The Message Matters: The Role of Implicit Beliefs About Giftedness and Failure Experiences in Academic Self-Handicapping

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Insight into causal mechanisms underlying underachievement among gifted students has remained elusive. Based on the premise of self-worth theory and implicit beliefs about intelligence, it was hypothesized that entity-focused messages about giftedness would lead to maladaptive academic coping behaviors when gifted status was threatened. Therefore, the current research examined the interactive effect of messages about giftedness as fixed or malleable and success or failure experiences on both behavioral and claimed self-handicapping among a sample of 108 undergraduates attending an elite university. Following a failure experience, participants who had heard an entity message about giftedness engaged in behavioral self-handicapping to a greater degree than those who heard an incremental message about giftedness. Female participants who received an entity message engaged in more claimed self-handicapping after experiencing failure and less claimed self-handicapping after experiencing success. There were no differences in claimed self-handicapping after success and failure for female participants who received an incremental message. This pattern is in line with an impression management strategy. In contrast, implicit messages did not influence male participants' claimed self-handicapping. Implications for motivational theory and educational practice are discussed.

Keywords: implicit beliefs about intelligence, behavioral self-handicapping, claimed self-handicapping, giftedness

Academic underachievement among intellectually gifted students has discouraged educators and intrigued researchers for decades. Underachievement is characterized by a significant discrepancy between what a student is capable of achieving (ability or potential) and what the student actually achieves. The term *gifted underachievement* refers to this discrepancy when ability is exceptionally high (Reis & McCoach, 2000). Underachievement is detrimental for any student, but the consequences for high-ability students may be even greater. Gifted underachievement represents a great loss for society in terms of missed achievements and undeveloped talents (Ceci, Williams, & Barnett, 2009), and high-ability students who underachieve or who are perceived as lacking motivation are also at risk for being overlooked in the gifted identification process (Endepohls-Ulpe & Ruf, 2006), thereby missing out on much-needed educational services that are critical for supporting talent development.

Although a wealth of research has identified attributes shared by underachieving gifted students (see Reis & McCoach, 2000, for a review), insight into causal mechanisms influencing underachievement remains elusive. Research on implicit beliefs about intelligence (Dweck & Leggett, 1988) can be extended to explore how underachievement develops among gifted students. The types of messages students receive about intelligence related to giftedness can interact with contextual factors, including students' experiences of success and failure, to influence motivational beliefs and behaviors (academic coping mechanisms). Ultimately, these maladaptive behaviors likely contribute to the onset and maintenance of underachievement, as short-term self-worth benefits are outweighed by the long-term undermining of academic achievement. Based on this reasoning, the current research investigates one potential causal pathway to underachievement by exploring how messages about academic ability (about both giftedness and the nature of it as fixed or malleable) interact with contextual factors such as success and failure experiences to lead to behavioral and claimed self-handicapping.

Theoretical Background

Prior research has suggested that underachieving gifted students are bored or unmotivated (e.g., Ford, Alber, & Heward, 2005). However, an alternative explanation provided by social-cognitive motivational theories is that students can be maladaptively motivated or motivated in a way that fosters beliefs or behaviors that undermine academic achievement. Two major theoretical perspectives in achievement motivation, self-worth theory of achievement motivation (Covington, 1992) and implicit beliefs about intelligence (Dweck & Leggett, 1988), guide and frame the current research. We begin by reviewing the self-worth theory of achievement motivation to provide a framework for understanding the mechanisms potentially leading to underachievement. Next, we address implicit theories about intelligence and self-handicapping in the context of self-worth theory. Finally, we discuss how the endorsement of a fixed belief about giftedness may provoke maladaptive achievement behaviors under certain conditions, such as when failure threatens both the gifted label and self-worth.

Self-Worth Theory of Achievement Motivation

The self-worth theory of achievement motivation (Covington, 1992, 2009; Covington & Beery, 1976) proposes that individuals are motivated to maintain and protect a sense of self-worth. Thus, underachievement may not necessarily be connected to a lack of motivation but rather to being overly motivated to protect self-worth by avoiding failure. Self-worth theory emphasizes both internal and external perceptions as important factors influencing achievement behavior (Covington, 1984, 1992). For example, being perceived as incompetent can threaten an individual's self-worth. Therefore, some individuals avoid ability-salient situations as a way to protect their self-worth. Messages about ability are also important in self-worth theory, making this theory particularly relevant for outlining one potential pathway in gifted underachievement. In other words, the messages that high-ability students receive about being gifted may lead them to believe that continued academic success is necessary to maintain the gifted label but may also convey that effort plays no role in giftedness. That is, if one tries and fails, identity as gifted can be lost. Therefore, gifted students may be susceptible to maladaptive motivational behaviors potentially engendered by self-worth protection.

Implicit Beliefs About Intelligence

Implicit beliefs about intelligence refer to the manner in which individuals conceptualize the nature of ability either as fixed and unchangeable (*entity view*) or as malleable and able to be improved with effort (*incremental view*; Dweck & Leggett, 1988; Yeager & Dweck, 2012). These implicit beliefs predict important outcomes, such as attributional patterns (Hong, Chiu, Dweck, Lin, & Wan, 1999; Robins & Pals, 2002) and achievement in the face of a challenging academic transition (Blackwell, Trzesniewski, & Dweck, 2007). Incremental theorists do not necessarily believe that failure is indicative of low ability but rather believe that increased effort can result in improved performance. In contrast, entity theorists discount the role of effort in achievement and attribute failure primarily to a lack of ability (Dweck & Leggett, 1988; Yeager & Dweck, 2012). Consequently, an entity theorist will avoid a challenging task that carries a high risk of failure (Nicholls, 1990). Any effort exerted on a task, irrespective of success, may instigate reservations about ability level (Hong et al., 1999). If a gifted individual endorses an entity belief and consequently does not exert effort on difficult tasks, the potential for underachievement through self-sabotage may rise with any incidence of challenge.

Implicit beliefs about intelligence may be particularly relevant in high-ability populations. Gifted students may be more exposed to ability-focused praise and messages (Dweck, 2002), which can lead to entity beliefs (Kamins & Dweck, 1999). Therefore, gifted students may be particularly at risk for the maladaptive behaviors associated with holding an entity theory of ability and giftedness, as certain messages about giftedness may lead students to believe that success is synonymous with giftedness and failure with a lack of giftedness. High-ability students who hold such an entity perspective may view failure as a direct reflection of low intellectual capacity (Thompson & Richardson, 2001) or as something that may negate gifted status. Research with typical students suggests that entity beliefs are also associated with general avoidance behaviors such as academic procrastination (Howell & Buro, 2009), behavioral disengagement and lower levels of active coping behavior in the face of exams (Doron, Stephan, Boiché, & Le Scanff, 2009), and decreased effort and persistence in the face of challenge (Cury, Da Fonseca, Zahn, & Elliot, 2008). In contrast to these avoidance-related findings, incremental beliefs about ability are positively associated with self-reported preference for challenging academic opportunities among adolescents identified as gifted (Feldhusen & Dai, 1997).

Self-Handicapping

Threats to self-worth can lead individuals to engage in self-worth protection through the use of various coping mechanisms, including *self-handicapping* (Covington, 1992). By self-handicapping, an individual intentionally creates an obstacle or sabotage to provide an a priori excuse for potential failure so that failure can be attributed to the handicap rather than to low ability (Berglas & Jones, 1978; Rhodewalt, 1994). With this a priori excuse, self-worth is protected. By externalizing failure, self-handicapping can relieve personal responsibility for poor performance, and the individual can maintain a perception of high ability (McCrea & Hirt, 2001). In contrast, occurrences of success after self-handicapping create the perception that extraordinary challenges have been overcome (Smith, Hardy, & Arkin, 2009). As a result, the individual can maintain or bolster feelings of self-worth and self-perceptions of ability.

However, short-term self-worth benefits gained from self-handicapping are greatly overshadowed by later consequences, including increased focus on avoiding appearing incompetent and a continued cycle of self-handicapping and declining achievement (Elliot & Church, 2003; Midgley & Urdan, 2001). Controlling for academic ability, students high in trait self-handicapping earn lower grades than those low in trait self-handicapping and suffer declines in self-worth over time (Zuckerman, Kieffer, & Knee, 1998). Additionally, because self-handicapping is not viewed favorably by outside observers (Cox & Giuliano, 1999; Covington & Omelich, 1979; Rhodewalt, Sanbonmatsu, Tschanz, & Feick, 1995), repeated usage of this coping strategy could evoke a neg-

ative dynamic between the student and that student's parents and teachers. In summary, engaging in self-handicapping can be quite detrimental for academic achievement.

Two forms of self-handicapping have been identified: behavioral and claimed self-handicapping (Hirt, Deppe, & Gordon, 1991; Leary & Shepperd, 1986). *Claimed self-handicapping* occurs when an individual provides, whether truthfully or not, excuses for poor performance. In this instance, a student will claim extenuating circumstances that are likely to interfere with success. For example, an individual who is engaging in claimed self-handicapping may study for an exam but remark to her peers that she hardly studied at all. In contrast, *behavioral self-handicapping* occurs when an individual actively creates an obstacle or engages in a behavior to impede performance (Berglas & Jones, 1978; Covington, 1992; Jones & Berglas, 1978). Unlike claimed self-handicapping, behavioral self-handicapping creates an actual impediment that typically directly undermines task performance (Leary & Shepperd, 1986). For example, a student who behaviorally self-handicaps may choose not to study before a test or will choose a debilitating environment in which to take the test. Therefore, behavioral self-handicapping is of particular concern because it makes failure more likely to occur (Elliot & Church, 2003; McCrea, Hirt, & Milner, 2008). Claimed self-handicapping can undermine achievement indirectly by leading individuals to habitually externalize responsibility for academic performance, thereby missing out on the opportunity to internalize the benefits of academic success (Murray & Warden, 1992). The two forms of self-handicapping are also proposed to differ in regard to self-worth protection. Claimed self-handicaps protect against external judgments of ability, whereas behavioral self-handicaps protect against both external and internal judgments of ability (Hirt et al., 1991; McCrea & Hirt, 2001).

Self-handicapping is grounded in attribution theory, whereby the certainty with which a cause can be attributed to an effect is dependent on the number of alternative possible causes (Weiner, 1974). For example, if a student performs poorly on an exam, it is possible that the student's parents, peers, or teachers will attribute the academic performance to low intellectual ability. This is particularly true if the student studied for the exam because it removes lack of effort as an explanation for poor performance. Individuals create self-handicaps when they feel they cannot meet expectations for future performance. These preevaluative attributions are most likely to occur in situations of causal uncertainty, in which individuals are unable to ascertain the cause of a past event (Thompson & Hepburn, 2003; Thompson & Richardson, 2001). Noncontingent evaluative feedback is one type of a causally uncertain situation, as individuals cannot discern the factors that led to past performance and thus feel unable to replicate success in the future. Noncontingent success feedback, as compared to contingent success feedback, leads to increased behavioral self-handicapping (Berglas & Jones, 1978; Hobden & Pliner, 1995) and claimed self-handicapping (Thompson, 2004).

The issue of noncontingent feedback and causal uncertainty may be especially relevant for gifted students, who are often insufficiently challenged academically (Baum, Renzulli, & Hëbert, 1995; Chan, 2003; Gallagher, Harradine, & Coleman, 1997). These students may be unclear as to how effort relates to academic success. Indeed, some prior research suggests that gifted students are more likely to attribute their high academic achievement to ability rather than to effort (Siegle & Reis, 1998; Siegle, DaVia Rubenstein, Pollard, & Romey, 2010). When failure experiences inevitably occur, often after years deprived of academic challenge (Balduf, 2009; Dweck, 2002), these students may feel unable to replicate prior success, never having fully developed a connection between effort and achievement, and self-handicapping behaviors may emerge as a coping response.

Given the attributional foundations of self-handicapping, implicit beliefs about intelligence have been identified as a potential predictor of self-handicapping, and this proposed relation has received support from correlational research. High trait self-handicapping students are more likely to endorse entity views of ability than low trait self-handicapping students (Rhodewalt, 1994), and self-reported entity beliefs positively relate to self-reported behavioral self-handicapping among middle school students (Shih, 2011) and young adults (Ommundsen, Haugen, & Lund, 2005). Although recent experimental work has found that this relation is moderated by other motivational beliefs, such that incremental beliefs do not buffer against behavioral self-handicapping when contingency of self-worth on academics is high (Niiya, Brook, & Crocker, 2010), this research did not measure implicit beliefs as they pertain to messages about giftedness, nor was claimed self-handicapping included as an outcome of interest. Therefore, although there is some mixed evidence for the link between implicit beliefs and self-handicapping, there is still a need for research aimed at understanding the causal mechanisms involved in behavioral and claimed self-handicapping usage among gifted students.

Finally, gender has also been found to correlate with self-handicapping. Some prior research has suggested that females are more likely to engage in claimed self-handicapping (Warner & Moore, 2004), but this effect is not consistently found (Feick & Rhodewalt, 1997). In contrast, a robust body of research has found that males are more likely than females to engage in behavioral self-handicapping (Berglas & Jones, 1978; Dietrich, 1995; Harris & Snyder, 1986; Kimble & Hirt, 2005; McCrea, Hirt, & Milner, 2008; Rhodewalt & Davison, 1986). If self-handicapping plays a role in underachievement, this may help to explain why males are also overrepresented among underachieving gifted students (Colangelo, Kerr, Christensen, & Maxey, 1993; McCoach & Siegle, 2003). Gender differences in behavioral self-handicapping may result from effort valuation. That is, females may be unwilling to forgo effort in order to behaviorally self-handicap because they report highly valuing effort (Hirt & McCrea, 2009; McCrea, Hirt, Hendrix, Milner, & Steele, 2008; McCrea, Hirt, & Milner, 2008).

Current Study

Prior correlational research and theory support the proposed link between implicit beliefs about intelligence and self-handicapping. Self-worth protection is hypothesized to underlie underachievement in general (Covington, 1992), and this idea may be extended to specifically consider one potential pathway in gifted underachievement: Entity-focused messages about giftedness lead the student to believe that giftedness consists of continued academic success without having to exert much effort. Confrontation with academic challenge can then evoke the use of maladaptive coping mechanisms such as self-handicapping if ability is perceived to be threatened. Thus, self-handicapping may be used to protect both

the gifted label and self-worth, but it may ultimately undermine achievement over time.

The argument for a self-worth pathway to underachievement seems quite probable given prior research. Severity of underachievement is linked to self-reported fear of failure (Preckel, Holling, & Vock, 2006), and fear of failure predicts self-handicapping usage (Elliot & Church, 2003). Finally, gender is a strong predictor of both behavioral self-handicapping (e.g., Berglas & Jones, 1978) and academic underachievement (e.g., Mc-Coach & Siegle, 2003). Accordingly, the current study employed an experimental approach to examine differences in self-handicapping as a function of entity and incremental beliefs about the nature of giftedness, taking into account potential gender differences.

In considering these processes, it is important to consider the implications of how self-handicapping is measured. A closer examination of the various methods employed to measure behavioral self-handicapping reveals different assumptions about the underlying motives behind the behavior. For effort withdrawal measures (e.g., Lovejoy & Durik, 2010; McCrea & Hirt, 2001; Rhodewalt & Fairfield, 1991; Tice, 1991), behavioral self-handicapping is operationalized as choosing not to practice or to practice very little before a task. However, effort withdrawal can be motivated by a number of factors. For example, an individual may choose to prepare less because the task is perceived as boring or not valuable. This scenario may be particularly relevant for gifted students, who may be more likely to encounter insufficient academic challenge (Baum et al., 1995; Chan, 2003; Gallagher et al., 1997). Thus, a measure of behavioral self-handicapping that more directly captures a self-sabotaging intent may be more appropriate, such as making the choice to take a performance-debilitating drug (Berglas & Jones, 1978), listening to distracting music (DeWall, Baumeister, & Vohs, 2008; Rhodewalt & Davison, 1986), or selecting unattainable goals (Greenberg, 1985). However, these measures do not account for differences in *degree* of behavioral self-handicapping, as they are not measured on a continuous scale. In the current study, we employed a new measure of behavioral self-handicapping that captures the sabotaging nature of the phenomenon along a continuous scale.

In the current study, we investigated the interactive effect of messages about giftedness as fixed or malleable and success or failure experiences on both claimed and behavioral self-handicapping. We drew from a high-ability population (students at an elite university) and then informed participants that they were gifted based on the background information they provided. The nature of the gifted message varied (as fixed or malleable) to highlight the unique role that certain messages about giftedness, not just ability, can have in contributing to academic self-sabotage. Given that entity beliefs trigger feelings of helplessness and decreased persistence when academic challenge is encountered (e.g., Henderson & Dweck, 1990; Robins & Pals, 2002), experiencing failure should provoke the use of self-handicapping for participants who hear an entity message about giftedness. These participants would be most likely to attribute failure to a lack of giftedness if they tried and failed (e.g., Covington, 1992). Finally, we hypothesized that gender would moderate the effect of message and problem-solving experience on behavioral self-handicapping, with stronger effects among male participants, given prior research that males are more likely to behaviorally self-handicap (e.g.,

McCrea, Hirt, & Milner, 2008). We also explored gender as a moderator for claimed self-handicapping but did not make specific hypotheses given the lack of robust gender effects in prior research.

Method

Participants

One hundred ten participants were recruited through the undergraduate psychology subject pool at a private, elite university in the United States. Two participants were dropped from the analyses due to expressing general suspicion of the deception utilized in the study, resulting in a final sample of 108 participants (55.6% male). A majority of the participants were first year students ($n = 52$, 48%; $M_{age} = 19.12$ years, $SD_{age} = 1.04$). The racial and ethnic make-up of the final sample was somewhat diverse: 57.4% Caucasian, 23.1% Asian, 12% African American, 2.8% Latino/a, 1% Native American, and 3.7% other.

Because our goal was to test for causal links between messages about giftedness and subsequent self-handicapping behavior, we utilized a sample of students who would see our gifted status manipulation as credible. Thus, we conducted the study at an elite, private university where students would find it plausible to be told that they were gifted. This institution has been ranked among the top 10 universities in the United States for 2 decades (U.S. News & World Report, 2012), and its admission standards are high, with acceptance rates below 15% in previous years (U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2011). Of the 108 participants in the final sample, 78 (72.2%) reported having been previously identified as gifted. Although prior gifted status was not a prerequisite for inclusion in the study, it further supports our claim that the gifted message was plausible for this sample. The overall pattern of results for the subsample of participants who reported having been previously identified as gifted was consistent with findings conducted with the entire sample, as we illustrate further in our description of the results. Therefore, our final sample for all analyses included both students who reported having been previously identified as gifted and those who did not.

Procedure

A 2 (implicit message: entity, incremental) × 2 (problem-solving experience: success, failure) × 2 (gender) design was employed. All participants were blocked by gender and randomly assigned to one of four experimental conditions: (a) entity-failure, (b) entity-success, (c) incremental-failure, and (d) incremental-success. In order to provide the basis for the incremental and entity messages about giftedness, the experimenter first interviewed participants about their academic history and delivered feedback: "I took a look at your responses and matched them against our SAT/ACT and GPA ranges of past participants. This places you in our gifted range, so we're going to go ahead with the gifted version of the study."

Next, the experimenter delivered the implicit message manipulation. In the entity condition, participants were told the following:

A lot of research suggests that giftedness is strongly fixed through genetics. It's either something you have or you don't have. So as

expected, we've found in our own research that high ability, like what we've identified in you, results in fairly stable performance. It's the kind of thing that results in really consistent performance across our different study tasks.

In the incremental condition, participants were told the following:

We've found that achieving at such a high level, like you have, requires not just high ability but also hard work and persistence. Things like effort, really sticking it out during a difficult task—those things are really important so that you can continually improve even from your high skill level. We're actually pretty excited about these findings. It means that effort is still important, even for gifted students like you.

The experimenter then gave problem-solving sets and feedback for the problem-solving experience manipulation. Participants in the success condition were given solvable reasoning problems of moderate difficulty and provided with success feedback: "I can see you've done really well on these problems and you got [number correctly completed] correct. That's really great and right in line with the other participants we've had in the gifted study." Feedback was personalized to reference the actual number of correctly completed problems for each participant in order to ensure believability (number of problems solved correctly ranged from two to five out of five total problems; over 80% of participants answered four or five correctly; $M_{correct} = 4.32$, $SD_{correct} = 0.89$). Participants in the failure condition were given unsolvable reasoning problems and provided with failure feedback:

It looks like you had some trouble with these problems. You didn't get any correct . . . usually our gifted participants get at least three of these questions right. I don't really know if the gifted label actually applies now but let's just move on to the next gifted task.

Finally, participants were informed that they would complete a second task (pattern-completion) and were given the opportunity to self-handicap, as described below. All participants were thoroughly debriefed directly following study completion.

Dependent Variables

Claimed self-handicapping was measured by providing participants with a list of 14 factors to claim as performance handicaps, including test anxiety, fatigue, illness, and so on (adapted from Thompson & Richardson, 2001), before administration of the second test. Participants were asked to indicate how likely each factor was to negatively impact their performance on the upcoming test. Each item was rated on a 5-point Likert scale (0 = *not at all likely,* 4 = *very likely*). A total claimed handicapping score was calculated by summing the item responses ($\alpha = .89$). Participants' scores ranged from 0 to 44 ($M = 11.59$, $SD = 10.03$).

Prior to completing the second task, participants were told that the researchers wanted to examine the effect of light brightness on reasoning problem task performance. The experimenter explained that bright light should help and lower light should hinder performance. Each participant was then allowed to choose the level of light for the task using a dimmer switch attached to a nearby desk lamp. Participants were told that all levels of light needed to be tested and could slide the dimmer switch up and down to change light levels on a continuous scale. Behavioral self-handicapping

was operationalized as choosing lower light on the dimmer (scored among half-point intervals from 0 [brightest] to 10 [darkest]), as the participant could use dim light as an a priori excuse for poor performance on the task. The brightest setting was deemed of reasonable brightness in pilot testing. Study participants completed this task in a windowless experimental room; therefore, the darkest setting was pitch blackness. Participants' choices for the light setting in the current study ranged from 0 to 7 ($M = 2.34$, $SD = 1.83$).

As this was a new measure for assessing behavioral self-handicapping, we conducted pilot testing for the light dimming task to help ensure that participants were able to understand the experimenter's explanations for the implications of bright and dim light. Ten pilot participants were given verbal instructions regarding the light task and were then asked to select a level of light and complete the set of reasoning problems. Afterward, the experimenter asked participants to explain in their own words what effects lower and brighter light were supposed to have on performance and to explain why they selected that particular level of light. Responses from all 10 pilot participants clearly indicated that they understood how low levels of light would harm performance and thus would provide an excuse for poor performance. No pilot participant indicated that his or her choice of light setting was random; rather, each participant was strategic in selecting a level of light. This validity evidence, though preliminary, lends support for the interpretation of dimmer light settings as reflecting behavioral self-handicapping (intentionally reducing likelihood of success so as to provide an a priori excuse for failure). Relatedly, scores on the behavioral self-handicapping measure were moderately and positively correlated with claimed self-handicapping scores for the full experimental sample ($r = .42$, $p < .001$), providing evidence of convergent validity for the new measure.

Manipulation Checks for Experimental Manipulations

Two manipulation check questions were included at the completion of the study. The question for implicit message read, "Which of the following best characterizes gifted as described by the experimenter?" ("can be improved through effort" or "mainly stable and unchangeable"). The question regarding the gifted manipulation read, "Which version of the study did you complete?" ("gifted version," "average version," or "below-average version"). All 108 participants responded correctly to both manipulation check items.

Results

We conducted two analyses of variance, with behavioral and claimed self-handicapping as the dependent variables. Independent variables in both analyses included the implicit message participants received about giftedness (implicit message), whether they experienced problem-solving success or failure (problem-solving experience), and their gender. All possible two- and three-way interactions were tested alongside the main effects of these independent variables.

Behavioral Self-Handicapping[1]

For behavioral self-handicapping, there was a statistically significant main effect for problem-solving experience, $F(1, 100) = 102.97$, $p < .01$, $d = 1.96$. However, we do not interpret this main effect further, as it was qualified by an Implicit Message × Problem-Solving Experience interaction, $F(1, 100) = 3.92$, $p = .05$, $\eta^2 = .024$. Although this interaction was right at, rather than below, the traditional level of statistical significance, we decided to probe the interaction further to determine if the simple effects within the interaction were statistically significant for students within each problem-solving condition (success and failure). Given the dramatically different patterns involving implicit message for students experiencing problem-solving success or failure (see Figure 1), declining to interpret the interaction could be potentially misleading, as it would lead one to focus solely on the main effects that do not apply to all participants in the same way. In the failure condition, there was a statistically significant effect of implicit message, $F(1, 100) = 4.65$, $p = .03$, $d = 0.51$. After experiencing failure, students who received an entity message about giftedness engaged in more behavioral self-handicapping ($M = 4.00$, $SD = 1.58$) than did students who received an incremental message ($M = 3.24$, $SD = 1.41$). This medium effect size can be further interpreted to suggest that for participants in the failure condition, those who received entity messages about giftedness engaged in half a standardized difference more behavioral self-handicapping than participants receiving an incremental message. In the success condition, however, the effect of implicit message was not statistically significant, $F(1, 100) = 0.41$, $p = .53$, $d = 0.21$. Thus, as hypothesized, an entity message about giftedness resulted in greater self-handicapping when failure occurred, and an incremental message about giftedness appeared to buffer the negative effects of failure on behavioral self-handicapping. These differences in the effect of implicit message as a function of success and failure provide further evidence of the importance of probing the interaction rather than interpreting the main effect of the success and failure condition.

There were no statistically significant main effects of gender, $F(1, 100) = 1.22$, $p = .27$, $d = 0.18$, or implicit message, $F(1, 100) = 1.06$, $p = .31$, $d = 0.10$. Likewise, neither of the remaining two-way interactions were statistically significant: The effect of implicit messages about giftedness on behavioral self-handicapping did not significantly differ for male and female students, $F(1, 100) = 0.00$, $p = .99$, $\eta^2 = .00$, nor did the effect of problem-solving experience, $F(1, 100) = 0.27$, $p = .60$, $\eta^2 = .00$. Finally, contrary to our hypothesis, the three-way interaction of Implicit Message × Problem-Solving Experience × Gender was not statistically significant for behavioral self-handicapping, $F(1, 100) = 0.14$, $p = .71$, $\eta^2 = .00$.

Claimed Self-Handicapping[2]

For claimed self-handicapping, the main effects of implicit message and gender were not statistically significant, $F(1, 100) = 1.20$, $p = .28$, $d = 0.23$; $F(1, 100) = 0.32$, $p = .58$, $d = 0.07$, respectively, nor were the two-way interactions for Implicit Message × Problem-Solving Experience, $F(1, 100) = 1.37$, $p = .24$, $\eta^2 = .01$; Implicit Message × Gender, $F(1, 100) = 0.00$, $p = .94$, $\eta^2 = .00$; and Problem-Solving Experience × Gender, $F(1, 100) = 0.18$, $p = .68$, $\eta^2 = .00$. There was a statistically signif-

icant main effect of problem-solving experience, $F(1, 100) = 32.08$, $p < .01$, $d = 1.10$. However, because this main effect was qualified by the hypothesized three-way interaction of Implicit Message × Problem-Solving × Gender, $F(1, 100) = 3.29$, $p = .07$, $\eta^2 = .02$, we do not discuss the main effect of problem-solving experience further. As in the prior section, this three-way interaction was marginally significant; however, a failure to probe this interaction would be potentially misleading due to the very different pattern of results observed for males and females (see Figure 2). To this end, we began by examining the pattern of effects separately for female and male participants, interpreting the statistically significant interactions and main effects within these separate analyses.

As seen in Figure 2a, the two-way Implicit Message × Problem-Solving Experience interaction was statistically significant for females, $F(1, 44) = 5.15$, $p = .03$, $\eta^2 = .08$, suggesting that the effect of the implicit message about giftedness that female students received varied as a function of their problem-solving experience. We further probed this two-way interaction for females to examine whether there were differences in implicit message based on problem-solving experience. For female students who experienced failure, the effect of implicit message was not statistically significant, $F(1, 22) = 0.91$, $p = .35$, $d = 0.39$. For female students who experienced success, the effect of implicit message was statistically significant and large, $F(1, 22) = 5.95$, $p = .02$, $d = 0.99$. Specifically, females who received an entity message about giftedness claimed significantly fewer handicaps ($M = 4.17$, $SD = 2.92$) than females who received an incremental message about giftedness ($M = 11.00$, $SD = 9.25$). This interaction pattern for female participants with claimed self-handicapping differs from the self-worth protective pattern found for all participants (both male and female) with behavioral self-handicapping.

Viewing this Implicit Message × Problem-Solving Experience interaction for females from an alternative perspective helps to clarify this pattern. Thus, we also examined whether the effect of

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[1] These findings for behavioral self-handicapping remained consistent when conducted with only participants who had reported being previously identified as gifted ($n = 78$). A main effect of problem-solving experience, $F(1, 70) = 59.29$, $p < .01$, $d = 1.82$, was qualified by a marginally significant Problem-Solving Experience × Implicit Message interaction, $F(1, 70) = 3.24$, $p = .08$, $\eta^2 = .02$. Probing this underpowered two-way interaction revealed a pattern of results that was consistent with the full sample, albeit less pronounced. As in the larger sample, the main effects of implicit message and gender were not statistically significant, nor were the Gender × Problem-Solving Experience, Gender × Implicit Message, and Gender × Problem-Solving Experience × Implicit Message interactions.

[2] The findings for claimed self-handicapping also remained consistent among the subsample of participants previously identified as gifted. The main effects of implicit message and gender were not statistically significant, nor were the two-way interactions for Implicit Message × Problem-Solving Experience, Implicit Message × Gender, and Problem-Solving Experience × Gender. The statistically significant main effect of problem-solving experience, $F(1, 70) = 19.20$, $p < .01$, $d = 0.97$, was qualified by a three-way interaction of Implicit Message × Problem-Solving × Gender, $F(1, 70) = 5.74$, $p = .02$, $\eta^2 = .03$. As in the larger sample, the Problem-Solving Experience × Implicit Message interaction for females in this subsample was still statistically significant, $F(1, 29) = 8.46$, $p < .01$, $\eta^2 = .18$, and produced a similar pattern of results. For male participants in the subsample, the main effect of problem-solving experience remained statistically significant, $F(1, 41) = 14.60$, $p < .01$, $d = 1.14$, and the two-way Problem-Solving Experience × Implicit Message interaction remained nonsignificant, $F(1, 41) = 0.84$, $p = .36$, $\eta^2 = .01$.
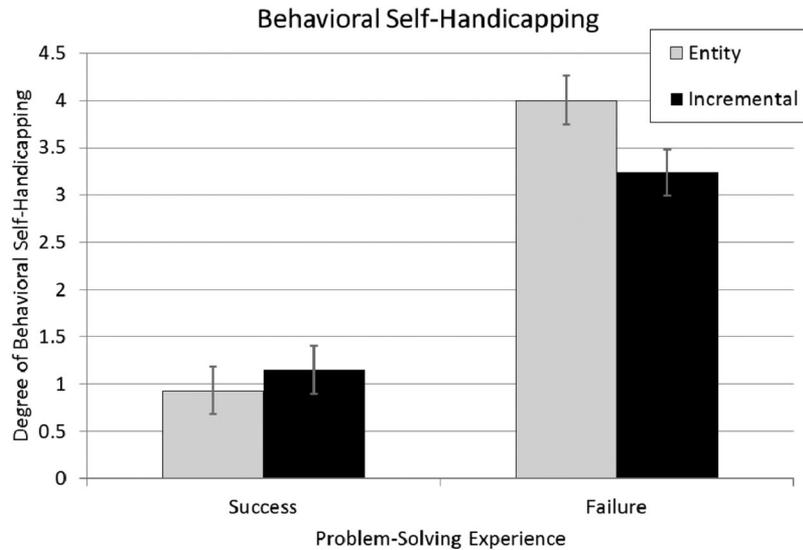
Figure 1. The significant interaction effect of implicit message about giftedness and problem-solving experience on behavioral self-handicapping. The error bars in Figure 1 represent standard errors.

problem-solving experience varied as a function of the implicit message about giftedness that female students received. For female students who received an entity message about giftedness, the effect of problem-solving experience was statistically significant and very large, $F(1, 21) = 23.23, p < .001, d = 2.01$. Specifically, female students who received an entity message engaged in claimed self-handicapping to a statistically significantly greater degree after experiencing failure ($M = 18.18, SD = 9.62$) than after success ($M = 4.17, SD = 2.92$). However, when female students received an incremental message about giftedness, the effect of problem-solving experience was greatly reduced and not statistically significant, $F(1, 23) = 1.31, p = .26, d = 0.46$. For females, an entity message evokes an exaggerated response after both success and failure feedback, whereas an incremental message does not.

For male students, the Implicit Message × Problem-Solving Experience interaction was not statistically significant, $F(1, 56) = 0.20, p = .66, \eta^2 = .00$. However, there was a statistically significant main effect of problem-solving experience, $F(1, 56) = 17.75, p < .01, d = 1.11$, such that males who experienced failure engaged in more claimed self-handicapping ($M = 16.32, SD = 12.50$) than those who experienced success ($M = 5.90, SD = 4.05$). Thus, the exaggerated response observed in female participants who heard an entity message was not seen among male participants.

Discussion

Findings from the current study are important not only for understanding causal mechanisms involved in the development of
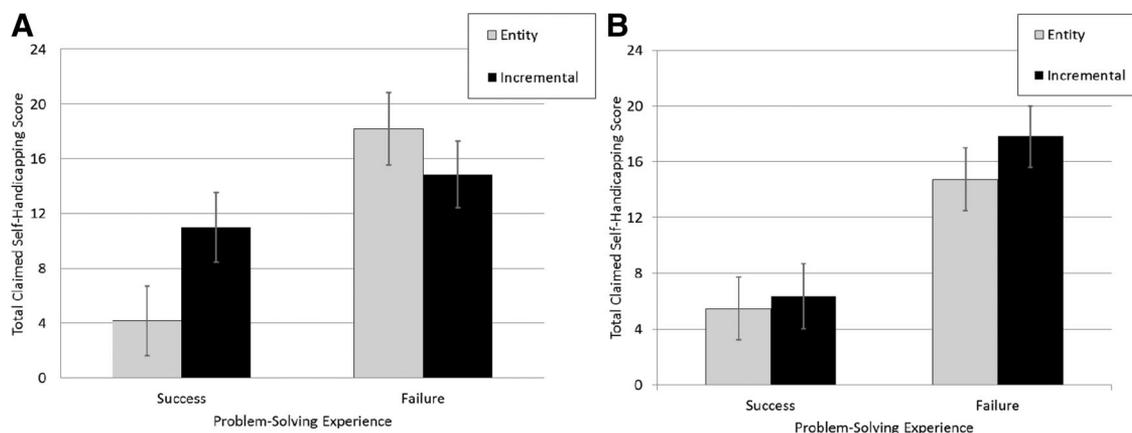

Figure 2. The significant interaction effect of gender, implicit message about giftedness, and problem-solving experience on claimed self-handicapping. A: Female. B: Male. The error bars represent standard errors.

gifted underachievement but also for informing broader motivational theory. We investigated the causal relations between messages about giftedness (implicit beliefs), success and failure experiences, and two forms of self-handicapping in the present research in order to better understand one potential pathway to underachievement for high-ability students. Several of the hypothesized relations were confirmed. For behavioral self-handicapping, the effect of implicit message about giftedness varied as a function of experiencing success or failure. Specifically, an entity-focused message about giftedness appears to elicit the use of behavioral self-handicapping among both males and females when failure threatens gifted status, likely due to self-worth concerns. Findings from claimed self-handicapping suggest that a different mechanism is at play. Here, the effect of experiencing success or failure varied as a function of implicit message about giftedness, but only for females. For female participants, receiving an entity message about giftedness resulted in increased claimed self-handicapping when failure occurred and greatly reduced claimed self-handicapping when success occurred, but this exaggerated response was not seen for female participants who received an incremental message. For males, experiencing failure lead to greater claimed self-handicapping, but the degree of claimed self-handicapping was not influenced by implicit message. Overall, the current research contributes to a growing body of evidence underlying the benefits of incremental beliefs (e.g., Blackwell et al., 2007; Dweck, Chiu, & Hong, 1995; Mueller & Dweck, 1998; Robins & Pals, 2002) and provides further insight into how implicit beliefs about intelligence relate to self-handicapping and more broadly to attempts to enhance or protect self-worth.

Theoretical Implications

A key premise of self-worth theory is that the use of coping mechanisms such as self-handicapping should occur when an individual perceives that exerting effort and failing would be indicative of a lack of ability (Covington, 1992) or, in the context of the current study, of a lack of giftedness. This scenario is arguably most likely to occur for entity theorists who discount the role of effort in academics and attribute failure primarily to low ability (Dweck et al., 1995). As Yeager and Dweck (2012, p. 304) succinctly stated, "The entity theory world . . . is a world of threats and defenses." Although correlational research has supported this hypothesized link between implicit beliefs and self-handicapping (Ommundsen et al., 2005; Rhodewalt, 1994; Shih, 2011), exploration into causal mechanisms has remained limited. In the only other known experimental research in which the relation between implicit beliefs and self-handicapping was investigated, incremental beliefs resulted in reduced behavioral self-handicapping only when contingency of self-worth on academics was low (Niiya et al., 2010). In testing the causal pathways between implicit beliefs and both behavioral and claimed self-handicapping, the current research addresses an important gap in motivational theory.

Measuring both forms of self-handicapping allows for an examination of differential purposes behind each type of self-handicapping strategy, an important goal in self-handicapping research (e.g., Hirt et al., 1991; Lovejoy & Durik, 2010; McCrea & Hirt, 2001). The type of self-handicapping (behavioral or claimed) appears to be an important factor in understanding how implicit beliefs relate to academic coping mechanisms. Behavioral

self-handicapping protects self-worth from both internal and external judgments, making it a viable strategy to protect self-worth and preserve one's conception of ability (Hirt et al., 1991; Leary & Shepperd, 1986; McCrea & Hirt, 2001). By engaging in behavioral self-handicapping, the individual not only prevents outsiders from finding out if he or she lacks ability (or is not gifted) but also fools him- or herself. One can still feel smart after behaviorally self-handicapping (McCrea & Hirt, 2001). Because entity theorists view academic experiences as being diagnostic of ability (Dweck et al., 1995; Yeager & Dweck, 2012), behavioral self-handicapping represents an opportunity to shield the self and outsiders from potentially discovering that ability (or giftedness) is lacking. In doing so, the self is protected. Indeed, the assumption of ability as something fixed and diagnosable by failure underlies the notion of the double-edged sword of effort proposed in self-worth theory (Covington, 1992).

In contrast with behavioral self-handicapping, engaging in claimed self-handicapping only prevents *observers* from diagnosing an individual's level of ability. Claimed self-handicapping has been tied more to external self-presentation or impression management concerns than to protection of self-worth and self-conceptions of ability (Hirt et al., 1991; McCrea & Hirt, 2001). Findings from the current study support this purpose behind claimed self-handicapping. Females who heard an entity message engaged in a great deal of claimed self-handicapping when failure occurred but engaged in drastically less claimed self-handicapping when success occurred. For females who heard an incremental message, reactions to success and failure did not result in statistically significant different degrees of claimed self-handicapping. This pattern of findings is consistent with the hypothesized *roller coaster effect* proposed by Harackiewicz and Elliot (1995). In an entity worldview, successes are seen as more positive and failures as more threatening. This perception may have led females in this sample to minimize the role of external factors (engage in little claimed self-handicapping) when success occurred in order to reap the glory and to maximize the role of external factors when failure occurred (by engaging in greater claimed self-handicapping) so as to be protected from being implicated as not gifted.

These differential patterns support the maintenance of a theoretical and empirical distinction between claimed self-handicapping and behavioral self-handicapping (Hirt et al., 1991; Hirt & McCrea, 2009; Leary & Shepperd, 1986). These findings also illustrate multiple important consequences of an entity mindset: self-worth protection, maintenance of self-conception of ability, and impression management. Although behavioral and claimed self-handicapping should continue to be conceptualized and measured as distinct behaviors, future research would benefit from exploring how students may use them together to balance both self-worth and impression management concerns. Our findings also inform research on implicit beliefs. Entity beliefs have long been purported to relate to a focus on looking smart and avoiding appearing incompetent (Dweck & Leggett, 1988; Yeager & Dweck, 2012). Although this relation has most often been studied in relation to achievement goal orientations (Cury, Elliot, Da Fonseca, & Moller, 2006), current findings suggest that the use of claimed self-handicapping may be another manner through which these processes occur. In other words, our clarification of the links between implicit theories and two forms of self-handicapping extend this prior research by detailing the behavioral ends of these

motivational pathways and clarifying the two types of self-handicapping as distinct outcomes of implicit beliefs.

Finally, the differential results by gender for claimed self-handicapping are relevant for broader motivational theory. Although males have been found to be more likely to behaviorally self-handicap than females (e.g., Berglas & Jones, 1978; McCrea, Hirt, & Milner, 2008), we did not find this effect. The lack of gender difference may be due to the continuous nature of our behavioral self-handicapping measure. In other words, females could choose to behaviorally self-handicap to a small degree (just enough) without having to make a dichotomous choice that could be clearly interpreted as pure self-sabotage. Having degrees of behavioral self-handicapping available may allow females to balance effort valuation (e.g., Hirt & McCrea, 2009) with wanting to provide an a priori excuse for failure to protect self-worth. It is also interesting that the exaggerated use of claimed self-handicapping after hearing an entity message about giftedness, but not after an incremental message, was observed only for female participants. For male students, it does not appear that implicit beliefs evoke the roller coaster effect or impression management strategies with respect to claimed self-handicapping. In general, claimed self-handicapping is a useful way both to protect an image of ability in case of impending failure (Lovejoy & Durik, 2010) and to heighten an appearance of competence after success (Feick & Rhodewalt, 1997). However, it is possible that women are more likely than men to perceive the nuanced benefits of utilizing claimed self-handicapping depending on how ability or giftedness is framed (as fixed or malleable), whereas men may only see claimed self-handicapping as useful to salvage an impression of competence after failure, regardless of implicit message. Indeed, women seem to prefer more subtle coping strategies such as claimed self-handicapping (Hirt & McCrea, 2009), making it possible that they may be more attuned to the benefits of claimed self-handicapping in various contexts.

Implications for Gifted Underachievement

Findings from the current study extend prior research on underachievement among gifted students by going beyond correlates to examine potential causal antecedents. The current research is an important first step in understanding the broad, long-term relations between real-world messages about giftedness and self-handicapping behaviors. Importantly, just as there is no single path to achievement (e.g., Linnenbrink & Pintrich, 2000; Pintrich, 2000), multiple pathways also likely exist in underachievement. In other words, difficulties with self-worth or the usage of self-handicapping strategies may be one potential way through which underachievement occurs but likely not the only way.

Repeated usage of self-handicapping behaviors can result in a negative cycle of declining achievement, worries about self-worth, and repeated self-handicapping (Urdan & Midgley, 2001; Zuckerman et al., 1998). However, self-handicapping is associated with some short-term benefits, such as relieving worries about failure and allowing for enhanced intrinsic motivation (Deppe & Harackiewicz, 1996) or even maintaining a happy mood (Alter & Forgas, 2007). It is possible that some high-ability students may be able to balance the drawbacks of self-handicapping against the benefits, perhaps by self-handicapping just enough to protect self-worth and maintain the gifted label but not to a degree that draws too much

unwanted attention from parents and teachers. Academic challenge is also subjective, and gifted students may be able to select academic courses or tasks that appear challenging to outsiders but are sufficiently easy to ensure academic success. However, it is upon experiencing failure that expectancies for future success decline among those who endorse entity beliefs (Dweck & Leggett, 1988). Gifted students may be able to avoid truly challenging academic contexts for long periods of time, but when failure eventually arises, underachievement could emerge through the use of self-handicapping behaviors. Thus, this balancing act could ultimately result in much greater underachievement.

This study is the first to provide preliminary evidence for the causal relation between messages about giftedness and self-sabotaging behavior that may ultimately undermine achievement. Testing these processes with college students in a short-term laboratory setting, rather than in the classroom context, limits our ability to generalize from these findings. However, the current study is an important first step toward beginning to understand the complex, long-term relations between messages about giftedness and coping behaviors in more naturalistic educational settings. Future research should aim to understand how different messages about giftedness, particularly those conveyed when a student is first identified as gifted, influence both students' conceptions of themselves as gifted and various coping behaviors. For example, do these coping behaviors emerge only in situations of explicit failure as measured in the current study (e.g., failing an exam), or do they also emerge in more subjective contexts such as transitioning from being the smartest student in high school to one of many smart students in college? Additionally, researchers may want to consider whether the use of varying methods for identifying students as gifted factors into students' implicit beliefs about the nature of giftedness, especially as there is not one universally accepted approach (Stephens, 2011). A further avenue for future research is the exploration of the dynamic relations between subsequent self-handicapping behavior and self-perceptions and how these interactions contribute to academic underachievement. Naturalistic experimental or quasi-experimental designs with gifted students could be a powerful tool in continuing this research to understand these causal processes at different ages.

Educational Implications

Overall, findings from the current study support a growing body of literature that emphasizes the need to be mindful about the motivational messages conveyed to students regarding the role of effort and ability in attaining academic achievement, both for students in general and specifically for gifted or high-ability students. Although a gifted label has been equated with intelligence praise (Mueller & Dweck, 1998) and with a stable attribute (Thompson, 1997), findings from the current study suggest that it is possible to infuse messages about giftedness with an incremental flavor. In other words, a gifted label does not automatically connote an entity message, and it may be possible to promote a believable, effort-focused message about giftedness. Consistent with the program standards put forth by the National Association for Gifted Children (2010), we recommend that educators of gifted students focus on emphasizing the role of effort in achievement. This may be especially relevant for how giftedness is framed when a student is first identified. We also extend this recommendation

by suggesting that educators focus on providing contingent feedback (Thompson, 1997) in order to help students make the connection between effort and academic outcomes. It is possible that uncertainty surrounding the source of a gifted label, particularly if the student has always achieved easy success, may promote self-handicapping behaviors.

Finally, the usage of self-handicapping strategies can serve as a potential warning sign to educators that motivational intervention is warranted (Midgley & Urdan, 1995). The cause of the coping strategy usage may vary, as some students may be worried about failing at academics in general while others might care more about protecting the gifted label. However, use of self-handicapping does not imply that the student does not care. Rather, the student self-handicaps because he or she cares, albeit in a maladaptive way. A multifaceted approach may be necessary, in which educators not only focus on the role of effort in giftedness but also help the student to detach self-worth from academic success to a reasonable degree (Niiya et al., 2010).

Conclusion

Although underachievement is certainly not limited to gifted students, the unique experiences that these students encounter, such as receiving frequent ability-focused praise and enduring high expectations from parents and teachers, coupled with heightened intellectual ability, make gifted students a unique population in which to study motivational processes leading to underachievement. Findings from the current study suggest that entity-focused messages about giftedness may elicit both self-worth coping behavior (behavioral self-handicapping) among male and female students and impression management behavior (claimed self-handicapping) among female students, suggesting potential avenues through which academic underachievement may take place for high-ability students. Importantly, these findings also contribute to motivational theory more broadly in elucidating differential causal pathways between implicit beliefs and behavioral and claimed self-handicapping. Further exploration into these mechanisms will further inform prevention and intervention efforts for underachievement among gifted students, as well as enrich our general understanding of how academic experiences interact with student beliefs to influence academic outcomes.

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