

*Role of Interest, Ability, and Effort in Developing Talent in College Honors Students*  
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*Abstract*

Although there are several explanations for why one succeeds or fails, according to attribution theory, effort and ability are the likely causes that students report. The purpose of the present study was to measure 163 college honors freshmen's perceptions of their skills in 15 talent areas. In addition, we explored the relationship of ability and effort attributions with self-efficacy and investigated gender differences in these perceptions. There was a positive relationship between students' interest in a talent area and their assessment of their skill in that area. The strongest relationships tended to be in non-academic areas. For some talents, males placed stronger attributions than females on the role that natural ability played, while for other talents, females indicated more than males that personal effort contributed to high levels of performance.

*Background of the Study*

Four popular motivation theories in contemporary educational psychology are self-efficacy theory, attribution theory, self-worth theory, and achievement goal theory (Seifert, 2004). We developed our study on aspects of self-efficacy, attribution, and achievement goal theory. Students believe they achieve for a number of reasons. Although there are several possible explanations for why one succeeds or fails, effort and ability are likely causes that students often report (Good & Brophy, 1994). Dweck (1975) found that, following failure, many students profited when teachers commented that the students didn't seem to be trying hard enough. Dweck hypothesized that effort explanations are readily changeable because decisions about how much effort to expend are under personal control. By comparison, explanations that rely on more stable reasons, such as ability are beyond personal control.

Originally Schunk (1981) hypothesized that student achievement and self-efficacy should increase when children were told that (a) they had worked hard after their efforts led to success and (b) that they needed to work harder when their performance failed to meet expectations. He found that attributing success to effort exerted no benefits on achievement outcomes. Apparently, students tend to believe that if they must work hard at a task, they are not good at it. Schunk (1984) later revised his thinking and found that successful students who received feedback that complimented their ability, rather than focused on their effort, developed higher self-efficacy and learning. Ability attributions for success seemed to result in higher expectation for future skill development, whereas effort attributions may have prompted students to question their competence.

Dweck and Leggett (1988) proposed a model in which individuals' implicit theories of intelligence orient them toward either learning/mastery goals or performance goals. Individuals who view intelligence as malleable set learning/mastery goals. These individuals are concerned with increasing their competence and view greater effort on their part as manifesting more ability. In contrast, individuals who view intelligence as stable set performance goals. These individuals are concerned with gaining favorable judgments of their competence and they view effort and ability as inversely related (Dweck 2000). Therefore, high effort that results in success or failure implies low ability, and low effort that results in success implies high ability. Students' goal-orientations may interact with their ability and effort perceptions to complicate the issue of attributing success to ability and failure to effort.

Siegle and Reis (1998) found that upper elementary students who were identified by their school districts as gifted and talented reported a strong relationship between the quality of work they produced and their ability ( $r=.72$ ), but a much weaker relationship between the quality of work they produced and the effort they expended ( $r=.33$ ). Siegle and Reis hypothesized that these gifted students may not have been challenged and therefore were not required to work hard to produce quality work, or these students failed to realize the importance of effort in producing quality work.

Obach (2003) noted that by eighth grade, "self-protecting attributional beliefs are firmly in place: students attribute success outcomes to ability and failure outcomes to effort" (p. 334). Assouline, Colangelo, Ihrig, and Forstadt (2006) found that gifted students also were more likely to attribute failure to not working hard enough rather than not being smart. Bong (2001; 2004) and Boekaerts, Otten, and Voeten (2003) reported that students generate different causal attributions for success depending on the school subject.

Gender also plays a role in attribution style. Boys more often attribute their successes to ability and their failures to lack of effort (Nicholls, 1975), while girls often attribute their successes to luck (Reis, 1987) or to effort (Rimm, 1991) and their failures to lack of ability (Licht & Shapiro, 1982; Nicholls, 1975; Reis, 1987). The academic self-efficacy of young males is enhanced because they believe in their ability, and it is maintained during failures because of their attribution of failure to lack of effort. However, the same may not be true for young females because they may accept responsibility for failure, but not for success (Felton & Biggs, 1977). Siegle and Reis (1994/1995) found that gifted boys in elementary and junior high school reported higher self-efficacy than did gifted girls in mathematics, social studies, and science. Gifted girls showed higher self-efficacy in language arts only. Assouline et al. (2006) reported similar results. They found gifted boys were more likely to make the attributional choice of ability for success than gifted girls were for school in general, mathematics, and science. The two groups were similar in language arts. Bornholt and Moller (2003) found that both adolescent males and females reported lack of effort for not doing well in mathematics and English. They did find gender differences for doing well. Effort was a more important reason for girls than boys for success in mathematics while ability was a more important reason for boys than girls for success in mathematics.

The level of giftedness may also influence attribution style. Nokelainen, Tirri, and Merenti-Valimaki (2007) reported that highly and moderately mathematically gifted students indicated that ability was more important for success than effort, while mildly mathematically gifted students tended to see effort as leading to success. Williams and Clark (2004) found that students overvalue their effort and undervalue their ability. "Despite students' perception of their effort as the most important contributor to exam performance, ability ratings best predicted exam performance" (p. 237). Gibb, Zhu, Alloy, and Abramson (2002) noted that while students with low levels of academic ability perform worse academically when they attribute negative events to internal and stable causes this was not true for students with high academic ability.

The purpose of the present study was to measure honors college freshmen's perceptions of their skills in a variety of talent areas. In addition, we explored the relationship of ability and effort attributions with self-efficacy and investigated gender differences in these perceptions.

#### *Participants*

The participants were college freshman enrolled in the honors program at a public university in the Northeast. Participation in the honors program was by invitation only. Students were invited to participate in the program based on their SAT scores and their high school academic performance. The average combined SAT score for students in the program was 1400 and all of the students were in the top 4% of their senior class. Of the 262 honors freshman, 163 completed our survey. These were students who were enrolled in the university's first year experience for honors students. The number of male ( $n=74$ ) and female ( $n=76$ ) students who participated was similar. Thirteen of the students did not indicate their gender. The males and females in our sample reported similar SAT Verbal ( $M=684.86$ ,  $SD=72.27$ ) scores while the males ( $M=719.32$ ,  $SD=81.95$ ) reported slightly higher SAT Math scores,  $t(124)=2.72$ ,  $p=.007$ , than the females ( $M=685.50$ ,  $SD=52.87$ ). The males ( $M=5.69$ ,  $SD=1.27$ ) in our sample reported earning lower grades in high school,  $t(147)=2.22$ ,  $p=.03$ , than the females ( $M=6.08$ ,  $SD=.83$ ) [8=All A's, 7=Mostly A's, 6=More A's than B's, 5=More B's than A's, 4=Mostly B's and Some A's and C's, 3=More B's than C's, 2=More C's than B's, and 1=Mostly C's and Below]. Table 1 shows the students' major areas of study.

#### *Instrumentation and Procedures*

The participants completed a questionnaire that assessed their goal orientation (Dweck, 2000), perceived talent (self-efficacy) in 15 areas, their interest in those 15 talent areas, and the extent to which they believed natural ability and personal effort contributed to high levels of performance in the 15 talent areas. The questionnaire was completed during the last week of their fall freshman semester. The participants voluntarily completed the questionnaire during one of their freshman experience seminars and all responses were anonymous.

Prior to administering the questionnaire, we field tested it with 8 junior honors students who were enrolled in a graduate level educational research course. Originally the questionnaire addressed six of Gardner's (1985) original seven proposed intelligences (intra-personal was not included). The field test

students suggested adding additional talent areas, renaming some of the talents for clarity, and rewording the instructions. We followed their suggestions. The final questionnaire listed the following talent areas: Music Skills, Art Skills, Mathematics Skills, Athletic Skills, Dance Skills, Inter-Personal Skills, Logical/Reasoning Skills, Visual/Spatial Skills, Language Acquisition Skills, Verbal Skills, Leadership Skills, Science Skills, and Overall Academic Skills. Students indicated on a 1 to 5-point Likert scale how talented they thought they were in each of the areas (1=*Very Poor*, 2=*Below Average*, 3=*Average*, 4=*Above Average*, and 5=*Very Talented*). They also indicated how important they thought natural ability and personal effort contribute to high levels of performance in each of the talent areas (1=*Unimportant*, 2=*Of Little Importance*, 3=*Moderately Important*, 4=*Important*, and 5=*Very Important*). Finally, they indicated how interested they were in each of the talent areas (1=*Never Interested*, 2=*Seldom Interested*, 3=*Interested About Half the Time*, 4=*Usually Interested*, and 5=*Always Interested*).

Table 1  
*Participants College Majors*

Major	<i>n</i>	%
Sciences	79	48.5
Undeclared	22	13.5
Did not answer	16	9.8
Econ/Finance/Accounting	15	9.2
English literature	8	4.9
Foreign language	3	1.8
Liberal Arts	3	1.8
Business	3	1.8
Education	3	1.8
Music	2	1.2
Athletics	2	1.2
Political science	2	1.2
History	2	1.2
Art	1	.6
Psychology	1	.6
Journalism	1	.6

### *Results and Discussion*

First, one cannot overestimate the importance of interest in high levels of performance. In all cases, there was a significant, positive relationship between students' interest in a talent area and their assessment of their skill in that area (see Table 2). The strongest relationships tended to be in non-academic areas (dance, music, athletic, art, and leadership). All of those relationships exceeded  $r=.60$ , with the strongest relationship existing between athletic skills and interest in athletics,  $r=.72$ . Science was the only academic related talent that showed a relationship with interest above  $.60$ ,  $r=.69$ . The range of student responses varied more within the nonacademic items. Because our participants were selected for the honors program based on their previous academic performance, this was expected since they were all high academic performers. The lower correlations for academic skills may reflect this smaller variance.

Talents in dance, music, and leadership were related to beliefs that personal effort contributes to high levels of performance. In other words, students who excelled in these areas tended to believe effort was important, while students who did not excel in these areas did not believe effort was as important. Additionally, students' perceptions of their talent were positively related to their belief that natural ability contributes to high levels of performance for mathematics, writing, logical/reasoning, verbal, and leadership skills. With the exception of leadership, which also showed the lowest correlation of the five, all of these talent areas involved tasks associated with doing well in school. These results suggest that gifted and talented

students with high levels of performance in these areas view natural ability as important while those with lower levels of performance see natural ability as less important. From a self-efficacy perspective, this is a positive finding for reversing underachievement, since these students possibly do not see a natural ability as a block to their achievement. Some research (Siegle, Reis, & McCoach, 2006) indicates that gifted students' underachievement may be linked to the meaningfulness they attach to school more than a believe in their ability to do well. In this study, we did not find strong relationships between students' belief about the importance of effort and their self-reported skills in academic areas. This parallels Siegle and Reis's (1998) findings with younger gifted students.

Table 2

*Relationship Between Perceived Level of Talent and Belief in an Entity Theory of Intelligence, the Importance of Natural Ability in High Performance Levels, the Important of Personal Effort in High Performance Levels, and Interest in Each of 15 Talent Areas*

Talent Area	Entity Belief	Role of Ability	Role of Effort	Personal Interest
Musical Skills	-0.093	0.019	0.36**	0.601**
Art Skills	-0.123	-0.053	0.16	0.629**
Mathematical Skills	0.027	0.263**	0.059	0.550**
Athletic Skills	0.003	0.124	0.116	0.726**
Writing Skills	0.082	0.259**	0.064	0.598**
Spelling Skills	-0.052	0.162	0.089	0.350**
Dance Skills	0.008	0.109	0.18*	0.691**
Inter-Personal Skills	-0.191*	0.15	0.11	0.453**
Logical/Reasoning Skills	-0.052	0.26**	-0.069	0.514**
Visual/Spatial Skills	-0.126	0.137	0.086	0.513**
Language Acquisition Skills	-0.029	0.063	0.095	0.496**
Verbal Skills	-0.034	0.237**	0.066	0.485**
Leadership Skills	-0.185*	0.186*	0.213*	0.613**
Science Skills	-0.072	0.064	0.05	0.688**
Overall Academic Skills	-0.002	0.093	0.038	0.222**

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

Females were more interested than males in music, art, dance, and language acquisition skills (see Table 3). Males were more interested than females in athletic and science skills. Males rated their personal talent higher in 5 of the 15 talent areas (mathematics, athletics, logical/reasoning, leadership, and science skills), whereas females outscored males only in language acquisition. Males and females rated the importance of ability in outstanding performance similarly in all areas except verbal talent. Males placed stronger attributions on the role that natural ability plays in contributing to high levels of verbal talent performance than females did.

Males never rated the importance of personal effort more strongly than females for any of the talent areas. Females felt more strongly than males that personal effort contributed to high levels of performance in logical/reasoning skills, leadership skills, and overall academic skills. These results support Nichol's (1975) finding that males are likely to attribute their successes to ability and females are more likely to attribute their successes to effort.

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Table 3  
Gender Differences

Talent Area	<i>t</i> -test Results	Males		Females	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Personal Talent</i>					
Math	<i>t</i> (144)=2.964, <i>p</i> =.004, <i>d</i> =.48	4.27	.821	3.88	.798
Athletics	<i>t</i> (143)=4.080, <i>p</i> <.001, <i>d</i> =.67	3.57	1.098	2.84	1.067
Logical/Reasoning	<i>t</i> (143)=2.966, <i>p</i> =.004, <i>d</i> =.49	4.29	.795	3.92	.722
Language Acquisition	<i>t</i> (143)=2.370, <i>p</i> =.019, <i>d</i> =.39	3.47	.883	3.79	.768
Leadership	<i>t</i> (140.849)=2.152, <i>p</i> =.033, <i>d</i> =.36	3.92	.846	3.60	.944
Science	<i>t</i> (142)=3.608, <i>p</i> <.001, <i>d</i> =.61	4.18	.887	3.66	.827
<i>Natural Abilities' Contribution to High Levels of Performance</i>					
Verbal Skills	<i>t</i> (142)=2.143, <i>p</i> =.034, <i>d</i> =.37	3.58	.942	3.25	.857
<i>Personal Efforts' Contribution to High Levels of Performance</i>					
Logical/Reasoning	<i>t</i> (144)=2.153, <i>p</i> =.033, <i>d</i> =.35	3.30	1.19	3.69	1.03
Leadership	<i>t</i> (144)=2.001, <i>p</i> =.047, <i>d</i> =.33	3.50	1.126	3.86	1.052
Overall Academic Skills	<i>t</i> (145)=3.05, <i>p</i> =.003, <i>d</i> =.51	4.01	.986	4.47	.801
<i>Interest in the Talent Area</i>					
Music	<i>t</i> (146)=2.859, <i>p</i> =.005, <i>d</i> =.48	3.34	1.378	3.91	1.009
Art	<i>t</i> (145)=4.195, <i>p</i> <.001, <i>d</i> =.69	2.61	1.248	3.48	1.270
Athletics	<i>t</i> (146)=4.287, <i>p</i> <.001, <i>d</i> =.70	4.01	1.164	3.16	1.250
Dance	<i>t</i> (145)=3.975, <i>p</i> <.001, <i>d</i> =.66	2.42	1.363	3.28	1.255
Science	<i>t</i> (146)=2.073, <i>p</i> =.04, <i>d</i> =.35	3.93	1.113	3.54	1.137
Overall Academic Skills	<i>t</i> (146)=2.328, <i>p</i> =.021, <i>d</i> =.38	3.14	1.186	3.55	.995

#### Limitations

This was not a random sample of university honors students, and these results cannot be generalized beyond this group of students. Since Dweck proposed her goal orientation theory, others have further divided the learning/mastery and performance orientation categories. Future researchers need to investigate these expanded areas with gifted and talented students.

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