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Identification as Gifted and Implicit Beliefs About Intelligence: An Examination of Potential Moderators

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Abstract

The current study investigated whether the developmental timing of a student's identification as gifted (i.e., when a student is first identified) was associated with later implicit beliefs about intelligence, and whether this relation is moderated by academic ability. A sample of 1,743 high-ability college students reported on whether and when they had been identified as gifted, academic ability (SAT scores), and implicit beliefs of intelligence. Timing of identification was unrelated to implicit beliefs; academic ability was the only significant predictor. Higher ability students who had been previously identified as gifted at any point in time reported implicit beliefs more toward entity beliefs than relatively lower ability students who had also been identified; however, this effect was quite small. Implicit beliefs did not vary by ability level for nonidentified students. These findings suggest that identification as gifted at any age modestly (but not necessarily meaningfully) relates to implicit beliefs for high-ability students.

Keywords

gifted identification; motivation; implicit beliefs about intelligence; gifted label; entity beliefs

Identifying students as academically gifted is a relatively widespread practice in the United States. Given its prevalence, researchers and educators alike are interested in investigating the potential effects of being labeled as gifted (Gates, 2010; Hoge & Renzulli, 1993), particularly with respect to long-term effects (Hickey & Toth, 1990; Ring & Shaughnessy, 1993). Overall, a gifted label relates to a mix of adaptive and maladaptive outcomes. For example, gifted adolescents vary greatly in self-reported comfort with the gifted label (Robinson, 1990). Self-reported benefits include increased access to better educational experiences (Berlin, 2009; Hershey & Oliver, 1988; Moulton, Moulton, Housewright, &

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Bailey, 1998) and a strong sense of internal gratification (Moulton et al., 1998). However, gifted students report that they often feel a strong, personal pressure to succeed (Berlin, 2009). Similarly, experiencing high expectations for academic success from parents and teachers is also named as a detrimental aspect of the gifted label (Berlin, 2009; Butler-Por, 1993; Freeman, 1994; Hershey & Oliver, 1988; Moulton et al., 1998), particularly among moderately gifted students (Berlin, 2009). Parent usage of the term “gifted” is associated with some adjustment difficulties, including anxiety and problems relating to peers (Cornell, 1989). Similarly, in a study of gifted children matched for intellectual ability, students labeled as gifted experienced greater emotional problems than students who were not labeled as gifted; however, these problems disappeared by adulthood and both groups reported equal life success (Freeman, 2006).

In addition to the multiple outcomes described above, being identified or labeled as gifted may also shape students’ motivational beliefs. Notably, research from the achievement motivation field suggests that praise for academic ability can shape students’ implicit beliefs about the nature of intelligence, which has important ramifications for motivational outcomes such as persistence and achievement (Dweck & Leggett, 1988; Yeager & Dweck, 2012). In the following section, we provide an overview of implicit theories of intelligence, a theoretical framework that provides insights into how labeling students as gifted relates to their development of motivational beliefs.

Theoretical Background

Implicit beliefs about intelligence (Dweck, 2000; Dweck & Leggett, 1988; Yeager & Dweck, 2012) are an important motivational construct that may have particular relevance for gifted or high-ability students, especially those who have been labeled as gifted. Broadly, implicit beliefs about intelligence refer to the manner in which an individual conceptualizes the nature of intelligence. Entity theorists believe that intelligence cannot be changed, while incremental theorists perceive that intelligence can be improved with effort. These implicit theories form a mental framework through which an individual interprets stimuli and experiences (Yeager & Dweck, 2012), shaping subsequent behavior and beliefs in an iterative manner (Kinlaw & Kurtz-Costes, 2003; Yeager & Walton, 2011). Accordingly, implicit beliefs relate to critical outcomes including attributions for success and failure (Hong, Chiu, Dweck, Lin, & Wan, 1999; Robins & Pals, 2002) and later achievement during challenging academic transitions (Blackwell, Trzesniewski, & Dweck, 2007). Among typical-ability students, entity beliefs are also linked to academic procrastination (Howell & Buro, 2009) and decreased persistence during challenges (Cury, Da Fonseca, Zahn, & Elliot, 2008). Theoretically, implicit beliefs influence these outcomes by shaping the goal orientations that students adopt in achievement settings. Students who endorse entity theories are more likely to focus on goals that will demonstrate their fixed ability (i.e., performance goal orientation), while incremental theorists are more likely to endorse goals of developing competence (i.e., mastery goal orientation; Cury, Elliot, Da Fonseca, & Moller, 2006; Dweck & Leggett, 1988).

As a result, implicit beliefs about intelligence have implications not only for gifted students’ academic performance and adjustment but also for the specific goal orientations that they

adopt in achievement settings. Incremental theorists are more likely to persist through challenges because these individuals are less likely to interpret failure as being diagnostic of low ability (Dweck & Leggett, 1988; Yeager & Dweck, 2012). In addition, endorsement of incremental beliefs among gifted students is related to greater preference for academic challenge (Feldhusen & Dai, 1997). Conversely, entity theorists view successes and failures as being diagnostic of ability level (Dweck & Leggett, 1988; Yeager & Dweck, 2012). Experiencing success implies high ability, and experiencing failure implies low ability. Accordingly, entity theorists will often avoid situations in which there is a risk of failure (Nicholls, 1990).

Research into the antecedents of implicit beliefs suggest that this motivational construct is likely quite relevant for high-ability populations. Praise for intelligence or academic ability, as opposed to praise for effort, causally relates to helpless reactions (Kamins & Dweck, 1999) and entity beliefs (Mueller & Dweck, 1998). Based on these findings, some researchers suggest that labeling students as gifted might lead to the formation of entity beliefs and a focus on protecting the gifted label at the cost of engaging in challenging schoolwork (Dweck, 2002a; Mueller & Dweck, 1998). The word “gifted” itself has been specifically implicated as a possible source of entity beliefs, as it seems to connote a fixed endowment that is bestowed upon a student (Dweck, 2002a). Overall, if students view a gifted label as praise for intelligence, and particularly if parents and teachers make this message salient through repeated messages about giftedness, students who have received a gifted label may be more likely than unlabeled students to endorse an entity belief of intelligence.

Despite this argument, prior research suggests that gifted students largely endorse incremental beliefs and related ideas such as the importance of hard work and motivation in achievement. Guskin, Okolo, Zimmerman, and Peng (1986) surveyed academically gifted and artistically talented youth attending a residential summer program for gifted and talented youth (qualified through nomination by school personnel). Although a majority of the participants agreed with the idea that they were born with talent, responses to open-ended questions suggested beliefs relating more to effort and hard work, a perspective aligned more closely with incremental than entity beliefs about intelligence. Only a small subset of participants cited an inborn gift as the source of exceptional ability; conversely, nearly half of the sample named hard work, motivation, and effort as the source of exceptional ability. Hard work and motivation were named as especially important when participants were asked how someone with exceptional ability is able to be exceptional. In a study by Kerr, Colangelo, and Gaeth (1988), nearly two thirds of the gifted adolescents in the sample agreed with the idea that giftedness is something that a person does, rather than something that a person is (i.e., inherent trait). However, the opposite was true in a study by Manaster, Chan, Watt, and Wiehe (1994); more than two thirds of these participants endorsed the idea that giftedness is a trait. Finally, Feldhusen and Dai (1997) surveyed gifted adolescents attending a residential summer program (admission criteria based on high standardized achievement or aptitude test scores) and found that, on average, gifted adolescents largely perceive giftedness to be malleable and enjoy academic challenges.

However, it does appear that students are sensitive to messages about giftedness framed within an entity (emphasizing the innate ability in giftedness) or incremental (emphasizing the effort required in giftedness) framework. Snyder, Malin, Dent, and Linnenbrink-Garcia (2013) used an experimental design to isolate a causal link between entity messages about giftedness and maladaptive academic behaviors. After a failure experience, participants who had heard an entity-focused message about giftedness engaged in greater behavioral self-handicapping (academic self-sabotage) than those who had received an incremental-focused message about giftedness. Thus, there are consequences for endorsing entity about giftedness in terms of maladaptive motivational behaviors.

In summary, gifted students in general tend to endorse a primarily incremental view of giftedness (although cf. Manaster et al., 1994), suggesting that the gifted label may not be as maladaptive for entity beliefs as has been suggested by theoretical perspectives on achievement motivation. However, prior correlational research on this topic has been conducted with gifted participants attending voluntary programs for the gifted (Feldhusen & Dai, 1997; Guskin et al., 1986, Kerr et al., 1988; Manaster et al., 1994). High-ability students who voluntarily attend these rigorous programs may be more likely to believe that academic challenge is not something that poses a threat to the gifted label, and that intelligence or giftedness is malleable (Feldhusen & Dai, 1997). In addition, these studies were conducted only with students who had been identified as gifted, meaning that it was not possible to compare the implicit beliefs of identified and nonidentified students of similar intellectual ability. Thus, it remains to be seen how identification status relates to implicit beliefs, as well as consider factors that may affect this relation.

Potential Moderators

Prior research on implicit beliefs and general research of labeling with gifted students suggests several potential moderators for considering associations between identifying students as gifted and the development of implicit beliefs. First, it is possible that the timing of when a student is first identified as gifted may relate to the formulation of entity beliefs. Individuals generally begin to adopt entity beliefs during late childhood and early adolescence (Dweck, 2002b; Kinlaw & Kurtz-Costes, 2003), suggesting that identification as gifted during this time (elementary school or middle school) may be especially salient for students. This hypothesis is further supplemented by findings relating to early identification as gifted. Among the participants from the Terman Study of the Gifted, identification as gifted before the age of 14 was associated with being less likely to believe that one had fulfilled potential at midlife, and with lower overall well-being at age 80, as compared with being identified after age 14 (Holahan & Holahan, 1999).

Second, level of academic ability may serve to moderate outcomes of gifted labels. Self-reported drawbacks and benefits of being gifted differ between highly gifted and moderately gifted adolescents (Berlin, 2009), such that experiencing high expectations for success from parents and teachers is ranked higher as a detrimental aspect of giftedness among moderately gifted students than among highly gifted students. Thus, the relation between receiving gifted messages and implicit beliefs about intelligence may also depend on level of academic ability.

Current Study

In the current study, we sought to address several gaps in the current literature. First, although a wide body of research has empirically examined antecedents of implicit beliefs among typical students (see Yeager & Dweck, 2012, for a review), and a gifted label has been suspected to relate to entity beliefs (Dweck, 2000, 2002a; Mueller & Dweck, 1998), it remains to be seen how identified and nonidentified students may differ with regard to implicit beliefs. As noted above, the effect of the gifted label on intelligence beliefs may also vary as a function of the developmental timing of the label and academic ability. Accordingly, in the current study, we investigated whether the timing of gifted identification related to later development of entity beliefs about intelligence, and whether this relation was moderated by level of ability. In addressing these questions, we drew our sample from a population of high-ability college students and asked these students to report on prior identification as gifted, the approximate timing of that first identification, and their current implicit beliefs about intelligence. This approach allowed for the examination of potential correlational links between aspects of identification as gifted (i.e., gifted label) and later implicit beliefs.

We hypothesized that earlier identification as gifted would relate to greater likelihood of endorsing entity beliefs about intelligence, given prior research on the development of implicit beliefs (Dweck, 2000, 2002a, 2002b; Mueller & Dweck, 1998). In addition, we hypothesized a potential interactive effect between ability level and the timing of identification but did not formulate predictions regarding the direction of this effect as it seemed equally plausible that this effect of timing could be greater for lower ability or higher ability students.

Method

Participants

Participants were drawn from a broader study on science beliefs conducted at a highly selective (acceptance rate lower than 15%; U.S. Department of Education, 2011) and elite university that has been consistently ranked among the top ten universities in the United States (U.S. News & World Report, 2012). For this study, all students enrolled in a natural science course at this university in their fall or spring semester were invited to participate. Overall, 1,966 first-year students participated. Some students did not provide complete information on academic ability, gifted identification status, or entity beliefs ($n = 223$), reducing the final sample to 1,743 students with complete data on these variables—816 (46.8%) male, 927 (53.2%) female, $M_{\text{age}} = 18.12$ years. Most participants identified as European American (46.8%), with other participants identifying as Asian (32.0%), African American (4.9%), multiracial (3.6%), Hispanic or Latino/a (7.2%), Native American (0.3%), or Other (2.5%).

Procedure

Data were collected from three cohorts of freshman classes. Data collection began in 2010 (Cohort 1) and continued in 2011 (Cohort 2) and 2012 (Cohort 3). Participants completed a

15 minute survey during a lecture period of a natural science course or through an online questionnaire. Each participant was compensated with US\$10 (cash or an Amazon gift card).

Measures

Gifted identification status and timing of first identification—Participants were asked, “Have you ever been identified as academically gifted/talented in school? If yes, in which grade were you identified as gifted?” Data were considered missing for this variable if a participant either left these items blank ($n = 87$, 4.4% of the total sample) or if they selected “other” or “don’t know” ($n = 62$, 3.1% of the total sample) in response to the second item that asked about timing of identification. Of the final sample of 1,743 students, the majority of students reported being previously identified as gifted at some point in their academic history ($n = 1,468$, 84.2%). Response categories for the timing variable included preschool/kindergarten ($n = 254$, 14.6%), elementary school ($n = 910$, 52.2%), middle school/junior high ($n = 209$, 12.0%), high school ($n = 95$, 5.5%), and never identified ($n = 275$, 15.8%). Timing categories were assigned values along an ordinal scale ranging from the least amount of time spent with gifted label to the longest amount of time spent with gifted label (0 = *never identified*, 4 = *preschool/kindergarten*).

Academic ability—We used self-reported SAT scores as an indicator of general academic ability. Although most students reported SAT scores ($n = 1,555$), 257 students reported only ACT scores. These scores were converted to SAT scores through the use of a concordance table (The College Board, 2012). Total SAT scores can range from 600 to 2,400; overall, the mean for the sample in the current study was relatively high ($M = 2,189.72$, $SD = 144.07$, range = 1,650–2,400). We do not intend to imply that this entire sample is gifted. Rather, we posit that the level of academic ability in the current sample is sufficiently high enough to allow for the examination of relations between academic ability and previous identification as gifted (as reported by participants) as separate constructs.

Implicit beliefs about intelligence—Implicit beliefs about intelligence were measured using a self-report questionnaire (Dweck, 2000). The scale consisted of eight items, each measured on a 6-point Likert-type scale (1 = *strongly disagree*, 6 = *strongly agree*). A sample item read, “You have a certain amount of intelligence, and you can’t really do much to change it” (entity belief item). A composite score was created by taking the average of each of the items, calculated such that greater scores represent higher entity beliefs. Total scores ranged from 1.0 to 6.0 in the current sample. Although this measure is often dichotomized into entity and incremental groups (Dweck, Chiu, & Hong, 1995), we chose to maintain the total scale score as a continuous variable, as dichotomization of a continuous measure is generally not recommended (Osborne, 2013). Other research with implicit beliefs scales has also calculated scores on a continuous scale (e.g., Blackwell et al., 2007; Robins & Pals, 2002; Shively & Ryan, 2013). Internal consistency was quite good ($\alpha = .93$).

Results

Descriptive statistics for all variables and Pearson correlations are presented in Table 1. Independent variables (i.e., ability and timing) were mean-centered prior to analyses. Variables were also screened for outliers using the Grubbs (1969) test. Three outliers for ability were detected (values below 1,580) and removed from all analyses. Implicit beliefs were normally distributed.

We conducted preliminary analyses to determine the need for the inclusion of control variables. Two one-way ANOVAs revealed that data collection cohort membership was statistically significantly related to implicit beliefs ($F = 13.92, p < .001, \eta^2 = .014$) and academic ability ($F = 3.89, p = .021, \eta^2 = .004$). Post hoc tests determined that students in the first (2010) cohort endorsed implicit beliefs more toward entity beliefs ($M = 3.21, SD = 0.99$) than students in the second ($M = 2.96, SD = 0.99$) and third ($M = 2.96, SD = 0.93$) cohorts. Students in the first cohort also reported lower ability scores ($M = 2,177, SD = 144$) than the third cohort ($M = 2,200, SD = 141$), neither of which differed from the second cohort ($M = 2,192, SD = 143$). A separate ANOVA found no significant differences between the cohorts for timing of identification ($F = 1.61, p = .20$). Students who reported being identified as gifted at any point in time also reported statistically significantly higher ability scores ($M = 2,196, SD = 141$) than students who reported having never been identified as gifted ($M = 2,155, SD = 156, F = 19.15, p < .001$). Accordingly, cohort status and ability were included as control variables in all analyses.

Timing of Identification and Implicit Beliefs

A hierarchical multiple regression analysis (see Table 2) was used to test whether the timing of identification as gifted and academic ability predicted students' implicit beliefs about intelligence in college. A two-way Ability $\times$ Timing interaction was also included to test for the potential interactive effect of academic ability and timing of gifted identification. In addition, two dummy codes representing cohort status were included to account for their influence, with Cohort 1 serving as the reference category. Ability, timing, and cohort status were entered as main effects in Step 1 and explained 5.8% of the variance in implicit beliefs (Adj. $R^2 = .058, p < .001$). There was a small cohort effect such that the second ($\beta = -.13, p < .001$) and third cohorts ($\beta = -.14, p < .001$) endorsed beliefs more toward the incremental end of the scale than the first cohort. Of note, ability was positively related to students' implicit beliefs ($\beta = .21, p < .001$), such that higher ability was related to beliefs toward the entity end of the scale. However, timing of gifted identification was not statistically significantly related to implicit beliefs ($\beta = .02, p = .32$).

In Step 2, the inclusion of the Ability $\times$ Timing interaction term did not explain any additional variance beyond the first step (Adj. $R^2 = .001, \beta = .03, p = .14$).¹ Thus, although academic ability was positively related to students' implicit beliefs in college, such that higher ability students were more likely to endorse beliefs that are closer to the entity end of

¹It is interesting to note that despite the interaction not reaching statistical significance, the pattern of findings was in the expected direction. Specifically, among high-ability students, earlier identification as gifted related to higher scores on the implicit beliefs scale. However, these values (at one standard deviation above the mean on academic ability) were still only between 3.0 and 3.5, which are considered to be neither incremental nor entity beliefs (Dweck, Chiu, & Hong, 1995).

the scale, the timing of this identification as gifted did not appear to relate to implicit beliefs. Furthermore, there was little evidence for an interactive effect of ability and timing on implicit beliefs.

General Identification as Gifted and Implicit Beliefs

A second hierarchical multiple regression was conducted to test the possibility that general identification as gifted (regardless of the timing of that identification) relates to implicit beliefs in college. The timing variable from the previous regression was recoded into a dichotomous gifted identification variable (1 = *identified at any time*, 0 = *never identified*). In this analysis, the main effects of cohort status, ability, and gifted identification were entered at Step 1, with a two-way Ability $\times$ Gifted Identification interaction entered at Step 2 (see Table 3). The first step of the hierarchical regression explained 5.8% of the variance in entity beliefs (Adj. $R^2 = .058$, $p < .001$). As in the previous analysis, students in the second ($\beta = -.13$, $p < .001$) and third cohorts ($\beta = -.14$, $p < .001$) differed from the first cohort on implicit beliefs. Ability was also statistically significantly related to implicit beliefs, as in the previous analysis ($\beta = .21$, $p < .001$). The main effect of gifted identification was not statistically significant at Step 1 ($\beta = .02$, $p = .43$), such that students identified as gifted did not differ on implicit beliefs compared with students who had not been previously identified as gifted.

At Step 2, the Ability $\times$ Gifted Identification interaction term was marginally significant ($\beta = .10$, $p = .056$). In probing the interaction, it was determined that higher ability related to entity beliefs more so in students who had been identified as gifted than in students who had not been identified as gifted (see Figure 1). Higher ability students who were identified as gifted reported implicit beliefs more toward the entity end of the scale than nonidentified students with similar academic ability. However, these implicit beliefs scores (for students at one standard deviation above the mean on ability) still fell within a range that is not considered to truly constitute entity or incremental beliefs (Dweck et al., 1995). Students in the lower ability group (one standard deviation below the average) reported implicit beliefs scores just below 3.0, a value that falls just within the range of what is considered to constitute incremental beliefs. Although this interaction effect was marginally significant, the relative size of this effect ($\beta = .10$) was quite small, suggesting that it may not have great practical importance. It is feasible that the detection of a marginally significant effect is made possible by the large sample size; the effect itself may not be practically significant, given the relatively small size of the beta value.

Discussion

Past research suggests important implications of students' implicit beliefs about intelligence, which may be particularly relevant for students identified as gifted. Findings from the current study contribute to the broader literature on achievement motivation among gifted students by more closely examining the relations between timing of gifted identification, general identification as gifted, academic ability, and implicit beliefs about intelligence. The exploration of a potential relation between timing of gifted identification and implicit beliefs is a novel contribution from the current study. Given the widespread practice of identifying

students as academically gifted, the effects of such identification have remained as an important question in the literature. Timing of gifted identification did not relate to implicit beliefs either as a main effect or as an interactive effect with academic ability. When collapsing across timing categories to examine the relation between general identification status and implicit beliefs, a marginally significant interactive effect was detected, such that higher ability students who had been previously identified as gifted at any age endorsed implicit beliefs slightly more toward the entity end of the spectrum. However, the actual size of this effect was small ($\beta = .10$, $R^2 = .001$), suggesting that it may not be truly meaningful in a practical sense. It is also important to note that in the current study, students who were previously identified as gifted reported higher ability scores than nonidentified students. Although controlling for prior ability in the current study partially accounts for this difference, future research should attempt to replicate this effect by using a control group that is more closely matched on ability.

Research in the laboratory provides evidence for a causal link between intelligence praise and the adoption of entity beliefs (Mueller & Dweck, 1998), leading some scholars to propose that labeling students as gifted may lead to the adoption of entity beliefs (Dweck, 2002a; Mueller & Dweck, 1998). However, there were no observable differences in implicit beliefs between identified and nonidentified students in the current study, and only a small interaction effect between identification status and academic ability was detected. This is consistent with prior research in that gifted students seem to largely endorse incremental beliefs and associated beliefs in the importance of motivation and effort (Feldhusen & Dai, 1997; Guskin et al., 1986; Kerr et al., 1988). Two explanations seem plausible. First, the seeming disconnect between laboratory experiments and correlational research may lie in the variability between both identification practices regarding how students are formally labeled as gifted (Robinson, 1990) and similar variability in types of gifted programming. The formation of entity beliefs about intelligence among gifted students may not be as likely within gifted programs in which effort is emphasized, such as talent development programs (e.g., Treffinger & Feldhusen, 1996), as the framing of giftedness matters (Snyder et al., 2013). Although we were unable to assess the types of gifted programming students experienced from our sample, researchers should aim to more closely examine the manner in which gifted students are identified and the type of gifted programming in which they participate when investigating the relation between the implicit beliefs and the gifted label. Second, the measurement of implicit beliefs in the current study may explain the lack of robust relation between gifted identification status and potential entity beliefs. In the current study, as was also the case in related studies (e.g., Feldhusen & Dai, 1997; Guskin et al., 1986), implicit beliefs were not measured immediately following the first administration of a gifted label. It is possible that entity beliefs may emerge soon after identification but dissipate over time, just as prior research has observed a rise and fall in emotional problems among labeled gifted students (Freeman, 2006).

Our findings should not be used to conclude that gifted labels are uniformly unrelated to implicit beliefs. Some students may develop entity beliefs as a result of being identified as gifted. Accordingly, one fruitful avenue for future research will be to closely investigate the

boundaries of this phenomenon: For whom, and under what conditions, do socialization messages about giftedness result in enduring change in students' implicit beliefs?

Although being identified as gifted did not relate to students' implicit beliefs about intelligence, higher academic ability was positively related to implicit beliefs, although these beliefs were in the range of values not truly considered to be incremental or entity beliefs (Dweck et al., 1995). This relation may stem from gifted students' exposure to sufficiently challenging curricula. Many gifted students are often insufficiently academically challenged (Kanevsky & Keighley, 2003; Reis & Renzulli, 2011), potentially giving them fewer opportunities to confront the idea that it is okay to struggle and persist through challenge if they are always able to succeed effortlessly in school. This may make these students more susceptible to the adoption of the belief that intelligence is an immutable entity, as they are less likely to formulate a connection between effort and success if the curricula are not sufficiently challenging (Ommundsen, 2003; Snyder & Linnenbrink-Garcia, 2013).

Future Directions

Certain limitations from the current study can inform future directions for research in this area. First, the measurement of timing in the current study encapsulates both the developmental nature of timing (i.e., the interactive effect between the age of the student and the message about giftedness) and cultural shifts in the way messages about giftedness are conveyed. Thus, findings from the current study need to be considered in light of the developmental generation from which the sample is drawn (i.e., pre-school approximately in the late 1990s, and so on) and should be replicated in future research. Second, future research will need to work to disentangle the combined and interdependent influences of various factors on later outcomes. For instance, microge-netic designs (e.g., Chinn, 2006) can be used to help understand if and how students' implicit beliefs change immediately following identification as gifted. Third, researchers should aim to replicate these findings by corroborating record data along with students' self-reported gifted identification status. It is possible that some students may be more likely to recall if and when they were identified as gifted if they view this as a core part of the self. Fourth, because identified and nonidentified students in the current study were not balanced with regard to ability level, researchers should replicate these findings with matched control groups or with randomly assigned control groups.

Educational Implications

Although we did not find a strong effect between identification as gifted and implicit beliefs in the current study, educators should still seek to promote incremental beliefs, particularly among gifted and high-ability students. Programming standards put forth by the National Association for Gifted Children encourage educators to help gifted students formulate incremental beliefs and recognize the role that effort plays in academic achievement (National Association for Gifted Children [NAGC], 2010). This recommendation may be especially important for students in the high ranges of academic ability, given the small association found in the current study between academic ability and implicit beliefs. Thus, we echo previous researchers in recommending that high-ability students are sufficiently academically challenged (Dweck, 2002a; Patrick, Gentry, & Owen, 2006).

Conclusion

The question of how a gifted label may affect an individual is an important research question with implications for educators, parents, and high-ability students. In the current study, we sought to fill a gap in this literature by examining how identification as gifted and the timing of that identification interact with academic ability to relate to implicit beliefs about intelligence. Although experimental research from achievement motivation literature supports the possibility that labeling students as gifted may lead to entity beliefs, findings from the current study suggest that this effect may not be as robust as previously believed. Findings from the current study, although not causal in nature, represent an important first step in helping to clarify the relation between aspects of identification as gifted and implicit beliefs about intelligence. Understanding the potential impact of the gifted label on students' implicit beliefs about intelligence could provide valuable information about the types of goals they are likely to adopt (e.g., mastery goals, performance goals, or multiple goals), which has important implications for students' general academic adjustment (Pintrich, 2000).

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Figure 1.
Interaction between ability and gifted identification on implicit beliefs.

Table 1

Bivariate Correlations, Means, and Standard Deviations for All Variables.

	1	2	3	M	SD
1. Timing	—	.124***	.045†	2.44	1.26
2. Ability		—	.204***	2,190.69	144.06
3. Implicit beliefs			—	3.06	0.97

Note. Timing categories were assigned values along an ordinal scale ranging from the least amount of time spent with message to the longest amount of time spent with message (0 = *never identified*, 4 = *identified in preschool/kindergarten*). Scores for implicit beliefs could range from 1.0 to 6.0, with higher values representing stronger entity beliefs.

† $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 2
Hierarchical Multiple Regression for Predicting Implicit Beliefs From Ability and Timing of Gifted Identification.

	Step 1			Step 2		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Intercept	3.25	0.04		3.24	0.04	
Timing of identification	0.02	0.02	.02	0.021	0.02	.03
Ability	0.001	0.0002	.21***	0.001	0.0002	.21***
Cohort 2 vs. Cohort 1	−0.27	0.06	−.13***	−0.27	0.06	−.13***
Cohort 3 vs. Cohort 1	−0.29	0.06	−.14***	−0.29	0.06	−.14***
Timing × Ability				0.0002	0.0001	.03
Adjusted <i>R</i> ²		.058			.058	
<i>F</i>		27.71***			2.125	

Note. Cohort 1 is used as the reference group for both dummy codes.

[†] *p* < .10.
* *p* < .05.
** *p* < .01.
*** *p* < .001.

Table 3
Hierarchical Multiple Regression for Predicting Implicit Beliefs From Ability and Gifted Identification.

	Step 1			Step 2		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Intercept	3.21	0.06		3.24	0.07	
Gifted identification	0.05	0.06	.02	0.07	0.06	.03
Ability	0.001	0.0002	.21***	0.001	0.0004	.12*
Cohort 2 vs. Cohort 1	−0.27	0.06	−.13***	−0.27	0.06	−.13***
Cohort 3 vs. Cohort 1	−0.29	0.06	−.14***	−0.29	0.06	−.14***
Gifted Identification × Ability				0.0002	0.0001	.10†
Adjusted <i>R</i> ²		.058			.059	
<i>F</i>		27.61***			22.85†	

Note. Cohort 1 is used as the reference group for both dummy codes.

Gifted identification was coded as (1 = *identified at any time*, 0 = *never identified*).

† $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.