

Low Subjective Social Status Promotes Ruminative Coping¹

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Correlational research has shown that lower social standing is associated with poorer health, but it is unknown if this association is causal. Two experiments tested whether randomly assigned low subjective social status would promote ruminative coping, a mechanism leading to the development of poor health outcomes. Participants were college females, split about evenly between Blacks and Whites. Experiment 1 ($N = 39$) found those imagining themselves at the bottom (vs. top) of a social ladder showed more ruminative coping using rater-assessed responses. Experiment 2 ($N = 42$) replicated these results, extended them with a self-report outcome measure, and demonstrated that negative affect did not mediate between subjective social status and ruminative coping. Across both experiments, race/ethnicity had no effect.

Health and illness are socially patterned (Berkman & Kawachi, 2000), with those lower in the social hierarchy typically suffering from poorer health, including greater rates of a wide range of diseases and earlier death

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(Marmot, 2006). Increasing evidence shows that material goods alone—for example, health insurance, living conditions, physical exposures—cannot entirely account for these health disparities (Adler & Snibbe, 2003). The perception of one's relative ranking in a social hierarchy, also known as *subjective social status*, appears to be another contributor.

Correlational research has suggested that as early as adolescence, lower subjective social status is associated with poorer health behaviors and indices (smoking: Finkelstein, Kubzansky, & Goodman, 2006; overweight: Goodman et al., 2003; worse self-rated health: Goodman, Huang, Schafer-Kalkhoff, & Adler, 2007), even after accounting for objective social status indicators, such as parent education. Seemingly small effects of adolescents' subjective social status on health may accrue through adulthood and later life (Goodman, 1999; Goodman et al., 2001, 2007) and exert a measurable, and perhaps preventable, toll on health. This is consistent with findings in adult samples that have revealed an association between lower subjective social status and worse health outcomes, including those connected to psychological and physiological functioning (Adler, Epel, Castellazzo, & Ickovics, 2000; Demakakos, Nazroo, Breeze, & Marmot, 2008), physical activity difficulties (Hu, Adler, Goldman, Weinstein, & Seeman, 2005), and chronic illness (Singh-Manoux, Adler, & Marmot, 2003).

Association Between Subjective Social Status and Health

In most of the research to date, subjective social status has been observed, but not randomly assigned. Thus, the nature of the association between subjective social status and health remains unclear. Subjective social status might cause changes in health status. For instance, chronically seeing oneself as at the bottom of the social hierarchy could be detrimental to one's health (Wilkinson, 2004). Or the causation might move in the other direction: Poor mental or physical health could lower one's subjective social status (akin to the social drift hypothesis, Link & Phelan, 1995). For example, ill health might force someone to quit a demanding, prestigious job, thus decreasing self-perceived social status as a result of loss of rank, as well as income. Alternatively, one or more third variables (e.g., negative affect, parent education, race/ethnicity) could influence both subjective social status and health outcomes. In an observational study with a longitudinal design (Goodman et al., 2007), subjective social status predicted changes in self-rated health. But as yet, little research has demonstrated the causal influence of subjective social status using the gold standard for determining cause and effect: an experimental design. This is, in large part, because randomizing health exposures in the fashion of a true experiment is neither practical nor ethical *ex vivo*.

One exception is a study in which experimentally assigned subordinate (vs. dominant) social status caused deleterious affective and cardiovascular changes (Mendelson, Thurston, & Kubzansky, 2008). The research protocol used an intricate behavioral manipulation adapted from laboratory-based sociological studies of social hierarchies in which artificial social groups are created and then imbued with status meaning. This type of approach creates a social hierarchy devoid of meaning outside the laboratory, intended to capture “pure” status, without confounding status factors, such as race/ethnicity. How such factors interact with laboratory simulations remains unknown. Though the behavioral manipulation is a strength, it raises the question whether a more parsimonious or subtle manipulation also might be effective. More importantly, the mechanism by which assignment to subordinate status led to its internalization and subsequent adverse outcomes in Mendelson et al.’s study remains to be investigated. As detailed subsequently, lower subjective social status and greater ruminative coping predict some health outcomes in common; therefore, we suggest that ruminative coping is a central factor in this regard.

Ruminative Coping: Shaped by Subjective Social Status?

Ruminative coping is the process of chronically paying attention to the causes, consequences, and symptoms of one’s distress (Nolen-Hoeksema, 1991). Like subjective social status, across numerous studies ruminative coping has predicted a range of health-related outcomes. These include health behaviors (sleep: Guastella & Moulds, 2007; substance use: Nolen-Hoeksema & Harrell, 2002) and physiological markers (cardiovascular reactivity: Glynn, Christenfeld, & Gerin, 2007; Pieper, Brosschot, van der Leeden, & Thayer, 2007; cortisol responses: McCullough, Orsulak, Brandon, & Akers, 2007; immune responses: Thomsen et al., 2004).

Moreover, some health outcomes are associated with both subjective social status and ruminative coping. One example is a prolonged heightening of sympathetic nervous system (SNS) arousal, a risk factor for later disease (McEwen & Seeman, 1999). Measures of SNS activity include systolic blood pressure and heart rate. Those with lower subjective social status tend to have higher resting systolic blood pressure (Adler et al., 2008), as do those who engage in more ruminative coping (Hogan & Linden, 2004). Similarly, both subjective social status and rumination are associated with relatively increased heart rate. Those who perceive themselves to be lower in status (Adler et al., 2000) or who ruminate more (Brosschot, Gerin, & Thayer, 2006; Pieper et al., 2007) experience elevated heart rate. Thus, ruminative coping may be the mechanism through which subjective social status has an effect on

some predictors of health. Because little evidence as yet links subjective social status to ruminative coping, a crucial next research step in this domain is to examine whether a link exists.

Several other observations also support the idea that ruminative coping is an important psychological factor that may be associated with social status. In both laboratory (Rusting & Nolen-Hoeksema, 1998) and observational field research (Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema, Morrow, & Fredrickson, 1993), women have shown greater rumination than have men. And, according to studies using both objective (Jun, Subramanian, Gortmaker, & Kawachi, 2004) and subjective (Singh-Manoux, Marmot, & Adler, 2005) indicators, as a group, women evidence less social status than do men.

Though research has shown that factors associated with low social status—namely, female gender—predict ruminative coping, whether perceiving low social status *per se* causes ruminative coping has never been examined directly. One study examined mediators of the gender difference in ruminative coping, and although the authors did not examine social status directly, the mediators they examined are related to social status. Specifically, analyzing data from a community sample, Nolen-Hoeksema and Jackson (2001) found that belief in the lack of controllability of one's own emotions, belief in the need to attend to the emotional tone of relationships, and relatively low mastery of situations more generally mediated the gender difference in ruminative coping. Arguably, low-status positions are defined, at least partly, by each of these constructs (cf. Young, 1990).

The aim of the current paper is to test whether subjective social status will influence ruminative coping in an experimental context. Previous research has suggested that people might engage in ruminative coping as an attempt to gain insight about their distress (Lyubormirsky & Nolen-Hoeksema, 1993). But such attempts are misguided and, over time, could be self-damaging because ruminative coping predicts a variety of negative health outcomes. Given the potential broad harm of ruminative coping, it seems useful to pinpoint its sources. We hypothesize that lower subjective social status will predict greater ruminative coping.

Subjective Social Status and Race/Ethnicity

Race/ethnicity is a powerful social marker of status that cannot be randomized and that overlays all simulated laboratory conditions. We examine whether our model will operate similarly in racial/ethnic groups that, in the United States, are of low status (Black) and high status (White). By one view, being Black in a society that devalues Blacks as a group may amplify the

deleterious effects of low subjective social status. Premature illness is one example of the amplified wear and tear—known as *weathering*—that occurs more severely among Black women than among their White counterparts (Geronimus, 2001) and may be related to low status. On the other hand, Blacks may be relatively immune to the effects of experimentally induced low subjective social status by virtue of already learning how to cope with it vis-à-vis race/ethnicity (see Crocker & Major, 1989, about why stigmatized groups do not always have worse mental health outcomes). By that reasoning, Blacks might be less sensitive to low subjective social status. This hypothesis is supported by data on subjective social status in adolescence: Black teens with less educated parents perceived their social status as higher than did their White counterparts (Goodman et al., 2007).

The literature to date is equivocal about whether the association between subjective social status and health is invariant between Black and White Americans. Goodman et al.'s (2007) study demonstrated Black–White similarities in this domain, as longitudinal changes in subjective social status predicted changes in self-rated health, regardless of race/ethnicity. Another investigation reported Black–White differences: In a study of pregnant women (Ostrove, Adler, Kuppermann, & Washington, 2000), for Black Americans, there was no association between subjective social status and self-rated health; but for their White counterparts, these constructs were positively associated. Yet, other findings among American adults have suggested Black–White similarities in the association of subjective social status and some health indicators (e.g., depression), but Black–White differences in the association of subjective social status with other health indicators (e.g., global self-rated health and hypertension; Adler et al., 2008). The findings from the observational data in these investigations have persisted, even when controlling for objective socioeconomic status indicators. Does race/ethnicity moderate the effect of subjective social status on ruminative coping? We test this as an empirical question in our studies.

Negative Affect as a Mediator Between Low Social Status and Ruminative Coping?

People in low-status positions may ruminate more than their higher status counterparts do because low status induces negative affect. As mentioned previously, recent experimental research has found that randomly assigned subordinate (vs. dominant) status resulted in more negative affect (Mendelson et al., 2008). In addition, cross-sectional research has demonstrated that angry, depressive, and anxious states—types of negative affect—were linked to rumination (Thomsen, Mehlsen, Christensen, & Zachariae, 2003), and

prospective data showed that greater negative affect predicted increased ruminative coping (Nolen-Hoeksema, Stice, Wade, & Bohon, 2007).

Alternatively, negative affect could operate as a partial mediator (cf. Gallo & Matthews, 2003). Previous survey research using a community-based sample of women suggested that the associations of subjective social status with health indicators (i.e., heart rate, sleep latency) persisted beyond negative affect (Adler et al., 2000). Corroborating these findings, other survey research using a nationally representative U.S. sample found that the association between subjective social status and self-rated health again persisted beyond negative affect (Operario, Adler, & Williams, 2004). However, these studies did not test whether negative affect was a mechanism by which lower social status predicts worse outcomes. Thus, we also examine whether experimentally induced low social status will increase ruminative coping by increasing negative affect.

Overview of the Current Studies

In two experiments, we test whether there will be a causal association between subjective social status and ruminative coping. We hypothesize that those who are randomly assigned to see themselves at the bottom of the social hierarchy—that is, with low subjective social status—will ruminate more than will peers who are randomly assigned to the top of the social hierarchy. We test alternative explanations for the association, examining third variables potentially associated with both subjective social status and ruminative coping (e.g., objective social status, assessed by parent education). Further, we examine whether race/ethnicity (Black or White) will moderate the hypothesized causal relationship.

In the first experiment, ruminative coping is measured using open-ended responses; in the second experiment, we additionally assess ruminative coping using closed-ended responses. Experiment 2 also tests whether negative mood will operate as a mediator of the effect of low social status on ruminative coping. To disentangle social status from gender, we examined women, as ruminative coping is more prevalent among females (Nolen-Hoeksema et al., 1999) and because the pool of available participants was predominantly female. We hypothesize that inducing participants to see themselves in a low social status position will promote ruminative coping.

Experiment 1

Using a 2 (Social Status: high vs. low) \times 2 (Race/Ethnicity: Black vs. White) design, we test whether students imagining themselves at the bottom

of a social status ladder at a future college reunion will show higher levels of ruminative coping than will those imagining themselves at the top. We determined ruminative coping by raters' assessments of journal entries written by participants imagining it was the day after their 5-year college reunion.

Method

Participants

Study participants were 39 undergraduates at a northeastern college who participated in exchange for \$5 and a chance to win a gift certificate at the campus bookstore. Inclusion criteria were that participants were female; self-identified as either White American or Black/African American; attended the college since their first year (i.e., were not transfer students); and were between 18 and 23 years of age. White Americans comprised 51% ($n = 20$) of the sample, and Black Americans comprised 49% ($n = 19$). Approval to conduct the research was obtained from the Institutional Review Board (IRB) of the college campus at which the participants were recruited.

Procedure

The participants responded to advertising around campus (through flyers, campus organizations, classes, and snowball sampling). Once it was confirmed that the individuals met the inclusion criteria, they were scheduled for the experimental session. Upon her arrival at the laboratory, the participant was greeted by a female experimenter. She was then directed to a room with a table, chairs, a small stack of blank paper, and a pen. The experimenter gave the participant a basic overview of the study, obtained informed consent, handed her a demographic questionnaire, and left the participant to complete it.

The experimenter then returned to the room and presented the participant with a modified version of the Subjective Social Status scale (Adler et al., 2000). This scale uses a ladder to represent American society visually. Typically, participants indicate their subjective social status by marking the rung of the 10-runged ladder that most closely fits their perceived status. For the current experiment, we used the measure as a manipulation of subjective social status. Given that our participants were all college students, we removed reference to education and modified the prompt to read as follows:

Imagine that this ladder pictures how American society is set up. At the top of the ladder are the people who are the best off:

they have the most money and the jobs that bring the most respect. At the bottom are people who are the worst off: they have the least money and no job, or jobs that no one wants or respects.

On the next page, the participants read the following: "Now think about yourself five years from your planned graduation date. You are at the five-year college reunion for your class." The high-status condition prompted participants as follows: "Imagine yourself at the top of the ladder. Take a minute to really picture the details of your life at this time." The low-status condition was identical, except participants were instructed to imagine themselves at the bottom of the ladder. Condition was randomly assigned within race/ethnicity. The experimenters were naïve to condition during the entire session.

The participants were then prompted to write, as if to a personal journal the day after they attended their 5-year college reunion, describing in detail how they would think, act, and feel if they were at the designated place on the ladder. They were left to write privately, indicating their responses on the blank page(s) provided on the table. When they were finished writing, the participants alerted the experimenter, who then administered a written manipulation check that asked "Where were you asked to imagine yourself on the ladder?" and asked participants to circle either the bottom or top. Next, the participants were given a packet with several distraction questions to counteract any negative mood that might have been induced in the course of the experiment, following procedures shown to be effective from previous research (e.g., Rusting & Nolen-Hoeksema, 1998). Finally, the participants were debriefed (underscoring that they were randomly assigned to their conditions), paid, and thanked for their time. The journal entries were transcribed into separate documents, which were identified only by participant number.

Measures

Ruminative coping. Ruminative coping was measured by raters' assessments of the transcribed journal entries. Two raters, who were unaware of the hypotheses, independently determined how much ruminative coping was indicated by the open-ended responses. They were trained using 10 practice stories from pilot data, appraising self-focused rumination and emphasis on three elements in the stories: the causes, consequences, and symptoms of distress, consistent with Nolen-Hoeksema's (1991) definition of *rumination*. Ratings were 0 (*none to very little*), 1 (*some*), or 2 (*a lot*). Cronbach's alpha to

indicate consistency across coders (Stemler, 2004) was .86, indicating an acceptable interrater reliability. Ruminative coping for analyses was calculated by averaging across the raters.

Potential covariates. There might have been extraneous factors associated with both subjective social status and ruminative coping. We measured these as potential covariates in the demographic questionnaire. These factors were age (in years); parents' education (highest each for mother and father, or equivalent parental figures) determined on an 8-point scale ranging from 1 (*elementary school*) to 8 (*graduate/professional degree*); participant's year in college; grade point average (GPA); and racial identification. Racial identification was rated on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much so*) how much the participant identified with her racial/ethnic group. Word count of each participant's diary entry was included as another potential covariate.

Post-manipulation questions. Perhaps participants ruminated not because they imagined themselves at the assigned place on the status ladder, but because seeing themselves at that rank was discrepant with their hoped-for future selves. To explore this, we asked the participants several post-manipulation questions. To examine whether their assigned status led them to ruminate, we asked them to respond (*No* or *Yes*) to the following statement: "Imagining the experience of being at the *assigned position* on the ladder caused me to worry." Those who answered *Yes* were asked to respond to two additional statements, which were rated on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much so*):

Sometimes people worry not because being at a particular place on the ladder would be so bad, but because it is *different* from their expectations for real life. Imagining being at a *different* place than I'd expect for myself in real life caused me to worry.

Sometimes people worry because they imagine being at a particular place on the ladder would just be unpleasant, not because the place is different from what they expect. Imagining the experience of being at the *assigned position* of the ladder caused me to worry.

Results

First, we computed means and standard deviations for the dependent variable and potential covariates (ruminative coping, $M = 0.69$, $SD = 0.82$; age, $M = 19.62$, $SD = 1.37$; mother's education, $M = 6.15$, $SD = 1.79$; father's education, $M = 5.92$, $SD = 1.91$; participant's year in college,

$M = 2.10$, $SD = 1.07$; GPA, $M = 3.24$, $SD = 0.41$; racial identification, $M = 5.82$, $SD = 1.39$; diary entry word count, $M = 271.82$, $SD = 128.11$). Next, we tested the hypothesis that participants who were induced to see themselves low (vs. high) in social status would promote ruminative coping. The manipulation check shows that all participants indicated the correct placement on the ladder. We analyzed the data with a 2×2 ANOVA model. The independent variables were manipulated subjective social status (low vs. high status), race/ethnicity (Black vs. White), and their interaction. The dependent variable was ruminative coping. To warrant inclusion in the analytical model, potential covariates should be related to the dependent variable (Neter, Kutner, Nachtsheim, & Wasserman, 1996, p. 1012). Because none of the potential covariates show any statistically significant correlation ($p < .05$) with ruminative coping, none were included in the model.

Participants who imagined themselves at the bottom of the ladder employed ruminative coping more than did those at the top (see Figure 1), $F(1, 35) = 40.83$, $p < .0001$. Neither race/ethnicity, $F(1, 35) = 0.50$, $p = .48$,

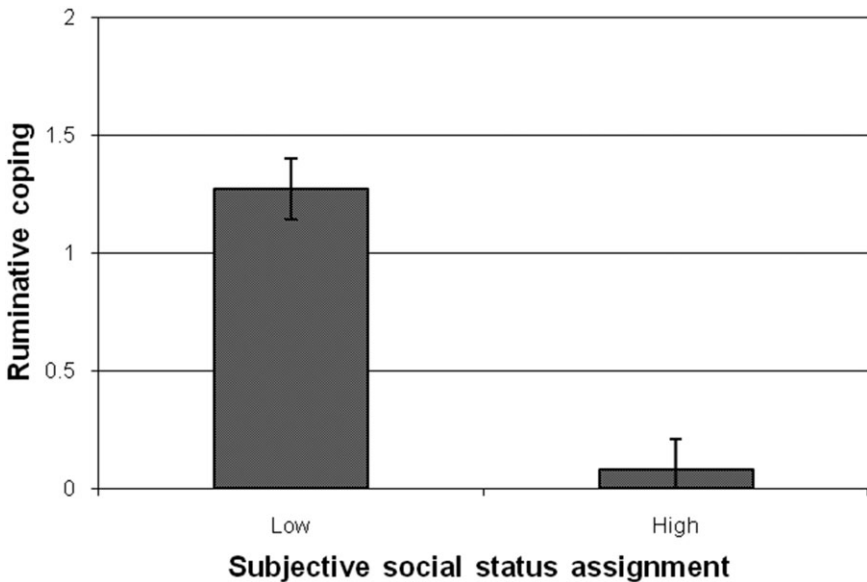


Figure 1. Effect of subjective social status on ruminative coping (raters' assessment): Experiment 1. Note. Figure presents estimated marginal means for ruminative coping by subjective social status assignment, collapsed across Blacks and Whites. Ruminative coping was determined by raters' assessments of open-ended responses. Vertical lines depict standard errors of the means.

nor the subjective social status by race/ethnicity interaction, $F(1, 35) = 0.04$, $p = .85$, show a significant effect on ruminative coping.

Regarding the post-manipulation measures, about half of the participants indicated that being at the assigned position caused them to worry. Among them, there were no significant differences by ladder assignment, $\chi^2(1, N = 21) = 0.43$, $p = .51$, and they were administered the two additional questions. There were no differences by ladder placement to the question about their perceived social status being different from expectations, $t(22) = 1.27$, $p = .22$. However, there were significant differences on the question about the assigned status being unpleasant rather than unexpected, with those assigned to the bottom of the ladder reporting more worry because of unpleasantness ($M = 5.77$, $SD = 0.93$) than those at the top ($M = 3.73$, $SD = 1.49$), $t(22) = 4.10$, $p < .0001$.

Discussion

Experiment 1 demonstrated that low subjective social status generated greater ruminative coping than did high subjective social status after an imagined future college reunion. Post hoc analyses suggest that this difference in ruminative coping is a result not of unmet expectations, but instead of the greater perceived unpleasantness associated with occupying low versus high social status. Race/ethnicity did not affect rumination or interact with assigned subjective social status.

Experiment 2

Experiment 2 is designed to replicate and extend the findings of Experiment 1 in two ways. First, Experiment 2 addresses whether the effect of subjective social status will be found using a closed-ended measure. Second, Experiment 2 tests if negative mood will mediate the effect of social status on ruminative coping. Again, we sampled both Blacks and Whites to examine whether the similarities would replicate. Approval to conduct the research was granted from the IRB of the college campus at which the participants were recruited.

Method

Participants

Study participants were 42 undergraduates at the same college as in Experiment 1, who participated in exchange for \$20 cash and a chance to win

a gift certificate at the campus bookstore. Inclusion criteria were that the participants were female; self-identified as either White American or Black/African American; attended the college since their first year (i.e., were not transfer students); were between 18 and 23 years of age; and did not participate in Experiment 1. White Americans comprised 52% of the sample ($n = 22$), and Black Americans comprised 48% ($n = 20$).

Procedure

The general procedure during the laboratory session is similar to that of Experiment 1. As in Experiment 1, after they completed the consent form and demographic questionnaires, the participants were randomly assigned to imagine themselves at the top or bottom of the ladder at their 5-year college reunion and to write, as if to a personal journal, about how they would feel under those circumstances. They then completed a packet of closed-ended items that include measures of negative affect, ruminative coping, and filler items. The manipulation check and distraction questions followed, and, as before, the session ended with debriefing and remuneration.

Measures

Ruminative coping. To replicate Experiment 1, we again determined ruminative coping by raters' assessments of transcribed diary entries. Additionally, we used a self-report, closed-ended measure with the 10-item version of the Ruminative Responses Scale (Nolen-Hoeksema & Jackson, 2001). The items asked participants what they generally do when they are upset. The prompt was modified so that participants were instructed to answer "imagining yourself in character" consistent with the manipulation. Responses were rated on a 4-point scale ranging from 1 (*never or almost never*) to 4 (*always or almost always*). Sample items for the ruminative coping subscale include "Think about all my shortcomings, failings, faults, mistakes," and "Think about a recent situation, wishing it had gone better." The alpha in the current sample was .77.

Negative affect. We assessed negative affect from both content coding each participant's diary entry and administering a self-report scale. The transcribed diary entries were analyzed using the Linguistic Inquiry and Word Count (LIWC) program (Pennebaker, Francis, & Booth, 2003), designed to capture a range of psychological processes through language use, including affect. The LIWC program has been validated extensively (Kahn, Tobin, & Massey, 2007; Pennebaker & King, 1999) and widely applied (e.g.,

Handelman & Lester, 2007; McCullough, Root, & Cohen, 2006). Each word in a participant's text was compared against the program's internal dictionary in the category of negative affect. For every participant, LIWC calculated a score of the percentage of words reflecting negative affect.

We also administered the widely used Positive and Negative Affective Schedule (PANAS; Watson, Clark, & Tellegen, 1988), a self-report scale. This measure includes 10 adjectives describing positive affect (e.g., *enthusiastic*) and 10 describing negative affect (e.g., *upset*). Respondents rated each adjective on a 5-point scale ranging from 1 (*very slight or not at all*) to 5 (*extremely*) to reflect how they felt. For the current study, the participants were instructed to answer, "imagining yourself in character" consistent with the manipulation, and were asked to indicate how they would feel if they were in the scenario they just recounted in their diary entries. The alpha for the negative affect subscale in the current sample was .91.

Potential covariates. The same covariates measured in Experiment 1 were measured in the demographic questionnaire during Experiment 2.

Results

We computed the means and standard deviations for the dependent variable assessed with open- and closed-ended measures, the potential mediator, and potential covariates. The results were as follows: ruminative coping (open-ended), $M = 0.68$, $SD = 0.79$; ruminative coping (closed-ended), $M = 2.49$, $SD = 0.56$; age, $M = 19.33$, $SD = 1.14$; mother's education, $M = 6.19$, $SD = 1.81$; father's education, $M = 6.00$, $SD = 1.75$; participant year in college, $M = 2.26$, $SD = 1.23$; GPA, $M = 3.46$, $SD = 0.41$; racial identification, $M = 5.45$, $SD = 1.69$; and diary entry word count, $M = 278.67$, $SD = 100.21$.

The manipulation check reveals that all participants imagined themselves at the status level they were assigned. As in Experiment 1, the independent variables were randomly assigned subjective social status (low/high status) and race/ethnicity (Black/White). The dependent variable was ruminative coping, this time operationalized using both open- and closed-ended measures. We examined potential covariates for inclusion in the main analyses. Because none of the potential covariates showed any statistically significant correlation ($p < .05$) with ruminative coping assessed either way, none were included in subsequent analytical models. Thus, for each assessment of the dependent variable, we conducted a 2 (Subjective Social Status: high vs. low) \times 2 (Race/Ethnicity: Black vs. White) ANOVA.

Replicating Experiment 1, we found that those in the low subjective social status condition ($M = 1.33$, $SD = 0.62$) ruminated more (as determined by

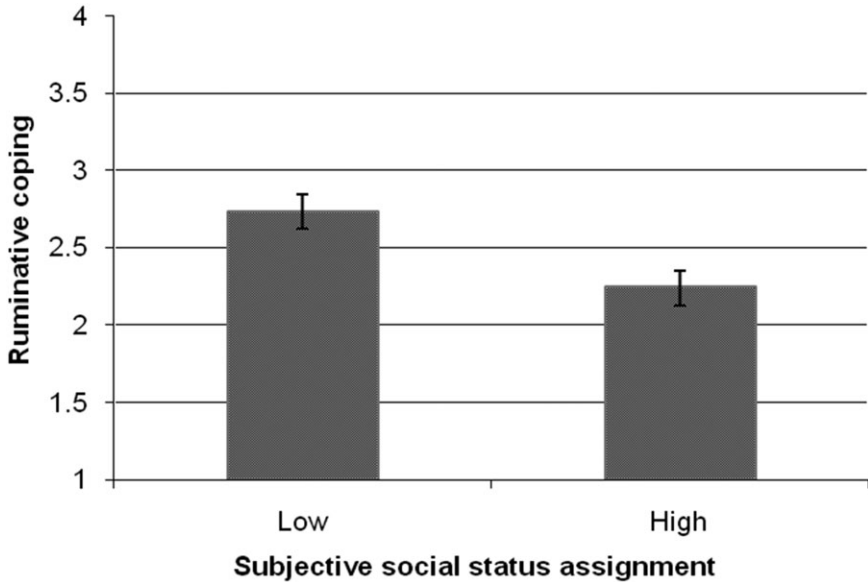


Figure 2. Effect of subjective social status on ruminative coping (self-report): Experiment 2. Note. Figure presents estimated marginal means for ruminative coping by subjective social status assignment, collapsed across Blacks and Whites. Ruminative coping was determined by closed-ended self-report. Vertical lines depict standard errors of the means.

raters' assessments of participants' stories) than did those in the high subjective social status condition ($M = 0.02$, $SD = 0.11$), $F(1, 38) = 86.78$, $p < .0001$. Race/ethnicity, $F(1, 38) = 0.00$, $p = .96$, and the subjective social status by race/ethnicity interaction, $F(1, 38) = 0.08$, $p = .79$, each had no effect.

In addition, participants who imagined themselves at the bottom of the ladder reported more ruminative coping on the closed-ended measure than did those at the top, as illustrated in Figure 2, $F(1, 38) = 15.07$, $p < .0001$. Again, race/ethnicity, $F(1, 38) = 0.07$, $p = .79$, and the subjective social status by race/ethnicity interaction, $F(1, 38) = 1.63$, $p = .21$, each had no effect.

It could be that these findings are driven simply by those with low subjective social status having more distress about which to ruminate. So, we first examined differences by assigned social status in negative affect. Those assigned to imagine themselves in low (vs. high) social status indicated more negative affect. This effect held for the PANAS negative affect subscale (low, $M = 3.57$, $SD = 0.60$; high, $M = 1.80$, $SD = 0.62$); $t(40) = 9.44$, $p < .0001$; and LIWC coding for negative affect in the open-ended responses (low, $M = 0.60$, $SD = 0.34$; high, $M = 0.28$, $SD = 0.22$); $t(40) = 3.66$, $p = .001$. Interestingly, the high subjective social status group was not distress-free. The diary entries

showed that sources of negative affect for those assigned to the high-status group included themes—consistent with other research—relating to excessive pressure to perform, isolation (Luthar & Latendresse, 2005), and guilt about one's relatively good situation (Harth, Kessler, & Leach, 2008).

We then examined whether negative affect mediated the effect of subjective social status on ruminative coping. For mediation to occur, four criteria must all be met (Baron & Kenny, 1986). In this case, subjective social status must predict both negative affect and ruminative coping; negative affect must predict ruminative coping controlling for subjective social status; and finally, the association of subjective social status with ruminative coping must be eliminated (indicating full mediation) or reduced (indicating partial mediation) with the inclusion of negative affect.

We tested whether negative affect mediated the effect of low subjective social status on ruminative coping measured both ways. To reduce method variance, when ruminative coping was measured with ratings of the open-ended responses, we used the closed-ended self-report of negative affect. When ruminative coping was measured by closed-ended self-report, we used the open-ended content-coded assessments of negative affect.

In both cases, we found that negative affect did not mediate the effect of low subjective social status on ruminative coping, as not all necessary criteria, as specified by Baron and Kenny (1986), were met. While low subjective social status predicted both negative affect ($B = -1.78$, $SE = 9.19$; $\beta = -.83$, $p < .0001$) and raters' assessments of ruminative coping ($B = -1.31$, $SE = 0.14$; $\beta = -.83$, $p < .0001$), negative affect did not predict raters' assessments of ruminative coping when subjective social status was included in the model ($B = 0.17$, $SE = 0.11$; $\beta = .24$, $p = .13$). This pattern of findings held also when ruminative coping was assessed by self-report. Specifically, whereas low subjective social status predicted both negative affect ($B = -0.33$, $SE = 0.09$; $\beta = -.50$, $p = .001$) and self-reported ruminative coping ($B = -0.59$, $SE = 0.15$; $\beta = -.53$, $p < .0001$), negative affect did not predict self-reported ruminative coping when subjective social status was included in the model ($B = 0.27$, $SE = 0.26$; $\beta = .16$, $p = .32$). Additionally, the pattern of results in both sets of models remained unchanged with the inclusion of race/ethnicity in the model (data not shown).

Discussion

Experiment 2 showed that low subjective social status increased ruminative coping, as assessed by both open- and closed-ended measures. We tested whether negative affect mediated the effect of low subjective social status on rumination measured by both types of assessment. In both cases, we found

that negative affect did not function as a mediator, even partially. Our data suggest that people low (vs. high) in subjective social status ruminate more, and not simply because they have more distress.

General Discussion

Our data suggest that one source of ruminative coping is the perception of oneself as relatively low in the social hierarchy. In two studies, imagining oneself as low in the social hierarchy caused participants to ruminate more than if they imagined themselves at the top of it. These findings were independent of race/ethnicity, age, parents' education, GPA, and racial identification. This effect was also consistent across two different measures of ruminative coping. These data demonstrate that toxic effects of low subjective social status on ruminative coping can be induced with even a simple pen-and-paper induction, complementing affective and cardiovascular findings derived from a more complex behavioral manipulation of social status (Mendelson et al., 2008).

Our finding that viewing oneself as low status promotes ruminative coping is consistent with previous research and also extends this research. Women as a group have less status than do men (Jun et al., 2004), and also ruminate more (Nolen-Hoeksema et al., 1999). Other research has demonstrated that women's greater rumination might be explained by their stronger beliefs that their own emotions are uncontrollable, that they are responsible for the emotional tone in close relationships, and that they have less general mastery over situations (Nolen-Hoeksema & Jackson, 2001). These components together may be markers of low social status, but their links with low social status have been implicit. The current experiments suggest that differences in ruminative coping can be induced among women as a function of subjective social status. In light of the findings from these studies, previous research should be re-evaluated: It may not be simply whether one is female (vs. male) that causes greater rumination, but the extent to which aspects of female gender are associated with or markers for relatively low social status (cf. Stewart & McDermott, 2004).

A large and growing literature in social epidemiology (the study of the social distribution of health and illness) and health psychology documents associations of social status with health, in a gradient fashion. Specifically, there appear to be incremental increases in health at each higher rung of the social ladder (Adler & Snibbe, 2003). Notably, ruminative coping and worry have been implicated in the development of negative physical health outcomes and major diseases (Brosschot et al., 2006; Gallo & Matthews, 2003).

Our experiments suggest that ruminative coping could be one way that people's perceptions of their own social status become embodied.

Negative affect did not mediate the effect of subjective social status on ruminative coping, even partially. These findings are consistent with previous research. For example, in a correlational study of a community-based sample, Nolen-Hoeksema and Jackson (2001) showed that three factors (i.e., believing one's emotions were beyond one's control, feeling responsible for the emotional tone of relationships, and endorsing a low sense of general mastery) together mediated the association between female gender and ruminative coping. These non-affective factors—arguably markers of lowered social status—and not distress were key mediators. In the current study, assignment to low subjective social status increased negative affect, but controlling for subjective social status, negative affect did not predict ruminative coping.

This suggests that the robust association between negative affect and ruminative coping (e.g., Nolen-Hoeksema, 1991, 2000; Nolen-Hoeksema et al., 1999) is confounded by subjective social status. Intriguingly, a population-based longitudinal study of adults with both men and women examining social status (via educational attainment) and incident heart disease found a pattern of results similar to ours. Affective factors (depression and anxiety, in their case) were predicted by education, but did not mediate the association between status and health (Thurston, Kubzansky, Kawachi, & Berkman, 2006). Taken together, these studies underscore that given the many factors likely contributing to the effect of subjective social status on ruminative coping, it would be surprising if any one of those factors fully mediated the effect. An important future research direction is to determine mechanisms linking subjective social status and ruminative coping.

There are limitations to these studies. To manipulate social status, we asked people to imagine themselves in a scenario, which of course is not the same as actually living that scenario. Research on affective forecasting demonstrates that people can be inaccurate when predicting how they will feel in the future. Regarding negative events, people tend to overestimate their own resulting negative affect (because, among other reasons, they underestimate their ability to cope with such situations; Wilson & Gilbert, 2005).

It could be that—as suggested by the affective forecasting literature—our findings are more a reflection of participants' theories about low- versus high-status experiences and less a reflection of the phenomenology of lived social status. Yet, it is worth noting possible limits of affective forecasting effects. For example, research on social exclusion and affective forecasting suggests that social exclusion numbs people's future projections of negative emotion (DeWall & Baumeister, 2006). Thus, if low subjective social status represents a form of social exclusion (Marmot, 2006; Sen, 2000), our findings

might, in fact, underestimate negative affect and related processes, such as ruminative coping, resulting from low subjective social status. In any case, establishing whether findings for imagined versus behavioral subjective social status manipulations (e.g., Mendelson et al., 2008) on ruminative coping are convergent or not remains an empirical question. Studies to validate further the method we created for manipulating subjective social status would determine if simply assigning subjective social status is useful as a relatively parsimonious alternative.

In a similar vein, perhaps participants ruminated not because they were in the low subjective status condition, but because being assigned to a low-status position violated their expectations, especially given that our sample was composed of college students who probably do not expect to find themselves at the very bottom of the social ladder 5 years after graduating. However, we used post-manipulation measures to explore this possibility and found that participants were able to distinguish between ruminating because of being in the assigned position versus a violation of expectations, and reported ruminating because of the former.

The idiosyncratic nature of the manipulation—imagining oneself at a future college reunion—is another limitation, perhaps limiting the generalizability of findings to a college-educated population. Replications with larger samples, including those from different populations, and other manipulations of subjective social status, are warranted. Finally, these experiments examined women only, because of women's greater tendency to ruminate. It is important to see whether the findings hold for men, or if there is a gender by subjective social status interaction.

Given the limits of the current experimental manipulation, future research should examine social status manipulated in different ways, as well as extend the current studies in several directions. For example, researchers could employ procedures to manipulate subjective social status similar to those found in the social rejection literature in which participants meet a group of their peers and then hear that no one has chosen them for a subsequent task (e.g., Twenge, Baumeister, Tice, & Stucke, 2001). These experiments manipulating rejection have found large effects on health behaviors, such as eating and exercise (Baumeister, DeWall, Ciarocco, & Twenge, 2005; Twenge, Catanese, & Baumeister, 2002). Future research should explore whether manipulations of subjective social status have similar behavioral effects. Also, the manipulation and the dependent variable in these experiments were assessed in an hour-long laboratory session. A next step might be to test whether manipulating subjective social status causes changes that can be detected over a longer period. Indeed, there is a small but growing literature on the development of subjective social status during adolescence. One recent observational study suggested that decreases in subjective social status predict

reductions in self-rated health (Goodman et al., 2007). As yet, it is unknown whether interventions at critical developmental points might be able to change subjective social status and, in turn, change health outcomes.

The current research offers a method for testing sequelae of subjective social status. Our studies suggest that low subjective social status causes ruminative coping, which may be a central mechanism by which social status is linked to a range of health outcomes. We found that, regardless of objective social status markers, such as parent education and for both Blacks and Whites, viewing oneself lower in the social hierarchy increased ruminative coping. Further, the effect of subjective social status on ruminative coping, measured either by open- or closed-ended means, were not explained by negative affect. Future research is necessary to understand the extent to which these findings replicate across other methods for inducing subjective social status and other populations, and to determine if interventions to reduce ruminative coping are beneficial, particularly to those who perceive themselves as low in the social hierarchy.

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