Using Dweck's Theory of Motivation to Determine How a Student's View of Intelligence Affects Their Overall Academic Achievement

Keely P'Pool
Western Kentucky University, keely.ppool913@topper.wku.edu

Follow this and additional works at: http://digitalcommons.wku.edu/theses

Part of the Educational Assessment, Evaluation, and Research Commons, and the Educational Psychology Commons

Recommended Citation
http://digitalcommons.wku.edu/theses/1214
USING DWECK’S THEORY OF MOTIVATION TO DETERMINE HOW A
STUDENT’S VIEW OF INTELLIGENCE AFFECTS THEIR OVERALL
ACADEMIC ACHIEVEMENT

A Thesis
Presented to
The Faculty of the School of Teacher Education
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Specialist in Education

By
Keely Blair P’Pool

December 2012
USING DWICK'S THEORY OF MOTIVATION TO DETERMINE HOW A STUDENT'S VIEW OF INTELLIGENCE AFFECTS THEIR OVERALL ACADEMIC ACHIEVEMENT

Date Recommended November 19, 2012

Julia L. Roberts, Ed.D., Director of Thesis

Lisa D. Murley, Ph.D.

Martha M. Day, Ed.D.

Dean, Graduate Studies and Research Date
ACKNOWLEDGEMENTS

I would first like to thank Dr. Julia Roberts, my committee chairperson and mentor, for her continuous support and guidance throughout the duration of this project and for all she has done throughout my academic and professional career. I would also like to express my gratitude to my other committee members, Dr. Lisa Murley and Dr. Martha Day, who have helped shape me into the student I am today. All three of my committee members have provided me with countless hours of their time as well as endless encouragement to reach my academic goals. In addition to my committee members I would like to express my utmost gratitude to Bob Cobb, an amazing statistician, for all of his help and guidance in regards to the research and statistics analyzed throughout this project. Thank you so much for your thorough explanations, supportive e-mails, answering all my questions, and meeting with me numerous times to discuss the various stages of this project! I also would like to thank my parents for their constant support of my academic pursuits and for their continuous encouragement of my love of learning. Also, my sincerest thanks to all of my family members, friends, and colleagues who have supported this project as well as all of my other endeavors throughout my academic career!
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables</td>
<td>v</td>
</tr>
<tr>
<td>Abstract</td>
<td>vi</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Literature Review</td>
<td>3</td>
</tr>
<tr>
<td>Purpose of Current Study</td>
<td>19</td>
</tr>
<tr>
<td>Method</td>
<td>22</td>
</tr>
<tr>
<td>Results</td>
<td>27</td>
</tr>
<tr>
<td>Discussion</td>
<td>32</td>
</tr>
<tr>
<td>Appendix A: Dweck Mindset Instrument</td>
<td>38</td>
</tr>
<tr>
<td>Appendix B: Parental Consent Form</td>
<td>40</td>
</tr>
<tr>
<td>Appendix C: Student Consent Form</td>
<td>42</td>
</tr>
<tr>
<td>Appendix D: Student Assent Form for Research Involving Minors</td>
<td>44</td>
</tr>
<tr>
<td>Appendix E: HSRB Approval</td>
<td>46</td>
</tr>
<tr>
<td>References</td>
<td>47</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1. GPA Means by Intelligence Group......................................................27

Table 2. Percentage of Students Identified in Each Theorist Category of the DMI......28

Table 3. Descriptive Statistics for First Semester GPA Scores, Second Semester GPA
Scores, and Difference Between GPA Scores by Intelligence Groups.................29

Table 4. Descriptive Statistics for ACT Composite Score by Intelligence Groups.......30

Table 5. Pearson Correlation Comparing Students’ View of Intelligence and Talent
Development.................................................31
This study explored how student intelligence was directly linked to the goals and motivation held by students when engaged in academic settings. Students were administered a questionnaire developed by Dr. Carol Dweck in which they responded to statements in order to determine their individual theory of intelligence. Once this was accomplished, multiple student variables (including but not limited to first semester GPA, second semester GPA, ACT composite score, age, and college coursework) were compared to their view of intelligence to determine if any correlations existed.

Results showed that there was no significant difference between students who viewed intelligence as malleable or fixed with regard to first semester GPA scores or the comparison between first and second semester GPA scores. The data from this research study supported other research by finding that approximately 15% of students were identified in the undecided category regarding their view of intelligence. There was no significant difference found between entity theorists and incremental theorists in regards to the theory of intelligence students held determining whether or not their second semester GPA scores would increase or decrease when compared to their first semester GPA scores. In addition, a significant difference was found between student views of intelligence and their ACT composite score. It was also discovered that there was a
positive correlation between how students viewed intelligence and how they viewed talent development.

Findings from this study suggest that praise can be both motivating as well as detrimental to students, and it is important that the correct type of praise be used when addressing students. It was also discovered that teachers can have a direct role in regard to helping students change their view of intelligence from an entity view, in which they view intelligence as a fixed trait, to an incremental view, in which they view intelligence as a malleable trait and able to change through their own effort and hard work. Future research topics are discussed in an effort to determine what strategies and methods can be utilized to allow as many students as possible to reach their full academic potential.
Introduction

Student achievement has long been the focus of teachers and educators around the world. Identifying specific factors that contribute to student achievement can assist educators in creating and utilizing effective teaching methods which will positively enhance the experience students have in academic settings. Dweck (2006) explains that student achievement is a direct result of the intelligence view each individual student holds. There are two different views of intelligence: the entity view in which students believe that intelligence is an attribute that is unable to change and the incremental view in which students believe intelligence is a malleable attribute that is able to change through their own effort and hard work.

Overall, Dweck’s (2008) research shows that entity theorists tend to focus on proving their intelligence by engaging in performance goals as a means to show others they are smart. Entity theorists want others to see that they are intelligent and often seek out tasks that are not challenging as a way to retain their label of being “smart.” On the contrary, students who are identified as incremental theorists prefer to focus on engaging in learning goals as a means of mastering new content they are presented with or difficult content with which they are struggling to master. Incremental theorists are motivated by mastery-oriented goals and have a desire to learn from their mistakes by consistently developing problem solving strategies in the face of adversity that match the academic challenges they are facing (Dweck, 1999b).

Praise is known by many to be a positive tool used to encourage students who perform well or who are frustrated as a way to motivate them to persevere through academic challenges that may prove to be difficult. However, Dweck (2012) and
Sternberg (2002) explain that praise can both limit the intellectual growth of students while also teaching students how to identify their personal view of intelligence. Although praise is often used as a positive means, it can often be counterproductive for students. Students who are praised for their intelligence are much more likely to become entity theorists and view intelligence as a fixed trait. Studies performed by Kinlaw and Kurtz-Costes (2007) suggest that these students are also at a greater risk of developing learned helplessness in various academic areas. Students who are praised for their effort rather than their intelligence are much more likely to develop the incremental view of intelligence and view intelligence as being a malleable trait, which they can alter and increase through their own effort and hard work.

Numerous studies have been conducted to determine if there is a correlation between academic achievement and how students view intelligence. So far, these studies have indicated that there is indeed an existing correlation. Elliot and Dweck (2005) affirm that student beliefs regarding intelligence and its malleability have a significant effect on the way students learn as well as their overall academic achievement. However, this theory has not yet been tested when the student sample consists of students who are all identified as being gifted. The term “gifted” in this study refers to students who have been identified as gifted from their ACT scores. Will there be a correlation between how gifted students view intelligence and their overall academic achievement? The following review of the literature will examine how students’ views of intelligence classifies them in regard to (a) self-theories, (b) how their goals and motivation lead to their success, (c) their academic achievement, (d) the effect praise has on them, and (e) the various strategies teachers can use to allow these students to reach their full academic potential.
Literature Review

Self-Theories

Student achievement has long been an important topic of discussion for teachers and educators, especially with regard to mandated testing, score report analysis, and teacher accountability. Carol Dweck (Learning Theories Knowledgebase, 2008) has identified two main implicit theories of intelligence held by students. These two theories consist of an “entity” theory of intelligence and an “incremental” theory of intelligence. Those students who carry the entity view of intelligence treat intelligence as a characteristic that is seen as being a fixed and stable attribute. These students have “a high desire to prove themselves to others and to be seen as smart and avoid looking unintelligent” (Learning Theories Knowledgebase, 2008, p. 1). Students who adhere to the entity theory of intelligence worry that any type of academic failure or having to work hard to achieve something will be viewed by others as them having a low intelligence. Due to this viewpoint, entity theorists often make academic choices that will maximize their possibility and probability of performing well.

Students who carry the incremental view of intelligence treat intelligence as a characteristic that is seen as being a malleable attribute that is able to change. Petty (2004) explains that incremental theorists believe that both “ability and success are due to learning, which requires time and effort” (p. 1). Therefore, if a student who is an incremental theorist is struggling with mastering specific content knowledge they will put forth more effort and work harder to understand the content rather than giving up because they have run into a challenging academic situation. These students “see satisfaction coming from the process of learning and often see opportunities to get better. They do not
focus on what the outcome will say about them, but what they can attain from taking part in the venture” (Learning Theories Knowledgebase, 2008, p.1). Additionally, Dweck (2008) explains that those students who believe intelligence is malleable and able to change believe that “their most basic qualities (including but not limited to their individual intelligence) can be developed through their own efforts and education” (p. 392). It is crucial for students to have these qualities because research indicates that students possessing these characteristics are more open to learning new and challenging content, more willing to confront challenges (both academically and in other settings), are more capable of working through difficult tasks on their own, and are much more capable of bouncing back from any failures they experience (Dweck, 1999b).

Dweck describes how these self-theories assist in shaping the thoughts, behaviors, and feelings of students. The self-theories also reveal “why some students are motivated to work harder and why others fall into patterns of helplessness and are self-defeating” (Learning Theories Knowledgebase, 2008, p.1). Dweck (2006) explains that there is also a category in which students fall when they do not strongly identify with either the entity theory of intelligence or incremental view of intelligence. There are approximately 15% of students who compose the “undecided” category. When discussing self-theories of intelligence it is important to note, however, that Dweck (2012) does not attempt to define intelligence. Her body of research focuses solely on how the view of intelligence with which people identify can impact or influence their behavior. Intelligence has long been a highly debated topic in regards to it having a singular definition. The core aspects of intelligence, of which there are many, have been agreed upon by numerous researchers and elicit a definition provided by Deary (2001) declaring,
Intelligence is a very general mental capacity that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. It is not merely book learning, a narrow academic skill, or test-taking smarts. Rather, it reflects a broader and deeper capability for comprehending our surroundings – ‘catching on’, ‘making sense’ of things, or ‘figuring out’ what to do (p. 17).

Dweck (1999b) explains that even Alfred Binet, the inventor of the IQ test knew that intelligence was not a fixed attribute that never changed. She explains that Binet invented the IQ test as a means of “identifying children who were not thriving in the Paris public schools, not to measure children’s fixed entities” (p. 59). His overall goal was to create academic programs for students so as to allow them to get back on track academically in order for them to achieve their true potential intellectually. Dewar (2008b) goes on to add that there are multiple factors that contribute to the intelligence of any person. Among the contributing factors of intelligence are factors in which we ourselves can control such as exercise, instruction in logic and critical thinking skills, free and unstructured play, mnemonic strategies, effort, and motivation. Dewar’s (2008a) research concludes that “what you believe may have a significant effect on the way you learn” (p. 2). A study conducted by Mangels, Butterfield, Lamb, Good, and Dweck (2006) confirmed this statement as the results from the study indicated that the students who were incremental theorists and viewed intelligence as able to change performed better than the students who were entity theorists and viewed intelligence as being a fixed and unchangeable attribute. Overall, Dweck’s (2008) research provides numerous reasons
explaining how self-theories play a critical role in the “challenge-seeking, self-regulation, and resilience” in students (p. 392).

**Goals, Motivation, & Student Success**

Blackwell, Trzesniewski, and Dweck (2007) establish that entity theorists and incremental theorists have different goals regarding academic achievement and are motivated by different means. Entity theorists are more focused on completing performance goals (which are utilized to document their ability) while incremental theorists prefer to complete learning goals (which are utilized to increase their individual ability). Incremental theorists are also more likely to believe in the purpose behind putting forth effort rather than seeing effort as being futile whether the task is either at a low or high degree of difficulty. In addition, entity theorists often display helpless strategies (often seen as effort withdrawal or strategy perseveration) while incremental theorists display strategies that are mastery oriented (usually seen as effort escalation or strategy change). Elliot and Dweck (2005) explain that the motivation of each individual student has a large impact on the types of strategies they will use when faced with academic challenges, which in turn will assist in their identification of intelligence as being either a malleable trait or a trait that is unable to change.

In a study completed by Dweck, Chiu, and Hong (1995) it was noted that both the goals and motivation of the individual student have a profound impact on the view of intelligence the student will eventually develop. The results of this study are in agreement with the previously mentioned Blackwell, Trzesniewski, and Dweck (2007) study in that the researchers concur that students holding the entity theory of intelligence prefer to engage in performance goals. These performance goals frequently cause students to
experience academic vulnerability regarding the development of learned helplessness when given a challenging task. Students engaging in learned helplessness would rather not attempt a challenging task for fear that they will fail, and by doing so they are able to protect their label of “being smart” since they did not fail a task. This study also supported the findings of the Blackwell, Trzesniewski, and Dweck (2007) study in regards to identifying students who are incremental theorists as those who seek out learning goals, which allow them to “master the content presented even if they have to struggle to do so” (p. 322).

Student success and achievement is the main goal of all educators. According to Mangels et al. (2006), increasing evidence shows that the likelihood of student success is “influenced not only by actual ability, but also by the beliefs and goals that they bring to the achievement situation” (p. 75). Heckhausen and Dweck (1998) also assert that student motivation can have a resounding impact on the overall academic achievement experienced by students. Entity theorists, who prefer to focus on performance goals, can become vulnerable quite quickly when presented with a challenging situation in which they realize there is a potential for failure to occur. The main motivation entity theorists have is to “look smart” in situations, which also means that they have to work hard at not failing in order to keep their “smart” title. However, whenever incremental theorists are presented with a challenging situation they seem to be much more capable of continuing to be effective learners. Incremental theorists are motivated by wanting to acquire more knowledge, which in effect assists them in being proactive in various learning environments because they are eager to succeed and are also willing to put in the work and effort in order to be successful. Mastery is the main motivation of incremental
theorists, and problem solving as well as learning from their mistakes are important components of mastery-oriented learning.

Mangels et al. (2006) suggest that since entity theorists feel the need to perform better than others as a way to prove their intelligence, these students are therefore much more vulnerable when negative feedback is provided. As a result of this vulnerability and in an effort to “save face,” these students are “more likely to shun learning opportunities where they anticipate a high risk of errors, or to disengage from these situations when errors occur” (p. 75). Contrary to the entity theorist goal of protecting their intelligence label, incremental theorists adhere to the goal of increasing their own ability through effort and hard work. These students are much more likely to pursue tasks that are challenging as a way to increase their intelligence. In addition to seeking out challenge, Mangels et al. (2006) explains that these students also “are more willing to pursue remedial activities when they experience academic difficulty” (p. 78). It is this self-acquisition of challenge and determined mastery of content that separates the incremental theorist from the entity theorist in terms of goals and motivation.

**Academic Achievement**

As explained by Dweck (2006), students who are entity theorists and identify intelligence as being a fixed trait are often susceptible to developing learned helplessness. This development of learned helplessness occurs because they view their academic circumstances as being outside of their own control, which in effect creates an atmosphere in which they give up on tasks more quickly should those tasks prove to be slightly challenging. Essentially, they feel that there is nothing they can do in order to improve their academic circumstances or overall academic achievement. As a result of
this perceived difficulty and challenge, students become more apt to “simply avoid situations or activities that they perceive to be challenging, perhaps through procrastination, absenteeism, etc.” (Learning Theories Knowledgebase, 2008, p.1). In addition, students may go an alternative route in which they purposely select assignments and tasks that are extremely difficult to complete so that they will have an excuse to fail, and these students might also stop trying to perform altogether.

As Dweck (2006) explains, entity theorists often link success and failure with what they perceive to be a fixed and limited amount of intelligence instead of their own individual effort, which often causes them to believe that “failure implies a natural lack of intelligence” (p. 137). Dweck (1999b) found that students who have a long history of success may actually be the most vulnerable for developing learned helplessness during their academic career because they will often buy into the entity theory of intelligence more readily than those who experience less frequent academic success. Overall, Dweck’s research indicates that students who hold an entity theory of intelligence are less likely to attempt academically challenging tasks, which will therefore put them at a greater risk for academic underachievement than students who hold an incremental view of intelligence.

Students who are incremental theorists and identify intelligence as being a malleable trait often react differently when faced with failure. These students strive to master challenges that are presented to them and often develop a mastery-oriented outlook in regards to academic areas. Incremental theorists are seen as having an internal desire to work harder to achieve goals and master content material presented to them. According to the Learning Theories Knowledgebase (2008), when provided with a
challenging task, incremental theorists “immediately begin to consider various ways that they could approach the task differently, and they increase their efforts” (p. 2). Incremental theorists, unlike entity theorists, believe that the effort they put forth on their own increases their strategy development and that what they learn will assist them in increasing their overall academic intelligence.

Incremental theorists believe that their intelligence can be increased and improved upon through constant effort and persistence; hence, these students will “set mastery goals and seek academic challenges that they believe will help them to grow intellectually” (Dweck, 1999b, p. 142). Students who identify with the incremental view of intelligence are often much better at adapting to academic challenges than those who hold the entity view of intelligence. Incremental theorists have developed tried and proven strategies that enable them to be successful when learning new content or attempting to master challenging content. Intrinsic motivation (learning for the enjoyment of learning) is often much more prevalent in students who are incremental theorists because they willingly put forth more effort to master tasks and content knowledge. Unlike entity theorists, incremental theorists seek out challenging tasks in order to accomplish them rather than using challenging tasks as an excuse for not being able to master specific content knowledge, which is often the method of entity theorists. Due to this difference in approach regarding academic challenges and tasks, Dweck (2006) notes that students who are incremental theorists are much more likely to succeed in academic settings and are also more likely to continue their education at the secondary and collegiate level than their entity theorist counterparts.
A recent study conducted by Blackwell, Trzesniewski, and Dweck (2007) focused on the internal mechanisms that enabled some students to thrive when met with academic challenge while other students, having the same academic ability, faltered and did not successfully complete the academic challenge. Both the entity and incremental theories of intelligence were assessed in this study, and the results showed that “even when students on both ends of the continuum show equal intellectual ability, their theories of intelligence shape their responses to academic challenge” (p. 247). Those students who identify with the entity view of intelligence feel their intelligence is uncontrollable, which often causes them to attempt to measure their intellectual ability. By measuring their ability students are more likely to withdraw from academic challenges or give up if they feel their trying and putting forth effort might result in a negative outcome. Students who identify with the incremental view of intelligence feel their intelligence can be increased through their own effort, and these students often steer themselves towards academic tasks that are more challenging and that “promote skill acquisition and learning to overcome difficult academic tasks,” resulting in higher academic achievement (p. 247). Horowitz, Subotnik, and Matthews (2009) explain that high achievement experienced by students comes from hard work over an extended period of time. Hard work and effort are components that allow students to experience academic success and support the incremental theory of intelligence in that high achievement is obtained by students who put forth effort and who work through academic struggles and challenges.

**Power of Praise**

Praise is often thought of as a means to support and encourage students when they are learning content for the first time or struggling to master content they have been
presented with multiple times. However, Dweck (2012) describes how praising students for their intelligence “has the potential to limit their intellectual growth” (p. 2). Multiple research studies conducted by Dweck (1999a) suggest that both parents and teachers may be leading their students into accepting the entity view of intelligence unknowingly. As explained by Sternberg (2002), students can learn to identify their view of intelligence based upon the type of praise they receive. In a study performed by Mueller and Dweck (1998) a group of fifth grade students were given multiple rounds of tasks to complete, and certain types of praise were given to students in between each task. The first task all students completed was a puzzle simple enough that all students would stand to perform fairly well and succeed at the task with relative ease. Once the first puzzle was complete half of the students were praised for their intelligence by being told, “You must be smart at this,” while the other half of students were praised for their effort by being told, “You must have worked really hard.” After the completion of the first puzzle students were then given a choice of the next type of task they were to complete. They were allowed to choose between a puzzle of the same level, which was an easy test just like the first one, or a puzzle that would be more difficult than the first but that they would learn a lot from attempting. Mueller and Dweck (1998) reported that of the students who had been praised for their effort upon completing the first puzzle, 90% of them chose to complete the more difficult puzzle for their second task. In contrast, of the students who had been praised for their intelligence upon completing the first task, a majority chose to complete the easy puzzle for their second task. As Bronson (2007) put it in her research, “The ‘smart’ kids took the cop-out” (p. 2). Dweck (2006) explains the reason for this occurrence by stating, “When we praise children for their intelligence, we tell them that this is the name of the
game: Look smart, don’t risk making mistakes” (p. 137). Essentially that is exactly what the fifth grade students in her study did; they didn’t want to risk being embarrassed by not being able to complete a more challenging puzzle so they chose to complete the task in which they were confident they would succeed.

Bronson (2007) suggests that giving students the label of being “smart” does not prevent them from underperforming in academic settings, and it may actually be causing the underperformance from students. This occurs because once students are labeled “smart,” which they believe to be a positive label, they will do anything and everything in their power to avoid having to give up that label or prove that they don’t truly deserve that label. Glenn (2010) adds that children who are told they are smart often become extremely preoccupied with how their performance compares to their peers who are completing the same work. They focus on their performance rather than attempting to develop new methods and strategies that would improve the quality of their own work. When students are given praise based upon their intelligence and how smart they are, they tend to move toward an entity theory of intelligence in which they believe their amount intelligence is fixed. Receiving this type of praise from parents or teachers can cause students to attempt to avoid challenges so their intelligence can remain intact. When these students come upon academic obstacles and challenges it is common for their performance and confidence to decline. Dweck (1999a) elaborates by stating, “By praising students for their intelligence, rather than effort, many adults are sending the message that success and failure depend on something beyond the students’ control” (p. 5). Dewar (2008a) agrees with this statement and adds that students praised for intelligence are more likely to view their own failures as evidence of low intelligence,
meaning that if they fail at something they must not be as smart as people declare them to be. This can lead to additional under achievement by the student as a means to prevent themselves from having to experience failure again. Students who are praised for their intelligence are often less likely to view themselves as intelligent. This occurs because when students are told they are smart by others they begin to view their performance as a way to constantly measure their own intelligence. When they come across tasks that are difficult in nature or more challenging than they are used to, they eventually fail and see their failure as a type of confirmation of them not being intelligent.

Whenever students perform at high levels their self-esteem is high; however, many students crumble whenever they are met with an academic challenge only to struggle with completing it. If students are praised for their effort rather than their intelligence, they are much more likely to develop an incremental view of intelligence and see their own intelligence as being an attribute they can change through hard work and effort. This then results in their self-esteem remaining constant and stable regardless of how much work they have to complete and how much effort they have to put into solving a task. Dweck (2008) describes these students as being eager learners and “highly resilient in the face of difficulty” (p. 392). These students are therefore much more likely to reach their full academic potential because “they are more willing to push through any academic setbacks they might experience” (Dweck, 1999a, p. 7). Effort and hard work are important to them because they know that through their own dedication to succeed they can overcome academic challenges that may cause them to initially struggle.

Praise is indeed a powerful tool tied to student performance and achievement. Whenever teachers give students any type of feedback, messages are conveyed which
inherently affect the opinion students have of themselves, their motivation, and their overall achievement (Dweck, 1999a). Dweck (2007) summarizes the importance of appropriate praise by explaining that the wrong kind of praise creates self-defeating behavior in students, while the right kind motivates students to learn and achieve at their highest level of potential. Dewar (2008b) explains some alternative forms of praise not focused on intelligence that can be used with students such as “praising their strategies, praising specific work they have completed, and praising their persistence or effort” (p. 5). Overall, it is important for students to focus on their potential for learning rather than their immediate intellect because when they understand that effort and hard work is the key to learning and mastering new content they can then be responsible for their achievement and their self-esteem. Dweck (1999a) states,

Students who value learning and effort know how to make and sustain commitment to valued goals. Unlike some of their peers, they are not afraid to work hard; they know that meaningful tasks involve setbacks; and they know how to bounce back from failure. These are lessons that cannot help but serve them well in life as well as in school (p. 9).

Teacher Impact on Intelligence Theories

Research conducted by Hattie, Biggs, and Purdie (1996) explains that “whether students attribute their success to something they can change (incremental view of intelligence) or something they can’t change (entity view of intelligence) is very influential, and this attribution can be changed” (p. 106). The effect sizes present in their research indicated that working on attribution can improve student performance, and this performance “can be improved as much as two and three grade levels” (p. 127). It is
important to note that children are not born believing that their own intelligence is fixed and unable to change. Research performed on American students by Kinlaw and Kurtz-Costes (2007) suggests young children tend to believe in the malleability of intelligence and most often identify themselves as incremental theorists. Many children often feel that the smartest person in the classroom is the one who works the hardest and puts forth the most effort. Dweck (2008) specifies that “a malleable theory of intelligence can be taught” (p. 392).

Teachers can have a positive impact on student performance as well as their overall achievement by establishing a “growth ethos” within their classroom. By establishing a growth ethos, teachers can utilize numerous methods in which they can influence students to view intelligence as being a malleable trait that is capable of changing through effort and hard work. Petty (2004) dictates that it is important for teachers who have a growth ethos classroom to stress the following: intelligence and ability can be cultivated, effort is required for learning, effort grows connections in the brain which makes students smarter, the brain is like a muscle which strengthens with exercise and students need to “work out” in order to become bright, don’t attribute difficulty to fixed intelligence, and avoid defensive withdrawal of effort. A main component of the growth ethos classroom centers on “process oriented praise.” Petty (2004) explains that focusing on the processes students go through in order to correctly complete academic tasks “teaches students to interpret setbacks in terms of lack of effort or inappropriate strategies” (p. 2). When this process is used, students identify the strategies they use as being what is causing them to fail rather than their lack of intelligence. This method additionally sells the idea to students that esteem comes from
“striving and from the use of effective strategies” (p. 2). Inherently, this method allows all students to earn the correct form of praise that will encourage them to alter the strategies they are using so that they can correctly complete the task. This ensures that all students experience success and teaches students they can accomplish and overcome difficult and challenging tasks by putting forth effort and altering their problem solving strategies.

Using appropriate assessments is another technique teachers can use in the classroom as a means of teaching students that intelligence is a malleable trait. According to Petty (2004), various types of assessments, such as self-assessments, peer assessments, and spoof assessments, are methods that have been found to “make huge differences to students’ attribution, and have doubled attainment in mathematics and related subject areas” (p. 3). Students can use self-assessments to assess themselves and their own individual student work against specific criteria from a designated assignment rubric or against modeled answers that have previously been discussed and evaluated by the class as a whole. Peer assessments can be used to pair up students holding the entity theory and incremental theory so they can discuss each other’s work to come up with positive feedback on how they can each improve their work samples. Using spoof assessments is a technique in which students are given a copy of a piece of work completed by an anonymous student from a previous year or completed by the teacher to discuss assignment expectations. Students then go through and discuss the piece of work and score it using criteria or a rubric provided to them by the teacher. The teacher then goes over the work sample and discusses each of the marks against the piece of work by explaining why points were lost and what could have been done in order to prevent points
from being taken away. Beasley (2011) explains the importance of rubrics by stating, “Using rubrics that are clear about the assignment expectations can send the message to students about what is valued in the classroom. Although grades can be used to assess students, we can use a rubric to provide praise related to hard work” (p. 5). All of these assessment methods demonstrate to the students that their success depends upon the work they do and not their intelligence level. Therefore, students learn that they can control their academic scores through their own work and effort rather than thinking their intelligence will only let them achieve a certain score.
**Purpose of Current Study**

The overall nature and purpose of this project was to determine if there was a relationship between how students view intelligence and their overall academic achievement. Previous studies have shown that students who view intelligence as being a malleable and changeable trait tend to work harder in school and achieve more, while students who view intelligence as being fixed tend to not work as hard and therefore achieve less than those students who view intelligence as malleable (Blackwell, Trzesniewski, & Dweck, 2007). This theory has not yet been researched with regard to a student population that is gifted, and doing this research will add valuable knowledge to the field of both psychology as well as gifted education regarding how students can determine their academic achievement based upon their view of intelligence.

This study focuses on students who have been identified as being gifted in various subject areas based on their ACT scores and who attend a public high school established for gifted and talented students (the Academy) located in the south central region of the United States at a four-year collegiate institution and who participate in college level courses. For the purpose of this study, the ACT scores as well as the cumulative GPA scores at the conclusion of the first and second semesters at the Academy for the students participating in this research study will be used. These scores will be compared to the results of the Dweck Mindset Instrument (DMI) to determine if there is indeed an existing correlation between how a student views intelligence and his/her overall academic achievement.

The results of this research will benefit the Academy as well as other institutions similar to it. Knowing how students view intelligence and how this view effects their
academic achievement will assist the staff of the Academy in being able to better meet the needs of the students who are attending, which will increase the success and achievement of these students. This study can also be used to assist in the screening and interview process that takes place before each student is admitted into the Academy. The research done in this study will add to what is known about young people and talent development. This study also will add to the body of literature that has been published regarding gifted students and the role intelligence plays in correlation to academic achievement. Specifically, this study will answer the following research questions:

**Research Question 1:** Is there a significant difference between students who view intelligence as being malleable (DMI score between 4-6) and students who view intelligence as being fixed (DMI score between 1-3) in regard to their likelihood of being successful in an academically challenging environment (first semester GPA of 3.0 or higher) like the Academy?

**Research Question 2:** When using Dweck’s Theory of Motivation, about 15% of students are labeled as being “undecided” meaning they do not have a clear theory regarding whether intelligence is a malleable or fixed trait (DMI score between 3.1-3.9). Do the data in this study support the 15% “undecided” category finding that is evident in other research using Dweck’s Theory of Motivation when the students answering the DMI are identified as being gifted students?
Research Question 3: Does the theory of intelligence held by students (DMI score between 1-3 for fixed trait, 4-6 for malleable trait, and 3.1-3.9 for undecided) determine whether or not their second semester GPA will increase or decrease when compared to their first semester GPA?

Research Question 4: Is there a significant difference between how students view intelligence (DMI score between 1-3 for fixed trait, 4-6 for malleable trait, and 3.1-3.9 for undecided) and their ACT composite score?

Research Question 5: Is there a correlation between how students view intelligence (DMI score between 1-3 for fixed trait, 4-6 for malleable trait, and 3.1-3.9 for undecided) and how they view talent development (DMI score between 1-3 for fixed trait, 4-6 for malleable trait, and 3.1-3.9 for undecided)?
Method

Participants

The participants of this study include 118 high school juniors and seniors who attended a public high school established for gifted and talented students (the Academy) located in the south central region of the United States at a four-year collegiate institution during the 2010-2011 academic year. All of the students who participated in this study completed a 16-item Dweck Mindset Instrument after signing a consent form or having their parents sign a consent form on their behalf if they were younger than 18 years old. Of the 118 students who completed the Dweck Mindset Instrument, there were 57 juniors and 61 seniors. Within the group of 118 student participants, 57 of the students were females while the other 61 students were males.

Materials

Dweck Mindset Instrument

The Dweck Mindset Instrument (DMI), developed and created by Dr. Carol Dweck, was used to assess how students view their own intelligence. After completing a thorough review of the literature pertaining to student motivation and mindset, the DMI was determined to be the most inclusive and comprehensive regarding the questions students could answer in order to determine their individual mindset in relation to their overall academic achievement. The DMI comprises 16 separate item statements, which students rank on an agreement scale of 1-6. The scale consists of the following scores: 1 (strongly agree), 2 (agree), 3 (mostly agree), 4 (mostly disagree), 5 (disagree), and 6 (strongly disagree). Students are instructed to read each of the individual 16 item
statements and then rank their level of agreement or disagreement with the item based on the numeric scale explained above.

The item statements on the DMI (see Appendix A) are written in a way so that students reveal their thoughts and feelings about whether or not they believe talent and intelligence are characteristics that are malleable or unable to change. These identified results are based upon their level of agreement or disagreement with each of the item statements. The item statements require students to determine their individual beliefs about their own intelligence and talent based upon their own overall academic success and achievement. By answering the item statements on the DMI, students are essentially answering questions that are focusing on a specific viewpoint related to intelligence and talent more than once. The item statements are written in a manner in which the wording is altered slightly so as to more accurately identify the viewpoints of students regarding their beliefs on their own individual intelligence as well as their personal overall academic achievement.

**Scoring**

The DMI is composed of 16 separate item statements, which students rank on an agreement scale of 1-6. The scale consists of the following scores: 1 (strongly agree), 2 (agree), 3 (mostly agree), 4 (mostly disagree), 5 (disagree), and 6 (strongly disagree). Students are instructed to read each of the individual 16 item statements and then rank their level of agreement or disagreement with the item based on the numeric scale above. The DMI contains both fixed item statements as well as incremental item statements. The scores from the incremental items are “reversed” so that strongly disagreeing with an entity item is similar to strongly agreeing with an incremental item.
The fixed item statements on the questionnaire consist of statement numbers 1, 2, 4, 6, 9, 10, 12, and 14. These statements focus on both intelligence and talent being factors that are fixed and unchanging. The incremental item statements on the questionnaire consist of item numbers 3, 5, 7, 8, 11, 13, 15, and 16. There are four fixed item statements and four incremental item statements focusing on student intelligence, and there are four fixed item statements and four incremental item statements focusing on student talent development. The scores selected by students for the incremental item statements, those statements that portray intelligence and talent as something that can be changed, are reversed (1 becomes a 6, 2 becomes a 5, 3 becomes a 4, 4 becomes a 3, 5 becomes a 2, and 6 becomes a 1). These scores are averaged with the item statements that portray intelligence and talent as being factors that are fixed and unable to change.

It is important to note that the scores for intelligence and talent are kept separate and calculated separately since they are two completely separate characteristics. The scores for the item statements regarding intelligence (items 1-8) are averaged together, and the scores for the item statements regarding talent (items 9-16) are averaged together. Students who receive an average score between 1 and 3 are counted as holding an entity theory and view intelligence and talent development as characteristics that are fixed and unable to change. Students who receive an average score between 4 and 6 are counted as holding an incremental theory and view intelligence and talent development as characteristics that are malleable and able to change. Students who receive an average score between 3 and 4 are counted as being undecided and do not have a clear theory about intelligence and talent development in regards to them being characteristics that are able to change or unable to change.
Procedure

After gaining the approval of the Human Subjects Review Board (see Appendix E), the first step was to give the parents the parental consent form which contains the purpose and description of the research project in which their child would be participating. The parental consent form (see Appendix B) was an “opt-out” consent form in which parents were instructed to sign the consent form only if they wanted to opt their child out of the research study and not have them participate. On the first page of the consent form there is a statement explaining that by signing the consent form they are not giving their permission for their child’s GPA scores and ACT scores to be used as part of the research study and that by not signing the consent form they are giving permission for their child’s GPA scores and ACT scores to be used in the research study. On the second page of the consent form there is a statement explaining to parents that by signing the consent form they are removing their child from the study and by not signing the consent form they are giving their permission for their child to participate in the study.

After receiving parental consent for all the students at the Academy to participate in the study, the students were then given both student consent forms (for those students who were already 18 years old at the time of the research study) as well as student assent forms for research involving minors (for those students who were under the age of 18 years old at the time of the research study). Both the student consent form (see Appendix C) and student assent form (see Appendix D) contain the purpose and description of the research study in which students would be participating. On the first page of both the student consent form and the student assent form for research involving minors, there is a statement explaining that by signing the consent or assent form they are giving their
permission for their GPA scores and ACT scores to be used in the research study as well as agreeing to participate in the research study themselves.

Upon completing the student consent and student assent forms, students were each given a DMI to complete (see Appendix A). Students were instructed to read each of the item statements and mark the box containing the appropriate number in the agreement scale based upon how much they either agreed or disagreed with each statement. Once students completed the DMI, they were collected and scored using the given scores for the fixed items and the reversed scores for the incremental items. These scores were then averaged, with the intelligence scores (questions 1-8) being kept separate from the talent scores (questions 9-16), and students were identified as holding an entity theory, an incremental theory, or not identifying strongly with either theory. These scores were also analyzed along with student ACT scores and their GPA scores from their first and second semesters at the Academy, which was December of 2009 and May of 2010 for the students who were seniors and December of 2010 and May of 2011 for the students who were juniors.
Results

The first research question focused on whether or not there was a significant difference between how students view intelligence and their likeliness of experiencing success in an academically challenging environment, such as the Academy. To evaluate the first research question students were placed into groups according to their score on the Dweck Mindset Instrument (DMI). Students who scored between 1-3 were identified as entity theorists. Students who scored between 3.1-3.9 were identified as being in the “undecided” group and didn’t strongly identify with the entity or incremental theory of intelligence. These students were excluded from this research question because the central focus of this question is the differences in the entity and incremental groups. Students who scored between 4-6 were identified as incremental theorists. First semester GPA scores were then contrasted by group. To examine the differences between these two groups, a T-Test for independent samples was performed on the first semester GPA scores of each student group. This analysis revealed no significant difference between the two groups, t(99) = -1.94; p > 0.0553. Sample means are displayed in Table 1.

Table 1. GPA Means by Intelligence Group

<table>
<thead>
<tr>
<th>Intelligence Group</th>
<th>Number of Students (N)</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entity (Fixed)</td>
<td>21</td>
<td>3.66</td>
<td>0.343</td>
</tr>
<tr>
<td>Incremental (Malleable)</td>
<td>80</td>
<td>3.44</td>
<td>0.482</td>
</tr>
</tbody>
</table>
The second research question focused on previous research studies that used Dweck’s Theory of Motivation (Dweck, 2006), which explains that approximately 15% of students will be labeled as “undecided” in their view of intelligence, meaning that they do not have a clear theory of whether intelligence is either a malleable or fixed trait. This question sought to determine if this statistic would be supported when the students completing the DMI were all identified as being academically gifted. The students who were identified in the “undecided” category for intelligence theories scored between a 3.1-3.9 on the DMI. To evaluate this research question, the percentage of students who identified with each of the three student groups (entity, undecided, and malleable) was calculated and analyzed. Table 2 shows the data collected from this research study supports previous research where Dweck’s Theory of Motivation was used in which approximately 15% of students are labeled as “undecided” as 14.4% of students from the Academy scored between 3.1-3.9 on the DMI and were identified as being in the “undecided” intelligence theory category.

**Table 2. Percentage of Students Identified in Each Theorist Category of the DMI**

<table>
<thead>
<tr>
<th>Intelligence Group</th>
<th>Number of Students (N)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entity (Fixed)</td>
<td>21</td>
<td>17.8%</td>
</tr>
<tr>
<td>Undecided</td>
<td>17</td>
<td>14.4%</td>
</tr>
<tr>
<td>Incremental (Malleable)</td>
<td>80</td>
<td>67.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>118</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
The third research question concentrated on if the specific intelligence theory held by students determined whether or not their individual second semester GPA score would increase or decrease when compared to their first semester GPA score. To evaluate this research question the difference between the first and second semester GPA scores was calculated for each of the two student groups (entity theorists and incremental theorists). Students identified in the “undecided” group were excluded from this research question because the central focus of this question is the differences in GPA scores in the entity and incremental groups. A T-Test for independent samples was performed on the difference of GPA scores to determine if any significant differences existed between the two student groups. The T-Test revealed that no significant differences existed, \( t(99) = 0.32; p > 0.7484 \). Table 3 reports the GPA scores of the first and second semesters and the difference between the GPA scores of the two student groups.

**Table 3. Descriptive Statistics for First Semester GPA Scores, Second Semester GPA Scores, and Difference Between GPA Scores by Intelligence Groups**

<table>
<thead>
<tr>
<th>Intelligence Group</th>
<th>First Semester GPA Scores</th>
<th>Second Semester GPA Scores</th>
<th>Difference Between GPA Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>Entity (Fixed)</td>
<td>21</td>
<td>3.66</td>
<td>0.34</td>
</tr>
<tr>
<td>Incremental (Malleable)</td>
<td>80</td>
<td>3.44</td>
<td>0.48</td>
</tr>
</tbody>
</table>
The fourth research question concentrated on whether or not a significant difference existed between how students view intelligence as a trait (malleable or fixed) and their ACT composite score. The students who were identified in the “undecided” group were excluded from this research question because the central focus of this question is the differences between views of intelligence and ACT composite scores with the entity and incremental groups. To assess this research question a T-Test for independent samples was performed by comparing each intelligence group to their ACT composite score. The analysis of the T-Test revealed that a significant difference existed between the two groups, t(99) = -2.53; p = 0.0131, regarding how students view intelligence and their ACT composite score. Table 4 shows the results of the T-Test and indicates that the entity theorists (students who view intelligence as a fixed attribute that is unable to change) exhibited a significantly higher ACT composite score than the incremental theorists (students who view intelligence as a malleable attribute that can change through effort).

Table 4. Descriptive Statistics for ACT Composite Score by Intelligence Groups

<table>
<thead>
<tr>
<th>Intelligence Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entity (Fixed)</td>
<td>21</td>
<td>31.90</td>
<td>2.278</td>
</tr>
<tr>
<td>Incremental (Malleable)</td>
<td>80</td>
<td>29.95</td>
<td>3.341</td>
</tr>
</tbody>
</table>
The fifth research question examined whether or not there was a correlation between how students view intelligence (malleable, fixed, or undecided) and how they view talent development (malleable, fixed, or undecided). According to Horowitz, Subotnik, and Matthews (2009), some students view giftedness and being talented as separate issues while others view these entities as having combined characteristics and thus share their view on both equally. To evaluate this research question students were scored separately on the intelligence questions and the talent development questions contained in the DMI. A Pearson Correlation Coefficient was calculated to determine the relationship between student scores on the intelligence questions and talent development questions from the DMI. Student scores from each of the three student groups (entity, undecided, and incremental) were compared independently. Table 5 summarizes those correlation results and indicates that there is a mild correlation for the incremental group, a weak correlation for the undecided group, and almost no correlation for the entity group.

**Table 5. Pearson Correlation Comparing Students’ View of Intelligence and Talent Development**

<table>
<thead>
<tr>
<th>Intelligence Group</th>
<th>Student Size (N)</th>
<th>Pearson $r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entity (Fixed)</td>
<td>21</td>
<td>0.136</td>
</tr>
<tr>
<td>Undecided</td>
<td>17</td>
<td>0.323</td>
</tr>
<tr>
<td>Incremental (Malleable)</td>
<td>80</td>
<td>0.547*</td>
</tr>
</tbody>
</table>

*Significant at the .001 level.
Discussion

The main purpose of this research study was to determine if the results from prior research conducted using Dweck’s Theory of Motivation aligned with the results of this study. The participants in this study were different from those in previous studies using Dweck’s research because they were all high school students who were identified as being gifted in one or more areas based upon their ACT scores. This study sought to seek out if there were any significant differences present regarding academic achievement and success between students who were identified as entity theorists (those who view intelligence as a trait that is fixed and unable to change) and students who were identified as incremental theorists (those who view intelligence as a trait that is malleable and able to change through their own individual effort and hard work). This study was done in an attempt to see if the results obtained from this study using this select group of academically gifted high school students would be similar to the results recorded from previous studies. Overall, some of the results obtained from this study were consistent with results from previous studies while other results were not consistent with previous studies.

Results from the first research question indicated that no significant difference was evident between students who were identified as entity theorists and those identified as incremental theorists in regards to academic achievement using GPA scores. In Dweck’s (2006) research it is stated that those students with the incremental view of intelligence often outperform those holding the entity view because they put forth more effort and challenge themselves in order to improve and increase their intelligence. This was found not to be the case in this research study. The results from the second research
question supported Dweck’s (1999b) research and other research studies using Dweck’s Theory of Motivation in that approximately 15% of students were identified in the “undecided” category in that they did not strongly identify with either the entity or incremental view of intelligence. In this study it was shown that 14.41% of students identified themselves as being “undecided” in terms of intelligence theory.

The third research question found that there was no significant difference between entity theorists and incremental theorists in regards to their theory of intelligence determining if their second semester GPA score would increase or decrease when compared to their first semester GPA score. This finding is also not consistent with previous studies conducted using Dweck’s research. Studies conducted by Kinlaw and Kurtz-Costes (2007) as well as Heckhausen and Dweck (1998) indicate that students who identify with the incremental view of intelligence will often increase their academic achievement over time while those who have an entity view of intelligence will struggle to increase their academic achievement as they will shy away from challenge and attempt to only show mastery of content with which they are comfortable. It is encouraging to see that students holding both intelligence views increased their academic achievement in their second semester. Perhaps the students used in this research study are showing that they are capable of overcoming their intelligence views (especially those having the entity view) when they are expected to show content mastery, or perhaps their intellectual abilities and being identified as gifted is assisting them in their academic performance.

There are also inconsistent findings between the fourth research question and previous research studies. The fourth research question found a significant difference between the student views of intelligence and the corresponding ACT composite scores.
Dweck’s (2006) research shows that the higher ACT composite scores should belong to the students who identified with the incremental view of intelligence. However, in this study the students with the higher average ACT composite scores were the students who identified with the entity view of intelligence. This may largely be due in part to the number of students in each of the intelligence groups. The ACT composite scores for the entity group consisted of only 21 student scores, while the ACT composite scores for the incremental group had 80 student scores included in its analysis. The fifth research question did result in some consistent findings between this research study and prior studies. This research question found that there was a positive correlation between how students viewed intelligence and how they viewed talent development. Some students view intelligence and talent development as being completely different and separate qualities. However, Dweck (1999b) explains that often students will hold the same view for multiple qualities if those qualities can be improved upon through individual effort.

**Limitations and Future Directions**

There are some limitations within this present study that readers should take into consideration. The student sample size of 118 students is somewhat small when compared to the sample sizes used in previous research studies focusing on Dweck’s work. The students within this sample size were all identified as being gifted through their ACT scores, but this one study does not represent all the findings that could occur when researching gifted students. Future studies should take this into account and utilize a larger student sample size when conducting research. Additionally, the students used in this present study were all located at a public high school established for gifted and talented students located in the south central region of the United States at a four-year
collegiate institution. The results obtained from these students may not be representative of the gifted student population as a whole. Future research should include students from other regions and ethnic/cultural backgrounds to provide documentation of as many students as possible.

In addition to the size limitations present in this study, the reporting measures used by students also present some limitations. The DMI had students self-assess their views of intelligence and record their answers to a variety of statements regarding intelligence and talent development. Self-assessing and self-reporting measures do have some weaknesses associated with them. The main weakness associated with these measures is that of social desirability response bias, which is defined by Arnold and Feldman (1981) as “the desire individuals have to present themselves in a favorable manner when responding to specific questions or statements” (p. 379). It is further explained by Arnold and Feldman (1981) that these individuals will provide responses to questions that do not indicate their true feelings if they think it will cause others to view them in a more favorable disposition. Prior to completing the DMI students were informed there were no right or wrong answers and that their answers were to be based solely on their own thoughts and opinions. In order to prevent social desirability response bias from occurring, in future research studies it would be helpful to have more than one assessment measure used. These assessment measures could be provided by additional sources such as parents, teachers, and other adults who are familiar with the individual students’ performance. These measures, in addition to the self-reporting measure, could help to further control the amount of social desirability response bias that occurs.
Future research could also be done on the same students as they progress through their collegiate years in order to compare their academic achievement based upon the intelligence theory with which they identify. The time and expense of such a study would be a disadvantage, but additional results from such a longitudinal study could add significant amounts of research to the current limited amount of literature that is available on intelligence theories and gifted students. In addition, it would be interesting to assess whether the same students identified with the same intelligence theories once their academic studies advanced into the collegiate area of content mastery. Another area that could be utilized in future research is that of academic settings similar to the Academy. There are currently 15 schools, including the Academy used in this study, that are state-supported, residential high schools that have an academic emphasis in science, technology, engineering, and mathematics (STEM). By conducting similar research at these academic facilities the results obtained could prove to be very useful and beneficial in regards to the screening process in order to determine the students who would most benefit from participating in the academic opportunities provided by these institutions.

An additional area in which future research can be conducted is that of how praise can be linked to students developing either the entity or incremental view of intelligence. Dweck (1999a) explains that praise can actually hinder student performance and academic achievement if it is the wrong type of praise. Intelligence praise is a form of praise in which a parent or teacher praises a child for being able to complete a task due to their intelligence or being smart. By eliciting this type of praise the student learns that they are only smart or intelligent if they complete a task correctly. The correct type of praise, as detailed by Mueller and Dweck (1998), is that in which a student is praised for
their effort or problem solving strategies. Future research should focus on how different types of praise can influence the development of student views of intelligence.

Various teaching strategies and methods have also been linked to student views of intelligence. Petty (2004) describes multiple types of teaching strategies that teachers can implement in the classroom setting as a way of changing a student’s view of intelligence from the entity theory to the incremental theory. Hattie, Biggs, and Purdie (1996) affirm that teaching strategies can play a large role in how a student develops their individual view of intelligence. Further research is needed in this area to determine which teaching strategies and methods can influence student intelligence views as well as how student intelligence views can be influenced based on the classroom setting and environment.

In conclusion, this present study both supports and expands upon previous research studies conducted using Dweck’s Theory of Motivation. The students used in this study were all identified as being gifted by their ACT scores, and the results obtained from the DMIs completed by these students show that self-theories of intelligence may not directly impact their overall academic achievement. This is important to note as it has multiple implications regarding how student motivation relates to the overall academic achievement experienced by each individual student. It was also found that close to 15% of students did not identify with either the entity or incremental view of intelligence, which is consistent with Dweck’s (2006) findings and prior research. Additional research discussed in this study focuses on the importance of praise and how the wrong form of praise can have a detrimental effect on student achievement. Correct forms of praise as well as effective teaching methods and strategies should be researched further as a way to successfully enhance the overall academic achievement and performance of students.
APPENDIX A – DWECK MINDSET INSTRUMENT (DMI)

DWECK MINDSET INSTRUMENT

Directions: Read each sentence below and then mark the corresponding box that shows how much you agree with each sentence. There are no right or wrong answers.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Mostly Agree</td>
<td>Mostly Disagree</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>1) You have a certain amount of intelligence, and you really can’t do much to change it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Your intelligence is something about you that you can’t change very much.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) No matter who you are, you can significantly change your intelligence level.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) To be honest, you can’t really change how intelligent you are.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) You can always substantially change how intelligent you are.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) You can learn new things, but you can’t really change your basic intelligence.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) No matter how much intelligence you have, you can always change it quite a bit.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) You can change even your basic intelligence level considerably.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Mostly Agree</td>
<td>Mostly Disagree</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>9) You have a certain amount of talent, and you can’t really do much to change it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) Your talent in an area is something about you that you can’t change very much.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11) No matter who you are, you can significantly change your level of talent.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) To be honest, you can’t really change how much talent you have.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13) You can always substantially change how much talent you have.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14) You can learn new things, but you can’t really change your basic level of talent.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15) No matter how much talent you have, you can always change it quite a bit.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16) You can change even your basic level of talent considerably.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B – PARENTAL CONSENT FORM

INFORMED PARENTAL CONSENT DOCUMENT

Project Title: "Using Dweck’s Theory of Motivation to Determine How a Student’s View of Intelligence Effects Their Overall Academic Achievement"

Investigator: Keely P’Pool The Gatton Academy (270) 780-4956

You are being asked to give your permission for additional data to be collected about your child that will be included in a study in which you have previously agreed to allow your child to participate. In addition to the prior consent form you were provided, which required you to give your permission for specific data about your child to be used, this consent form regards the collection of additional academic and demographic data relating to your child. Western Kentucky University requires that you give your permission in order for this information about your child to be included in the study. You may sign this “opt-out” consent form for your child if you do NOT want the additional academic and demographic information relating to your child to be used. Upon receiving this form you will have 5 business days to “opt-out” on behalf of your child regarding the collection of this additional data.

You may ask me any questions you have to help you better understand this project and the use of this additional academic and demographic data. A basic explanation of the project is written below. Please read this explanation and ask me any questions you have.

If you decide that you do NOT want the additional academic and demographic data relating to your child to be used in this study, please sign the last page of this form. You will be given a copy of this form to keep for your records.

1. Nature and Purpose of the Project: The overall nature and purpose of this project is to determine if there is a correlation that exists between how students view intelligence and their overall academic achievement. The previous “opt-out” consent form you received gave permission for your child’s ACT scores as well as their cumulative GPA at the conclusion of their first semester at the Gatton Academy to be used in this research study. The additional data that is needed for which your permission is requested is data that focuses on your child’s academic history (including college coursework, standardized test scores, and high school GPA) and demographic data (including age, gender, and size of home high school). By not signing this “opt-out” consent form, you are giving me your permission to access and include your child’s additional academic and demographic data in this research study, which will be kept confidential and only viewed by me during the course of this study.

2. Explanation of Procedures: Your child has already completed the questionnaire that is necessary for this research study. Your child will be informed of your consent prior to being given an assent form to sign themselves. The assent form your child will sign states that they are participating in this study voluntarily and that they are aware that they can withdraw from the study at any time without any consequences or negative outcomes. The explanation of the additional data needed for the study, explanation of the informed consent of their parents, and completing their own signed informed assent form is expected to take less than 10 minutes. All of this will take place in the 4th floor common room of the Gatton Academy and will be a onetime occurrence for this study.
3. **Discomfort and Risks**: There are no known or anticipated risks to your child by participating in this study. Your child will be signing an additional assent form giving me permission to access additional academic and demographic data about them to include in this study and will have no negative effects at the conclusion of their participation.

4. **Benefits**: The results of this research will benefit the Carol Martin Gatton Academy of Mathematics and Science in Kentucky. The inclusion of this additional academic and demographic data will assist in providing more detailed information regarding the correlation of how students view intelligence and their overall academic achievement. This study can also be used to assist in the screening and interview process that takes place before each student is admitted into the Academy. The research done in this study will add to what is known about young people and talent development. This study will also add to the body of literature that has been published regarding highly gifted students and the role intelligence plays in correlation to academic achievement.

5. **Confidentiality**: The data collected during this study will be coded so as to conceal the names and identities of the participants in the study. The data collected during this study will be stored in a locked file cabinet to which only the principal investigator will have access. This locked file cabinet will additionally be stored in a locked storage room so as to further limit the access to the information by parties not affiliated with this study.

6. **Refusal/Withdrawal**: Refusal to participate in this study will have no effect on any future services you or your child may be entitled to from Western Kentucky University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty or consequences.

*You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.*

_________________________  __________________________
Signature of Parent to “Opt-Out” Their Child              Date

_________________________  __________________________
Witness                  Date

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD
Paul Mooney, Human Protections Administrator
TELEPHONE: (270) 745-4652

IRB APPLICATION # 11-11-11
APPROVED 2/15/11 IN 2/1/11
EXEMPT EXPEDITED FULLBOARD
DATE APPROVED 12/13/10
APPENDIX C – STUDENT CONSENT FORM

INFORMED STUDENT CONSENT DOCUMENT

Project Title:  "Using Dweck's Theory of Motivation to Determine How a Student's View of Intelligence Effects Their Overall Academic Achievement"

Investigator:  Keely P'Pool  The Gatton Academy (270) 780-4956

You are being asked to give your permission for additional data to be collected about you that will be included in a study in which you have previously agreed to participate. In addition to the prior assent form you were provided, which required you to give your permission for specific data about you to be used, this assent form regards the collection of additional academic and demographic data.

You may ask me any questions you have to help you better understand this project and the use of this additional academic and demographic data. A basic explanation of the project is written below. Please read this explanation and ask me any questions you have.

1. Nature and Purpose of the Project: The overall nature and purpose of this project is to determine if there is a correlation that exists between how students view intelligence and their overall academic achievement. The previous assent form you received gave permission for your ACT scores as well as your cumulative GPA at the conclusion of your first semester at the Gatton Academy to be used in this research study. The additional data that is needed for which your permission is requested is data that focuses on your academic history (including college coursework, standardized test scores, and high school GPA) and demographic data (including age, gender, and size of home high school). By signing this consent form, you are giving me your permission to access this additional academic and demographic information, which will be kept confidential and only viewed by me throughout the course of this study.

2. Explanation of Procedures: You have already completed the questionnaire that is necessary for this research study. You will be informed of the consent of your parents prior to being given an assent form to sign yourself. This assent form states that you are giving me permission to access your additional academic and demographic data and also states that you are participating in this study voluntarily and that you are aware that you can withdraw from the study at any time without any consequences or negative outcomes. The explanation of the additional data needed for the study, explanation of the informed consent of your parents, and completing your own signed informed assent form is expected to take less than 10 minutes. All of this will take place in the 4th floor common room of the Gatton Academy and will be a one time occurrence for this study.

3. Discomfort and Risks: There are no known or anticipated risks that you will experience by participating in this study. You will be signing an additional assent form giving me permission to access additional academic and demographic data about you to include in this study and will have no negative effects at the conclusion of your participation.

IRB APPLICATION # 11-11-12
APPROVED 2/1/11 2/1/11
EXEMPT EXPEDITED 00000
DATE APPROVED 12/5/10
4. **Benefits:** The results of this research will benefit The Carol Martin Gatton Academy of Mathematics and Science in Kentucky. The inclusion of this additional academic and demographic data will assist in providing more detailed information regarding the correlation of how students view intelligence and their overall academic achievement. This study can also be used to assist in the screening and interview process that takes place before each student is admitted into the Academy. The research done in this study will add to what is known about young people and talent development. This study will also add to the body of literature that has been published regarding highly gifted students and the role intelligence plays in correlation to academic achievement.

5. **Confidentiality:** The data collected during this study will be coded so as to conceal the names and identities of the participants in the study. The data collected during this study will be stored in a locked file cabinet to which only the principal investigator will have access. This locked file cabinet will additionally be stored in a locked storage room so as to further limit the access to the information by parties not affiliated with this study.

6. **Refusal/Withdrawal:** Refusal to participate in this study will have no effect on any future services you may be entitled to from Western Kentucky University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty or consequences.

*You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.*

______________________________ Date

Signature of Student

______________________________ Date

Witness

______________________________ Date

The dated approval on this consent form indicates that this project has been reviewed and approved by the Western Kentucky University Institutional Review Board. Paul Mooney, Human Protections Administrator

**Telephone:** (270) 745-4652

**IRB Application #:** 11.3

**Approved:** 11/21/11

**Exempt Expedited Full Board**

**DATE APPROVED:** 11/21/11
INFORMED ASSENT DOCUMENT
FOR RESEARCH INVOLVING MINORS

I, ________________________________, understand that my parents have given permission for me to participate in a study concerning __________ Student Motivation __________, under the direction of ______ Keely P'Pool ______. You are being asked to give your permission for additional data to be collected about you that will be included in a study to which you have previously agreed to participate. In addition to the prior assent form you were provided, which required you to give your permission for specific data about you to be used, this assent form regards the collection of additional academic and demographic data.

You may ask me any questions you have to help you better understand this project and the use of this additional academic and demographic data. A basic explanation of the project is written below. Please read this explanation and ask me any questions you have.

1. **Nature and Purpose of the Project**: The overall nature and purpose of this project is to determine if there is a correlation that exists between how students view intelligence and their overall academic achievement. The previous assent form you received gave permission for your ACT scores as well as your cumulative GPA at the conclusion of your first semester at the Gatton Academy to be used in this research study. The additional data that is needed for which your permission is requested is data that focuses on your academic history (including college coursework, standardized test scores, and high school GPA) and demographic data (including age, gender, and size of home high school). By signing this assent form, you are giving me your permission to access this additional academic and demographic information, which will be kept confidential and only viewed by me throughout the course of this study.

2. **Explanation of Procedures**: You have already completed the questionnaire that is necessary for this research study. You will be informed of the consent of your parents prior to being given an assent form to sign yourself. This assent form states that you are giving me permission to access your additional academic and demographic data and also states that you are participating in this study voluntarily and that you are aware that you can withdraw from the study at any time without any consequences or negative outcomes. The explanation of the additional data needed for the study, explanation of the informed consent of your parents, and completing your own signed informed assent form is expected to take less than 10 minutes. All of this will take place in the 4th floor common room of the Gatton Academy and will be a one-time occurrence for this study.

3. **Discomfort and Risks**: There are no known or anticipated risks that you will experience by participating in this study. You will be signing an additional assent form giving me permission to access additional academic and demographic data about you to include in this study and will have no negative effects at the conclusion of your participation.
4. **Benefits:** The results of this research will benefit The Carol Martin Gatton Academy of Mathematics and Science in Kentucky. The inclusion of this additional academic and demographic data will assist in providing more detailed information regarding the correlation of how students view intelligence and their overall academic achievement. This study can also be used to assist in the screening and interview process that takes place before each student is admitted into the Academy. The research done in this study will add to what is known about young people and talent development. This study will also add to the body of literature that has been published regarding highly gifted students and the role intelligence plays in correlation to academic achievement.

5. **Confidentiality:** The data collected during this study will be coded so as to conceal the names and identities of the participants in the study. The data collected during this study will be stored in a locked file cabinet to which only the principal investigator will have access. This locked file cabinet will additionally be stored in a locked storage room so as to further limit the access to the information by parties not affiliated with this study.

6. **Refusal/Withdrawal:** Refusal to participate in this study will have no effect on any future services you may be entitled to from Western Kentucky University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty or consequences.

*You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.*

My participation in this project is voluntary, and I have been told that I may stop my participation in this study at any time. If I choose not to participate, it will not affect my grade (treatment/care, etc., as appropriate) in any way.

Signature ___________________________ Date __________________

THE DATED APPROVAL ON THIS ASSENT FORM INDICATES THAT THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD

Paul Mooney, Human Protections Administrator

TELEPHONE: (270) 745-4652

IRB APPLICATION # 11-113
APPROVED 2/15/11 to 2/1/11
EXEMPT EXPEDITED FULLBOARD
DATE APPROVED 12/13/11
APPENDIX E - HSRB APPROVAL

In future correspondence, please refer to HS11-113, December 13, 2010

Koely P'Pool

c/o Dr. Roberts
School of Teacher Education
WKU

Koely P'Pool:

Your research project, Using Dweck's Theory of Motivation to Determine How a Student’s View of Intelligence Affects Their Overall Academic Achievement, was reviewed by the HSRB and it has been determined that risks to subjects are: (1) minimized and reasonable; and that (2) research procedures are consistent with a sound research design and do not expose the subjects to unnecessary risk. Reviewers determined that: (1) benefits to subjects are considered along with the importance of the topic and that outcomes are reasonable; (2) selection of subjects is equitable; and (3) the purposes of the research and the research setting is amenable to subjects' welfare and producing desired outcomes; that indications of coercion or prejudice are absent, and that participation is clearly voluntary.

1. In addition, the IRB found that you need to orient participants as follows: (1) signed informed consent is required; (2) Provision is made for collecting, using and storing data in a manner that protects the safety and privacy of the subjects and the confidentiality of the data. (3) Appropriate safeguards are included to protect the rights and welfare of the subjects.

This project is therefore approved at the Full Board Review Level until May 13, 2011.

2. Please note that the institution is not responsible for any actions regarding this protocol before approval. If you expand the project at a later date to use other instruments please re-apply. Copies of your request for human subjects review, your application, and this approval, are maintained in the Office of Sponsored Programs at the above address. Please report any changes to this approved protocol to this office. A Continuing Review protocol will be sent to you in the future to determine the status of the project. Also, please use the stamped approval forms to assure participants of compliance with The Office of Human Research Protections regulations.

Sincerely,

Paul J. Mooney, M.S.T.M.
Compliance Coordinator
Office of Research
Western Kentucky University

cc: HS file number P'Pool HS11-113
REFERENCES


http://www.indiana.edu/~intell/dweck.shtml


http://chronicle.com/article/Carol-Dwecks-Attitude/65405/


