the larger community. The tragedy of the commons was originally explained using the example of a herd grazing on common land. Grassland is a renewable resource assuming that it is not overgrazed. For example, if everyone in a community grazes five sheep on the commons, the grass will regrow in sufficient quantity that the grazing can continue year after year. The problem (i.e., tragedy) occurs when one (or more) individual decides to maximize short-term gain by grazing more than five sheep. When this happens, the individual will enjoy a short-term benefit but the commons will be destroyed, thus resulting in long-term cost to the group.

Although the tragedy of the commons is a universally recognized phenomenon, certain individuals at certain times may be more willing to exploit the commons. What individual difference variables predict those that are willing to exploit the commons for short-term gain? Research to date has uncovered at least three such variables. One of these is empathy. Individuals are less likely to exploit the commons when they have a high degree of empathy for those with whom they share the common resource (Batson & Moran, 1999). Second, individuals who are high in individualistic and competitive value ori-

entation are more willing to exploit the commons (e.g., Van Lange, Otten, DeBruin, & Joireman, 1997). Finally, individuals who report greater extrinsic values are more willing to exploit the commons (Sheldon & McGregor, 2000).

Narcissism is a theme that runs through each of these diverse findings. Narcissism is an overarching personality variable that reflects both a lack of empathy for others (Watson, Grisham, Trotter, & Biderman, 1984) and competitive and individualistic strivings (e.g., Emmons, 1984; Morf et al., 2000; Watson, Morris, & Miller, 1997-1998). Narcissists also share with those high in extrinsic value orientation a focus on fame, status, and physical appearance (Kasser & Ryan, 1996). (We would argue, however, that narcissism is not equivalent to extrinsic value orientation in that narcissists' motivations and values are largely, although by no means completely, intrinsic; see Rose & Campbell, 2004, for a larger discussion of this issue.) Thus, our prediction that narcissists will be more likely than nonnarcissists to facilitate the tragedy of the commons is consistent with past research on the commons dilemma.

The Current Research

In the current research, we examine the actions of narcissists and nonnarcissists in the settings of a commons dilemma. We predict that narcissists will harvest more of the commons in the initial round and that their stated reason for doing so will be to increase individual rewards (i.e., acquisitiveness). We also predict that narcissism will be associated with depleting the commons more rapidly. Likewise, we predict that to the extent that the competitive group (i.e., the group made of the four "companies" simultaneously harvesting the timber) or competitive dyad consists of narcissists, the less the competitive group or dyad will harvest in total. Finally, within the competitive group or dyad, narcissists will harvest more and nonnarcissists will harvest less. To test these hypotheses, we present two studies. In Study 1, we assess behavior in a laboratory-based commons dilemma using four individuals each representing the interest of a different company. In Study 2, we examine behavior in a laboratory-based commons dilemma, but one in which there are only two individuals participating.

STUDY 1

We conducted a commons dilemma in the lab using four individuals, each of whom represented a different forestry company. We predicted that narcissism would be linked to greater acquisitiveness and more forest harvested in the first round. We also predicted that, across rounds, narcissism would be associated with more rapid resource depletion. Indeed, the overall amount of forest harvested by the competitive groups with more narcis-

sists will be less. Finally, we predicted that those competing with narcissists would ultimately harvest less while the narcissists harvested more.

Method

Participants. Participants were 232 University of Georgia undergraduates (153 women, 79 men). All participants volunteered to participate in the study in exchange for partial course credit.

Materials and procedure. Participants completed the study in competitive groups of four individuals. Individuals were not assigned to groups based on gender so the gender proportion of the different groups varied. The procedure was based on that used successfully in past research (Sheldon & McGregor, 2000). Participants were placed in separate cubicles throughout the study.

It was first explained to participants that they would be participating in two unrelated studies. This was done to minimize any potential demand characteristics. The first study involved filling out several questionnaires presented in a booklet.[1] Narcissism was assessed with a 40-item, forced-choice version of the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988). Each question contains a pair of statements (e.g., "If I ruled the world it would be a much better place"; "The thought of ruling the world frightens the hell out of me"). The total score on the NPI can range from 0 to 40, with 40 representing the highest level of trait narcissism. The NPI is the most commonly used self-report measure of narcissism in normal populations and has adequate reliability and validity (Raskin & Terry, 1988; Rhodewalt & Morf, 1995). Participants also completed the 10-item Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965), with endpoints at 1 (*very strong disagreement*) and 9 (*very strong agreement*). The RSE is the most commonly used measure of self-esteem. We collected the RSE to examine its potential role as a mediator between narcissism and the outcome variables of interest (cf. Sedikides, Rudich, Gregg, Kumashiro, & Rusbult, 2004).

Participants were then given a booklet containing the explanation of the commons dilemma study. These materials were taken from Sheldon and McGregor (2000). Individuals were told that they represented a forestry company whose goal was to harvest as much forest as possible. Participants were given three additional pieces of information as well. First, they were told that there were three other companies harvesting the forest at the same time. Second, they were told that they could choose to harvest 0 to 10 hectares of forest per year. Finally, they were told that there was only 200 hectares of forest and that this forest regrew by 10% after each annual harvest.

Participants were then asked two questions. First, they were asked to rate the extent that they wanted to profit

more than the other companies (i.e., acquisitiveness). This was assessed on a 7-point scale where 7 entailed the highest level of acquisitiveness. Second, participants were asked to rate the extent that they thought that the other companies wanted to profit more than the participant did (i.e., apprehension). This was also assessed on a 7-point scale where 7 entailed the highest level of apprehension. (We borrowed these questions and terminology from Sheldon & McGregor, 2000; they provide a detailed discussion of this choice of terminology.)

For the actual commons dilemma, each participant's cubicle was labeled Company A, Company B, and so forth. Each participant simultaneously and privately recorded the number of hectares that they wanted to harvest on a "bid sheet." These sheets were collected by the experimenter, who (a) added together the total number of hectares harvested in the round, (b) subtracted that value from the amount of forest available (this value started at 200 hectares but changed from round to round), (c) added 10% to this value, and (d) announced the total amount of hectares available to the four participants in the next round. For example, if, on the first round, the combined harvest made by the participants was 20 hectares, the experimenter would subtract 20 from 200 for a total of 180 hectares. The experimenter would then add 10% (18 hectares) to this value and announce to the participants that there were 198 hectares of forest remaining. This process repeated itself until the forest was completely harvested or 25 rounds were completed (participants were not told ahead of time about the 25 round limit). After completing the task, participants were debriefed and thanked.

Results

Descriptive statistics. We first calculated descriptive statistics. The mean NPI score was 16.1 ($SD = 7.0$). The mean RSE score was 73.2 ($SD = 10.4$). NPI and RSE scores correlated, $r = .25$, $p < .001$. For the dependent measures, the following values were obtained: acquisitiveness ($M = 5.3$, $SD = 1.3$), apprehension ($M = 5.0$, $SD = 1.4$), and hectares cut on first round ($M = 6.5$, $SD = 2.0$). In addition, the total number of rounds before the forest was depleted (or the task ended) was $M = 12.4$, $SD = 3.5$, and ranged from 6 to 24 rounds.

Acquisitiveness. Consistent with predictions, narcissists reported greater acquisitiveness than did nonnarcissists, $r = .14$, $p < .05$. To control for the potential influence of gender on this association, we next placed narcissism and gender together in a regression model as simultaneous predictors of acquisitiveness. Narcissism remained a significant predictor in this model, $\beta = .14$, $t(229) = 2.1$, $p < .05$.[2] In contrast to narcissism, self-esteem by itself did not predict acquisitiveness, $\beta = -.03$, $t(230) = -.42$, *ns.* This rules out a mediational role for

self-esteem such as that reported in past research (Sedikides et al., 2004).

Apprehension. Narcissists did not report greater apprehension than did nonnarcissists, $r = .07$, *ns.* We next placed narcissism and gender together in a regression model as simultaneous predictors of apprehension. Narcissism was not a significant predictor in this model, $t < .1$; however, there was a significant effect of gender, $\beta = .16$, $t(229) = 2.4$, $p < .01$. Men reported greater apprehension than did women. There was also no association between RSE and apprehension, $r = .05$, *ns.*

Forest harvested in the first round. Consistent with predictions, narcissists in the first round chose to harvest more forest than did nonnarcissists, $r = .17$, $p < .01$. To control for the potential influence of gender on this association, we next placed narcissism and gender together in a regression model as simultaneous predictors of forest harvested in the first round. Narcissism remained a significant predictor in this model, $\beta = .14$, $t(229) = 2.1$, $p < .05$. There was also a significant effect of gender such that men cut more forest than did women in the first round, $\beta = .13$, $t(229) = 2.0$, $p < .05$. In contrast to narcissism, self-esteem by itself did not predict first round harvest, $\beta = .02$, $t(230) = .22$, *ns.* This again rules out a mediational role for self-esteem.

A second set of analyses revealed that the association between narcissism and first round harvest was mediated by self-reported acquisitiveness. First, we established that acquisitiveness predicted first round harvest in a simple regression, $\beta = .43$, $t(230) = 7.2$, $p < .001$. Next, we placed both narcissism and acquisitiveness as simultaneous predictors in a multiple regression with first round harvest as the outcome variable. The effect of acquisitiveness remained significant, $\beta = .42$, $t(229) = 6.9$, $p < .001$, and the effect of narcissism dropped to marginal significance, $\beta = .11$, $t(229) = 1.8$, $p < .10$. The significance of this mediation was confirmed by a Sobel test, $z = 2.08$, $p < .05$.

Rounds before resource depletion. As predicted, individual narcissism was associated negatively with the number of rounds before the forest was completely depleted, $r = -.16$, $p < .05$. To control for the potential influence of gender on this association, we next placed narcissism and gender together in a regression model as simultaneous predictors of rounds before resource depletion. Narcissism remained a significant predictor in this model, $\beta = -.15$, $t(229) = -2.2$, $p < .05$. In contrast to narcissism, self-esteem by itself did not predict rounds before depletion, $\beta = .06$, $t(230) = .88$, *ns.* This again rules out a mediational role for self-esteem. Given the consistent failure to find a significant link between self-esteem and the relevant outcome variables, the remaining analyses focus directly on narcissism.

Because total harvest depended on the harvest of each member of the competitive group (i.e., every competitive group member harvested for the same number of rounds—there were no differences between competitive group members), we examined two group-level predictor variables in a second set of analyses: the average narcissism score of the competitive group and the percentage of narcissists (i.e., those with scores above the median NPI) in the group. Results using these two approaches were very similar and are thus presented together. The total number of rounds each competitive group completed was regressed on their average narcissism (percentage narcissist) and gender composition. Narcissism predicted the number of rounds the group completed when controlling for the gender composition (average narcissism: $\beta = -.31$), $t(55) = 2.99$, $p < .05$ (percentage narcissism: $\beta = -.25$), $t(55) = -1.94$, $p = .06$, indicating that competitive groups with high levels of narcissism completed fewer rounds than competitive groups with lower levels of narcissism. (In terms of simple correlations, narcissism in each competitive group correlated negatively with the total number of rounds the forest lasted: average narcissism: $r[56] = -.33$, $p < .05$; percentage narcissists: $r[56] = -.28$, $p < .05$.)

Total harvest. Although narcissists harvested more in the first round across competitive groups, the total amount of forest harvested was not associated with narcissism across all the competitive groups in our study, $r = .09$, *ns.* This analysis presents an incomplete picture, however, because of issues of independence. We used hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) strategies to control for this lack of independence.

First, we investigated how much each individual chose to harvest over the repeated rounds. HLM is an appropriate analysis strategy because multiple observations are nested within the person (Raudenbush & Bryk, 2002). At Level 1, the amount each person harvested across trials is represented by an individual growth trajectory. The individual growth parameters, in turn, become the outcome variables in the Level 2 model. In other words, the parameters for the amount each person harvested across trials will depend on their gender and their narcissism scores at Level 2.

For the model below, we used data for the first six rounds only because all competitive groups completed six rounds and had enough hectares remaining to move on to a seventh round. Data were analyzed using the following model:

$$\text{Level 1: Amount Harvested Over Time} = \pi_{0i} + \pi_{1i}(\text{Round Number}) + e_{ti}$$
$$\text{Level 2: } \pi_{0i} = \beta_{00} + \beta_{01}(\text{Gender})_i + \beta_{02}(\text{Narcissism})_i + r_{0i}$$
$$\text{Level 2: } \pi_{1i} = \beta_{10} + r_{1i}$$

For this model, π_{0i} is the Level 1 intercept, is the initial amount each person harvested. π_{1i} is the growth rate for each person across bids. β_{00} is the mean of the initial amount harvested, β_{01} is the effect of each individual's gender, and β_{02} is the effect of each individual's narcissism score. β_{10} is the mean growth rate. The intraclass correlation (ICC) for this model is .25 (see Table 1 for a summary of this model). In summary, men took more initially than did women, and importantly, narcissists took more initially than did nonnarcissists. When gender and narcissism were incorporated as predictors of π_{1i} in the Level 2 model, they were not significant. Thus, taken together, results reveal that men and narcissists take more initially but do not differ from anybody else in their slopes or their growth rate. This pattern can be seen in Figure 1.

Second, we wanted to address the characteristics of the competitive group composition. Do groups with a higher percentage of narcissists harvest more or less than other groups and do narcissists harvest more than nonnarcissists in a group? Data were analyzed with the random-intercepts model with Level 1 predictors. This model enables the researcher to control for the backgrounds of the individuals who compose the group. As Raudenbush and Bryk (2002) explain, HLM is a good model for the current data structure because it does not incorrectly assume independent responses or behaviors when individuals are nested in a group. Finally, the estimates of treatment effects are efficient—the sources of variation in nested designs are appropriately represented and parameter estimates are efficient.

For this model, the composition of the group exerts a common influence on each individual. These effects only modify the mean level amount harvested for the competitive group. The distribution of effects among each individual in the group are unchanged. Thus, only the intercept, β_{0j}, varies across groups. The other Level 1 coefficients are constant. Below is the model for the present study:

$$\text{Level 1: Amount Harvested} = \beta_{0j} + \beta_{1j}(\text{Narcissism}) + r_{ij}$$
$$\text{Level 2: } \beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Gender Composition}) + \gamma_{02}(\text{Percentage Narcissists}) + u_{0j}$$
$$\text{Level 2: } \beta_{1j} = \gamma_{10}$$

For this model, narcissism scores were grand mean centered. β_{0j} is the adjusted mean outcome in group j after controlling for differences in narcissism scores. β_{1j} is the fixed Level 1 effect. γ_{00} is the adjusted mean of the amount harvested. γ_{01} is the effect of the gender composition. γ_{02} is the effect of the percentage of narcissists in the group. Percentage narcissists, as in our "rounds" analysis already reported, was based on a median split of NPI scores. Those who were above the mean were considered narcissists and those below the median were con-

TABLE 1:   **Summary of Results for the Amount Harvested Over Time From HLM Analyses**

	Reliability Coefficient Estimate			Level 2 Estimates			
Study	ICC	π_{0i}	π_{1i}	β_{00}	β_{01}	β_{02} (Gender)	β_{10} (Narcissism)
Group	.25	.77	.57	5.91**	.38*	.03**	.18**
Dyad	.21	.72	.59	6.86**	−.42*	.03*	.10**

NOTE: HLM = hierarchical linear modeling; ICC = intraclass correlation.
*p < .05. **p < .01.

sidered nonnarcissists. Percentage narcissists is the percentage of individuals in the group who were identified as narcissistic. (We also replicated this analysis with average narcissism score and found similar results.) γ_{10} is the pooled within-group regression coefficient in the Level 1 narcissism scores. The intraclass correlation (ICC) for the random-intercept model is .13 (see Table 2 for a summary of this model). Results indicate that within the competitive group, narcissists harvested more than their competitors did. Between competitive groups, however, groups with a high percentage of narcissists harvested less than did other groups.

Summary

Consistent with predictions, narcissism was associated with the tragedy of the commons in several ways. Narcissists desired more profit than did nonnarcissists (and there was no difference between individuals in terms of apprehension). These acquisitive tendencies were actualized in the first round of harvest when narcissists cut down more forest than did nonnarcissists. In the short term, then, narcissism was associated with increased harvest, but at a long-term cost to others and the commons. Competitive groups with high numbers of narcissists rapidly destroyed the common resource but afterward had less timber overall to show for their efforts. The narcissists in these groups did well with their harvests; those working with the narcissists suffered the poorest harvest.

STUDY 2

The goal of Study 2 was to replicate the findings of Study 1 using a dyadic task. This is important for two reasons. First, the dyadic social situation is more personal, and that may serve as a limiting factor on self-serving behavior (Sedikides, Campbell, Reeder, & Elliot, 1998). Second, participants have more direct/accurate knowledge of what the other person is harvesting. For example, if one person cuts 2 hectares of forest and the forest is depleted by 8 hectares, it is abundantly clear that the other participant is being greedy. Thus, the use of a dyadic task serves as a test of a boundary condition for narcissists' greed. Will narcissists refrain from competitive resource acquisition in this more personal context

or will, as we predict, narcissism be linked with the tragedy of the commons even in a dyadic context?

Method

Participants. Participants were 166 University of Georgia undergraduates (108 women, 58 men). All participants volunteered to participate in the study in exchange for partial course credit.

Materials and procedure. The procedure and materials were identical to that used in Study 1, with the exception that there were only two companies harvesting forest and the number of hectares available to harvest was reduced from 200 to 100.

Results

Descriptive statistics. We first calculated descriptive statistics. The mean NPI score was 15.5 (SD = 6.9). The mean RSE score was 73.9 (SD = 10.9). NPI and RSE scores correlated, r = .40, p < .001. For the dependent measures, the following values were obtained: acquisitiveness (M = 5.3, SD = 1.3), apprehension (M = 5.2, SD = 1.6), and hectares cut on the first round (M = 7.0, SD = 1.9). In addition, the total number of rounds before the forest was depleted (or the task ended) was M = 11.2, SD = 4.1, $range$ = 7-25.

Acquisitiveness. Consistent with predictions, narcissists reported greater acquisitiveness than did nonnarcissists, r = .18, p < .05. To control for the potential influence of gender on this association, we next placed narcissism and gender together in a regression model as simultaneous predictors of acquisitiveness. Narcissism remained a significant predictor in this model, β = .18, $t(163)$ = 2.3, p < .05. In contrast to narcissism, self-esteem by itself did not predict acquisitiveness, β = −.01, $t(164)$ = −.11, ns. Consistent with the findings of Study 1, this rules out a mediational role for self-esteem such as that reported in past research (Sedikides et al., 2004).

Apprehension. Consistent with predictions, narcissists did not report greater apprehension than did nonnarcissists, r = .06, ns. We next placed narcissism and gender together in a regression model as simultaneous predictors of apprehension. Narcissism was not a significant predictor in this model, t < .1. There was also no
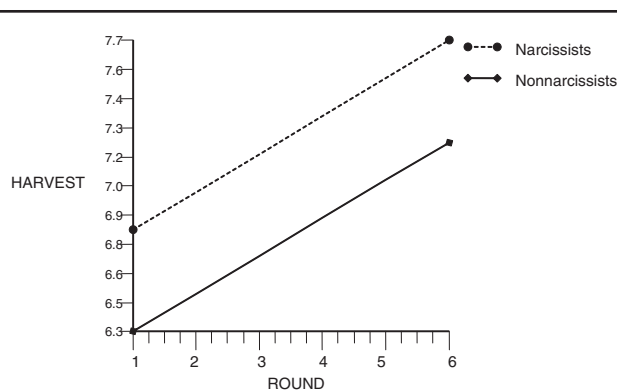
Figure 1   Amount harvested across rounds as a function of narcissism (Study 1).

NOTE: Narcissists reflect Narcissistic Personality Inventory (NPI) score 1 *SD* above mean; nonnarcissists reflect NPI score 1 *SD* below mean.

association between self-esteem and apprehension, $r = .04$, *ns*.

Forest harvested in the first round. Narcissists in the first round chose to cut marginally more forest than did nonnarcissists, $r = .13$, $p < .10$. To control for the potential influence of gender on this association, we next placed narcissism and gender together in a regression model as simultaneous predictors of forest cut in the first round. Narcissism dropped to nonsignificance in this model, $\beta = .12$, $t(163) = 1.6$, $p = .12$. Self-esteem by itself did not predict first round harvest, $\beta = .09$, $t(164) = 1.2$, *ns*. This rules out a mediational role for self-esteem.

A second set of analyses revealed that the association between narcissism and first round harvest was mediated by their self-reported acquisitiveness. First, we established that acquisitiveness predicted first round harvest in a simple regression, $\beta = .39$, $t(164) = 5.5$, $p < .001$. Next, we placed both narcissism and acquisitiveness as simultaneous predictors in a multiple regression with first round harvest as the outcome variable. The effect of acquisitiveness remained significant, $\beta = .38$, $t(163) = 5.2$, $p < .001$, and the effect of narcissism dropped to nonsignificance, $\beta = .06$, $t(163) = .8$, *ns*. The significance of this mediation was confirmed by a Sobel test: $z = 2.19$, $p < .05$.

Rounds before resource depletion. Individual-level narcissism was associated negatively with the number of rounds before the forest became completely depleted, $r = -.19$, $p < .05$. We next placed narcissism and gender together in a regression model as simultaneous predictors of rounds before resource depletion. Narcissism remained a significant predictor in this model, $\beta = -.23$, $t(163) = -3.0$, $p < .01$. There was also a significant effect of gender, $\beta = .21$, $t(163) = 2.7$, $p < .01$. Women depleted the forest more quickly than did men. Because this gender finding

was not replicated in Study 1, we refrain from making a strong interpretation. Self-esteem by itself did not predict rounds before depletion, $\beta = -.06$, $t(164) = -.81$, *ns*. This rules out a mediational role for self-esteem. Given the consistent failure to find a significant link between self-esteem and the relevant outcome variables in both Studies 1 and 2, the remaining analyses focus directly on narcissism.

As in Study 1, we conducted analyses using average narcissism scores and percentage narcissist scores for the competitive dyad. The total number of rounds each dyad completed was regressed on narcissism and gender composition. Narcissism predicted the number of rounds the competitive dyad completed, controlling for the gender composition (average narcissism: $\beta = -.31$), $t(80) = 2.99$, $p < .01$ (percentage narcissists: $\beta = -.19$), $t(80) = -1.79$, $p = .08$, indicating that narcissism was associated with more rapid resource depletion. Likewise, the gender composition predicted the number of rounds the competitive dyad completed controlling for narcissism (average narcissism: $\beta = .26$), $t(80) = 2.51$, $p < .05$ (percentage narcissists: $\beta = .24$), $t(80) = 2.82$, $p < .05$, indicating that competitive dyads consisting of more men completed more rounds when narcissism was controlled. (In simple correlation terms, average narcissism score in each dyad correlated negatively with the total amount of rounds that the forest survived, $r[81] = -.27$, $p < .05$, although this value did not reach significance for percentage narcissists, $r[81] = -.17$, $p = .11$.)

Total harvest. As in Study 1, the total amount of forest harvested was not associated with narcissism, $r = -.04$, *ns*. There was, however, a Narcissism × Gender interaction, $\beta = -.45$, $t(162) = -2.1$, $p < .05$. Decomposing the interaction, it was evident that for men (but not for women), narcissists harvested less forest overall than did nonnarcissists. We resisted making a strong interpretation of this interaction because it was not evident in Study 1. As in Study 1, we next used HLM to address the amount harvested.

For the model below, we used data for the first six rounds only because all competitive dyads completed six rounds and had enough hectares remaining to move on to a seventh round. Data were analyzed using the following model:

$$\text{Level 1: Amount Harvested Over Time} = \pi_{0i} + \pi_{1i}$$
$$(\text{Round Number}) + e_{ti}$$
$$\text{Level 2: } \pi_{0i} = \beta_{00} + \beta_{01}(\text{Gender})_i + \beta_{02}(\text{Narcissism})_i + r_{0i}$$
$$\text{Level 2: } \pi_{1i} = \beta_{10} + r_{1i}$$

For this model, π_{0i} = the Level 1 intercept, is the initial amount each person harvested. π_{1i} = the growth rate for each person across bids. β_{00} is the mean of the initial amount harvested, β_{01} is the effect of each individual's

TABLE 2: Summary of Results for the Total Harvested From HLM Analyses

	Level 1 Variance Components		Level 2 Estimates			
Study	ICC	β_{0j}	γ_{00}	γ_{01} *(Gender Composition)*	γ_{02} *(Percentage Narcissists)*	γ_{10} *(NPI)*
Group	.11	45.42	88.76**	−9.74*	−12.03*	.51*
Dyad	.45	61.58	78.93**	6.94*	−8.26*	.20*

NOTE: HLM = hierarchical linear modeling; ICC = intraclass correlation; NPI = Narcissistic Personality Inventory.
*$p < .05$. **$p < .01$.

gender, and β_{02} is the effect of each individual's narcissism score. β_{10} is the mean growth rate. The intraclass correlation (ICC) for this model is .21 (see Table 1 for a summary of this model). In summary, women took more initially than did men, and importantly, more narcissistic people took more initially than did less narcissistic people. When gender and narcissism were incorporated as predictors of π_{1i} in the Level 2 model, they were not significant. Thus, taken together, results reveal that women and narcissists take more initially but do not differ from anybody else in their slopes or their growth rate (see Figure 2).

Next, the random-intercepts model with Level 1 predictors was employed to investigate the amount each individual harvested. Below is the model for the present study:

Level 1: Amount Harvested = $\beta_{0j} + \beta_{1j}$(Narcissism) + r_{ij}
Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}$(Gender Composition) + γ_{02} (Percentage Narcissists) + u_{0j}
Level 2: $\beta_{1j} = \gamma_{10}$

For this model, narcissism was grand mean centered. β_{0j} is the adjusted mean outcome in dyad j after controlling for differences in narcissism scores. β_{1j} is the fixed Level 1 effect. γ_{00} is the adjusted mean of the amount harvested. γ_{01} is the effect of the gender composition. γ_{02} is the effect of the percentage of narcissists in the competitive dyad. (Similar results were obtained using mean narcissism scores.) γ_{10} is the pooled within-dyad regression coefficient in the Level 1 narcissism scores. ICC for the random-intercept model is .44 (see Table 2 for a summary of this model). Again, results reveal that within the dyad, narcissists harvested more than did their partners. Between competitive dyads, however, dyads with a great percentage of narcissists harvested less than did others.

Summary

The results of Study 2 were largely consistent with those of Study 1. Within the dyadic context, narcissism was associated with the tragedy of the commons in several ways. Narcissists desired more profit than did nonnarcissists (and there was no difference between individuals in apprehension). These acquisitive tendencies were actualized in the first round of harvest when

narcissists cut down marginally more forest than did narcissists. Narcissists' increased harvest was associated with more rapid depletion of the commons. Competitive dyads with greater average narcissism (and, marginally, with a higher percentage of narcissists) rapidly destroyed the common resource. As in Study 1, the competitive dyads with a greater percentage of narcissists had less timber overall to show for their efforts. Finally, as in Study 1, narcissists harvested more than the other member of their competitive dyads; nonnarcissists working alongside narcissists suffered the most.

GENERAL DISCUSSION

The results of these two studies provide some evidence of the trade-offs involving narcissism in a commons dilemma. Narcissists were successful in the short term; that is, they harvest more timber in the first round of harvesting. Narcissists also are successful to some degree in the long term; that is, they reliably harvest more than the nonnarcissists with whom they are competing. Across competitive groups and dyads, however, narcissists did not harvest more than nonnarcissists. This seeming inconsistency came about because when narcissists competed, the forest was depleted more rapidly and the total amount of forest harvested by the competitive group or dyad was diminished. In all, narcissism is linked to individual gain but also to significant social costs. First, those competing with the narcissist suffered the most, reporting the lowest harvest amounts. Second, the commons was exploited and destroyed more rapidly when narcissists were involved. This pattern of findings was found in both competitive four-person group and dyadic settings, with the results being descriptively more robust in the group setting.

The across-rounds analyses helped clarify the social mechanisms behind these findings. Narcissists began with a larger harvest in the first round than did nonnarcissists. Across the subsequent six rounds, both narcissists and nonnarcissists accelerated their harvest at a similar rate. This similar harvest rate coupled with the initial larger harvest by narcissists led to the rapid resource destruction observed when narcissists were involved. This finding suggests that one possible direction for restraining the destruction caused by narcissists'
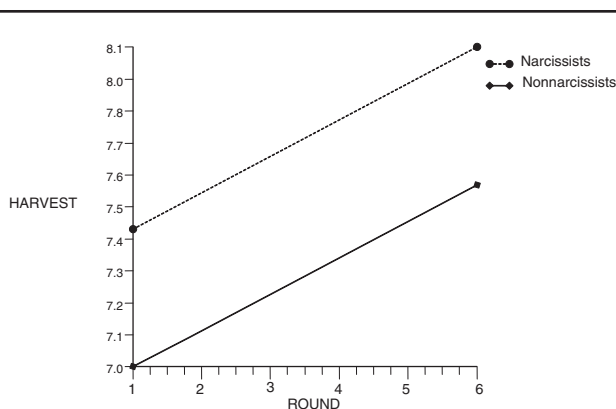
Figure 2   Amount harvested across rounds as a function of narcissism (Study 2).

NOTE: Narcissists reflect Narcissistic Personality Inventory (NPI) score 1 *SD* above mean; nonnarcissists reflect NPI score 1 *SD* below mean.

selfish behavior is to focus on initial behavior (e.g., the first-round harvest). If this could be attenuated, there is the possibility that the commons would be sustained for a longer time.

Although the intrapsychic mechanisms underlying narcissists' behavior were not systematically targeted in this research, several relevant (albeit tentative) findings should be noted. First, narcissists' elevated harvests occurred independently in the first round; there was no evidence that narcissists accelerated their harvests across subsequent rounds to a greater extent than did nonnarcissists. This suggests that narcissists approached the situation with an acquisitive, competitive orientation (Morf et al., 2000). This possibility is further supported by the mediation analyses using the acquisitiveness and apprehension items. Narcissists' elevated first-round harvest was mediated by acquisitiveness, but not apprehension. Finally, self-esteem did not appear to play a role in narcissists' behavior. Indeed, self-esteem did not independently predict any outcome variables of interest, thus ruling out its role as a mediator between narcissism and behavior in a commons dilemma. This lack of mediation differs markedly from past research on narcissism and psychological health (Sedikides et al., 2004) and supports a view that narcissism operates differently from self-esteem. Given the above findings, our tentative conclusion is that narcissists' competitive orientation plays an important role in these outcomes, but future research needs to be done to specifically assess other potential mechanisms such as low levels of empathy.

Implications

The study of narcissism is interesting to social and personality psychologists because it is a very "social" personality variable. Narcissism involves a self-regulatory agenda that is most manifest when the needs of the self are pitted against the needs of others (Morf & Rhodewalt, 2001). The majority of research on narcissism up to this point has focused productively on narcissists' approach to the social world. The present research shifts the focus more directly onto the social and societal consequences of narcissism. Based on past theory (Morf & Rhodewalt, 2001), we described narcissism as involving a series of trade-offs. Examining narcissism within a commons dilemma made one of these trade-offs clear. We found that narcissists gained a relative victory over the others in their group or dyad at the end of the harvest. The cost of this victory, however, was carried by the other competitive group members and the common resource, both of which suffered.

An interesting implication of this finding is that the societal costs of narcissism might actually at times be reinforced by society. This is a potential pitfall of selection (e.g., in a work setting) based on individual performance. This pitfall is revealed in a small thought experiment. Imagine that you wanted to create the best performing dyads based on the results of Study 2. If you used individual-level selection, you would pick the more successful individuals in each dyad (i.e., the narcissistic ones). Next, imagine that you formed new dyads with the successful individuals, and new dyads with the less successful individuals, and then put these dyads in another commons dilemma. The result would be that those in the successful new dyads would actually underperform and those in the unsuccessful new dyads would actually overperform. The narcissists' individual-level acquisitiveness would lead to dyadic-level disaster. The better choice would be to use dyadic-level selection. Picking the best performing dyads would result in the best dyadic performance.

Indeed, this line of reasoning also brings to mind issues of group-level selection and the evolution of narcissism and egalitarianism in humans (e.g., Boehm, 1999). Narcissistic behavior often pits the desires of the individual against the good of others. Although this is likely to have benefits for the narcissistic individual, it might not always be optimal for societal functioning. Thus, it is plausible that it is in the long-term good of societies to develop strategies for minimizing narcissistic behavior and reinforcing egalitarian behavior. Indeed, this may have been the case throughout human history, even to the extent that these strategies have been selected genetically (Boehm, 1997). Modern-day hunter-gatherers, for example, use leveling mechanisms to maintain egalitarian resource sharing. At the extremes, those individuals who are aggressive and selfish may even be killed by the group (Boehm, 1997, 1999). The same processes are seen in modern industrial societies when dishonest chief executive officers who

extract riches for the self at the expense of their own companies are fired, fined, or imprisoned. Studying these societal processes is an important topic for future research.

Caveats

There are several caveats to note regarding the present research. First, this research took place in a laboratory setting. Although laboratory studies have proven effective for studying behavior in a commons, it is important to have these findings replicated in the context of real-world decisions. It might not be possible to find a perfect example of a commons dilemma and obtain narcissism scores from each of several key decision makers. Nevertheless, it might be possible to study the link between narcissism and general approaches to commons issues in organizational decision makers.

Second, our task was limited to 25 rounds. If there was no limit, the differences between groups with high or low percentages of narcissists could actually be larger (especially in terms of the total amount of timber harvested) because the groups with fewer narcissists may have maintained a cooperative stance for a longer period. This would be an interesting question for future research.

Conclusions

In the context of a resource dilemma, narcissism confers a benefit for the self but a longer term cost to others and to the commons. We hope that future research continues examining the social and societal costs of narcissism as well as strategies for mitigating these costs.

NOTES

1. We also included the Psychological Entitlement Scale (PES; Campbell et al., 2004). The PES was associated with acquisitiveness in Studies 1 ($r = .17$, $p < .01$) and 2 ($r = .23$, $p < .01$). However, in neither study was the PES linked to round 1 harvest (rs = .08 and .07, respectively). This lack of association ruled out the potential role of the PES as a mediator between narcissism and harvest.

2. Gender main effects and interactions were tested in all regression analyses. These are only reported if they reached significance.

REFERENCES

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Batson, C. D., & Moran, T. (1999). Empathy-induced altruism in a prisoner's dilemma. *European Journal of Social Psychology*, *7*, 909-924.

Boehm, C. (1997). Impact of the human egalitarian syndrome on Darwinian selection mechanics. *American Naturalist*, *150*, 100-121.

Boehm, C. (1999). *Hierarchy in the forest.* Cambridge, MA: Harvard University Press.

Bradlee, P. M., & Emmons, R. A. (1992). Locating narcissism within the interpersonal circumplex and the five-factor model. *Personality and Individual Differences*, *13*, 821-830.

Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? *Journal of Personality and Social Psychology*, *75*, 219-229.

Buss, D. M., & Chiodo, L. M. (1991). Narcissistic acts in everyday life. *Journal of Personality*, *59*, 179-215.

Campbell, W. K. (1999). Narcissism and romantic attraction. *Journal of Personality and Social Psychology*, *77*, 1254-1270.

Campbell, W. K., Bonacci, A. M., Shelton, J., Exline, J. J., & Bushman, B. J. (2004). Psychological entitlement: Interpersonal consequences and validation of a new self-report measure. *Journal of Personality Assessment*, *83*, 29-45.

Campbell, W. K., Goodie, A. S., & Foster, J. D. (2004). Narcissism, overconfidence, and risk attitude. *Journal of Behavioral Decision Making*, *17*, 297-311.

Campbell, W. K., Reeder, G. D., Sedikides, C., & Elliot, A. J. (2000). Narcissism and comparative self-enhancement strategies. *Journal of Research in Personality*, *34*, 329-347.

Campbell, W. K., Rudich, E., & Sedikides, C. (2002). Narcissism, self-esteem, and the positivity of self-views: Two portraits of self-love. *Personality and Social Psychology Bulletin*, *28*, 358-368.

Carroll, L. (1987). A study of narcissism, affiliation, intimacy, and power motives among students in business administration. *Psychological Reports*, *61*, 355-358.

Emmons, R. A. (1984). Factor analysis and construct validity of the narcissistic personality inventory. *Journal of Personality Assessment*, *48*, 291-300.

Farwell, L., & Wohlwend-Lloyd, R. (1998). Narcissistic processes: Optimistic expectations, favorable self-evaluations, and self-enhancing attributions. *Journal of Personality*, *66*, 65-83.

Foster, J. D., Shrira, I., & Campbell, W. K. (2003, June). *The trajectory of relationships involving narcissists and nonnarcissists.* Poster presented at the annual meeting of the American Psychological Society, Atlanta, GA.

Gabriel, M. T., Critelli, J. W., & Ee, J. S. (1994). Narcissistic illusions in self-evaluations of intelligence and attractiveness. *Journal of Personality*, *62*, 143-155.

Gosling, S. D., John, O. P., Craik, K. H., & Robins, R. W. (1998). Do people know how they behave? Self-reported act frequencies compared with on-line codings by observers. *Journal of Personality and Social Psychology*, *74*, 1337-1349.

Hardin, G. (1968). The tragedy of the commons. *Science*, *162*, 1243-1248.

Hogan, R., & Hogan, J. (2002). Assessing leadership: A view from the dark side. *International Journal of Selection and Assessment*, *9*, 40-51.

John, O. P., & Robins, R. W. (1994). Accuracy and bias in self-perception: Individual differences in self-enhancement and the role of narcissism. *Journal of Personality and Social Psychology*, *66*, 206-219.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*, 280-287.

Kernis, M. H., & Sun, C. (1994). Narcissism and reactions to interpersonal feedback. *Journal of Research in Personality*, *28*, 4-13.

Lasch, C. (1979). *The culture of narcissism: American life in an age of diminishing expectations.* New York: Norton.

Morf, C. C., & Rhodewalt, F. (2001). Unraveling the paradoxes of narcissism: A dynamic self-regulatory processing model. *Psychological Inquiry*, *12*, 177-196.

Morf, C. C., Weir, C., & Davidov, M. (2000). Narcissism and intrinsic motivation: The role of goal congruence. *Journal of Experimental Social Psychology*, *15*, 424-438.

Paulhus, D. L. (1998). Interpersonal and intrapsychic adaptiveness of trait self-enhancement: A mixed blessing? *Journal of Personality and Social Psychology*, *74*, 1197-1208.

Raskin, R. N., & Novacek, J. (1991). Narcissism and the use of fantasy. *Journal of Clinical Psychology*, *47*, 490-499.

Raskin, R. N., & Terry, H. (1988). A principle components analysis of the Narcissistic Personality Inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology*, *54*, 890-902.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Newbury Park, CA: Sage.

Rhodewalt, F., & Morf, C. C. (1995). Self and interpersonal correlates of the narcissistic personality inventory. *Journal of Research in Personality, 29,* 1-23.

Rhodewalt, F., & Morf, C. C. (1998). On self-aggrandizement and anger: A temporal analysis of narcissism and affective reactions to success and failure. *Journal of Personality and Social Psychology, 74,* 672-685.

Robins, R. W., & Beer, J. S. (2001). Positive illusions about the self: Short-term benefits and long-term costs. *Journal of Personality and Social Psychology, 80,* 340-352.

Rose, P., & Campbell, W. K. (2004). Greatness feels good: A telic model of narcissism and subjective well-being. In S. P. Shohov (Ed.), *Advances in psychology research* (Vol. 31, pp. 1-15). Hauppauge, NY: Nova.

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press.

Sedikides, C., Campbell, W. K., Reeder, G. D., & Elliot, A. J. (1998). The self-serving bias in relational context. *Journal of Personality and Social Psychology, 74,* 378-386.

Sedikides, C., Rudich, E. A., Gregg, A. P., Kumashiro, M., & Rusbult, C. (2004). Are normal narcissists psychologically healthy? Self-esteem matters. *Journal of Personality and Social Psychology, 87,* 400-416.

Sheldon, K. M., & McGregor, H. A. (2000). Extrinsic value orientation and "the tragedy of the commons." *Journal of Personality, 68,* 383-411.

Van Lange, P. A., Otten, W., DeBruin, E. M. N., & Joireman, J. A. (1997). Development of prosocial, individualistic, and competitive orientations: Theory and preliminary evidence. *Journal of Personality and Social Psychology, 73,* 733-746.

Wallace, H. M., & Baumeister, R. F. (2002). The performance of narcissists rises and falls with perceived opportunity for glory. *Journal of Personality and Social Psychology, 82,* 819-834.

Watson, P. J., Grisham, S. O., Trotter, M. V., & Biderman, M. D. (1984). Narcissism and empathy: Validity evidence for the narcissistic personality inventory. *Journal of Personality Assessment, 45,* 159-162.

Watson, P. J., Morris, R. J., & Miller, L. (1997-1998). Narcissism and the self as continuum: Correlations with assertiveness and hypercompetitiveness. *Imagination, Cognition, and Personality, 17,* 249-259.