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RELATIONS BETWEEN TEACHERS' IMPLICIT THEORIES OF INTELLIGENCE,
STANDARDIZED ACHIEVEMENT TESTING, AND CLASSROOM GOALS

by

Sydney W. Ringle

A Plan B paper submitted in partial fulfillment of the requirements for the degree

of

MASTERS OF SCIENCE

in

Psychology

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2014

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ABSTRACT

Relations Between Teachers' Implicit Theories Of Intelligence, Standardized
Achievement Testing, and Classroom Goals

by

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Utah State University, 2014

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An achievement gap between ethnic minorities and whites continues to exist within the US, as well as between the US and varying countries (Peterson, Woessmann, Hanushek, & Lastra-Anadon, 2011). Research has identified several factors that contribute to this gap, such as differences in curricula across countries, teacher quality, and school funding. In addition to these factors, teachers' implicit theories of intelligence may also contribute to the achievement gap. Whether teachers view intelligence as fixed (entity theory) or malleable (incremental theory) can impact instructional practices, specifically the use of performance and learning goals. Performance goals focus on evaluation, ability, and performance rather than mastery of material, growth, and overall learning as seen in learning goals are (Dweck, 1999; Shim, Cho, & Cassady, 2013).

Research is limited regarding the development of implicit theories of intelligence; however, there is evidence culture may be involved. Identifying specific cultural practices that influence the development of implicit theories of intelligence may provide a unique perspective on pedagogy and how teachers interact with students. This review of the literature discusses one cultural practice that may be related to the development of implicit theories of intelligence, mainly standardized achievement testing. First, this literature review defines the construct of implicit theories of intelligence; then, reviews the literature on performance and learning goals as mediating factors of implicit theories of intelligence, and, finally, explores the relation between these and standardized achievement testing. Areas for future research and implications are also discussed.

(32 Pages)

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Sydney Ringle

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CHAPTER I

INTRODUCTION

Across industrialized countries and cultures, there is an international achievement gap in reading, mathematics, and science. According to the Program for International Student Assessment (PISA), out of 65 countries, the US falls behind 31 countries in math proficiency and 16 countries in reading proficiency (Peterson et. al., 2011). Specifically, among the US graduating class of 2011, only 32% of students were proficient in math compared to 58% of students in Korea and 56% of students in Finland, the world's two highest achieving countries (Peterson et al., 2011). In the US, 31% of students are reading proficient compared to 47% in Korea and 46% in Finland (Peterson et al., 2011). Son and Senk (2010) found that mathematical concepts are introduced earlier in the curriculum in Korea compared to the United States. Even when the same material is taught, the content is more conceptually advanced in most European and East Asian schools than in the US (Geary, 1996).

Within the US, an achievement gap also exists between students in the same classroom, receiving the same curricula, and taught by the same teachers (Mark & Hall, 2013). This gap persists due to the socioeconomic status of the school, teacher effectiveness, and the demographics of the classroom (e.g., racially diverse students, student with disabilities; Hall Mark 2013).

In addition to variations in curricula, school resources, and teacher quality, implicit theories of intelligence may contribute to the international and domestic

achievement gap. Theories of intelligence impact a person's reactions and judgments in different contexts and affects whether helplessness or mastery skills are learned (Dweck, Chiu, & Hong, 1995). Implicit theories of intelligence include entity theory and incremental theory (Dweck, et. al., 1995).

Entity theory states that intelligence is fixed, uncontrollable, and unable to grow over time. An individual eventually reaches his/her maximum threshold of inherent intelligence and shows no further progress (Blackwell, Trzesniewski, & Dweck, 2007; Rattan, Naidu, Savani, & Dweck, 2012). Students adhering to an entity theory of intelligence experience deterioration in academic performance and disengagement, while students with an incremental theory of intelligence experience increased academic success (Mangels, Butterfield, Lamb, Good, & Dweck, 2006; Spinath & Steinmeier-Pelster, 2001; Blackwell et al., 2007). For example, a student holding an entity theory is more likely to develop helpless attributes in the face of task difficulty, leading to an increase in negative self-concept, resulting in performance decline (Spinath & Steinmeier-Pelster, 2001). On the other hand, incremental theory states that intelligence is malleable and, through effort, can increase over time despite the inherent ability of the individual (Blackwell et al., 2007; Rattan et al., 2012).

Similarly, how teachers praise intelligence (entity theory) or effort (incremental theory) and how these behaviors align with their pedagogical practices (e.g., performance vs. learning goals) can have negative effects on students (Dweck et. al., 1995; Dweck, 1999; Mueller & Dweck, 1998; Rattan et al., 2012). Teacher expectations of students can

impact student achievement and test scores (Becker & Luthar, 2002; Rosenthal & Jacobson, 1968; Sorhagen, 2013). Rosenthal and Jacobson (1968) found that students from whom teachers expected greater academic achievement displayed greater increases in achievement than children who were not expected to show academic growth (i.e., self-fulfilling prophecy).

Research suggests teachers' implicit theories of intelligence impact instructional practices, but it is still unclear which factors contribute to the *development* of implicit theories of intelligence. Rattan et al. (2012) found that culture is a driving force in the development of implicit theories of intelligence. Culture, as defined by Ingraham (2000 p. 325) is “an organized set of thoughts, beliefs, and norms for interaction and communication, all of which may influence cognitions, behaviors, and perceptions.” Rattan et al. (2012) found evidence for contrasting theories of intelligence among western (i.e., the US) and non-western countries (i.e., India). Individuals in both countries held both entity and incremental beliefs of intelligence; however, US participants primarily adhered to entity theory, while the majority of participants from India adhered to incremental theory. Even within western cultures (i.e. Germany) differences may exist in implicit theories of intelligence among high school students (Spinath & Stienmeier-Pelster, 2001).

Though specific components of culture have not been identified as contributors to implicit theories of intelligence, one possible cultural practice of the US that may be related to theories of intelligence is standardized achievement testing in schools. In recent years, the federal government has placed a strong focus on education reform, which

includes an expectation for elementary and secondary schools to meet high, nationally competitive standards in core academic subjects (Becker & Luthar, 2002). Because of this, there is pressure on administrators and teachers to teach in a way that will help meet state and national norms (Sternberg, 1999). This cultural practice may contribute to how teachers view intelligence and teaching behaviors.

Since the 1990's, European nations have also used standardized testing to improve the general education of students ("National Testing of Pupils in Europe: Objectives, Organisation, and Use of Results," 2009). National tests are used to summarize the achievement of students, evaluate schools through standardized assessments, and identify additional learning needs of students ("National Testing of Pupils in Europe: Objectives, Organisation, and Use of Results," 2009).

As norm-referenced standardized achievement testing becomes more prevalent across countries, it continues to influence school systems, educational funding, and job security. In the US, standardized achievement testing affects school and district funding, school closures, and teacher and administrator positions. The expectation for students to perform may impact teacher implicit theories of intelligence and teaching practices in the classroom. The cultural aspect of standardized achievement testing across the US and European nations may provide insight into how teachers' view intelligence and how such beliefs influence their pedagogical practices. An underlying hypothesis exists in the literature between theories of intelligence, classroom practices, and standardized achievement testing (see Figure 1). This review of the literature summarizes such studies.

CHAPTER II

REVIEW OF LITERATURE

This section summarizes (a) Dweck's (1999) implicit theories of intelligence as a construct that differs across cultures, (b) classroom goal orientations (i.e., performance vs. learning), (c) the relation between implicit theories of intelligence and goals, and (d) standardized achievement testing and the pressure teachers experience from it. Specifically, standardized achievement testing in the US will be the focus.

Implicit Theories of Intelligence as a Cultural Construct

Rattan et al. (2012) found evidence of significant cultural variation in implicit theories of intelligence. Out of 50 American college students in Northern California, 58% favored an entity theory of intelligence, whereas out of 50 Indian college students in Bangalore, India, 70% favored an incremental theory of intelligence (Rattan et al., 2012). Similar evidence for cultural differences in implicit theories of intelligence was found amongst North American and Japanese university students (Heine et al., 2001). Heine et al. (2001) found that North American students focused on the futility of effort, demonstrating a reluctance to persist on failed tasks, whereas Japanese students were more likely to persist after failed tasks, indicating a focus on the utility of effort. These behavior patterns are consistent with the definition of implicit theories of intelligence, with entity theorists focusing on the futility of effort and fixed ability (i.e., the North American students) and incremental theorists embracing the utility of effort and the possibility for development and improvement (i.e., Japanese students) (Blackwell et al.,

2007). Stevenson and Stigler (1994) found that American teachers and parents focus more on inherent ability (entity theory) as the primary determinant of academic outcomes more often than East Asian educators and parents. The previous studies show support for cultural differences in implicit theories of intelligence.

Teachers' implicit theories of intelligence influence how teachers praise students, console ability levels (e.g., comfort students on low scores or lack of ability), and engage in subtle communications that reflect teacher expectations (Dweck, 1999; Mueller & Dweck, 1998; Rattan et al., 2012). Teachers who adhere to an entity theory tend to determine student ability based on a single test score and attribute that score to inherent ability (Rattan, Good, & Dweck, 2012). They are more likely to engage in comfort-oriented pedagogical tactics and strategies (e.g., comforting failure or low ability) that reduce the achievement and academic engagement of the student. Entity teachers also communicate significantly lowered expectations for the students' future performance based on one low test score (Rattan et al., 2011; Butler, 2000). Students who receive comfort-oriented teaching practices such as consoling for poor scores feel less encouraged and motivated because of the teachers perceived lowered expectations (Rattan et al., 2011).

Teachers with an incremental theory of intelligence evaluate students based on progress and learning goals rather than concrete scores, attributing successes and accomplishments to effort and hard work (Dweck, 1999). These teachers are more likely to establish motivational climates in the classroom, encourage student autonomy, and

believe they are a crucial contribution to the academic success of their students (Leroy et al., 2007).

Theories of intelligence may also be related to classroom goals, specifically performance and learning goals. Performance and learning goals are developed by individual beliefs and behaviors (Shim et al., 2013). Dweck and colleagues (Bandura & Dweck, 1985; Dweck & Leggett, 1988) operationalize performance goals as providing “opportunities to gain positive judgments of intellectual ability and avoid negative judgments” (Dweck et al., 1995, 274). In other words, these opportunities foster performance over growth and focus on evaluation and ability. This focus is primarily in the context of peer comparison. Performance goals center on ability during failed tasks rather than potential growth when faced with failure (Dweck, 1999; Shim et al., 2013). In essence, students with performance goals measure themselves based on performance and ability which negatively impact self-esteem and self-concept as they develop helpless attributes and coping strategies when faced with setbacks and failure (Dweck et al., 1995; Dweck, 1999). Teachers who foster performance goals promote a learning environment void of intrinsic motivation and self-determination (Leroy et al., 2007; Dweck, 1999). Students who develop performance goals are more likely to develop helpless attributes, blame failures on low ability, and display negative affect (Dweck, 1999; Elliot, 1988).

In comparison, incremental theorists foster learning goals in a classroom and emphasize progress, mastery on tasks, and stimulate a motivational centered climate in the classroom (Dweck, 1999; Leroy et al., 2007). Learning goals in a classroom can instill such goals in students who are then more likely to focus on increasing their

learning and mastery of new concepts despite possible failure (Elliot, 1988). Learning goals provide “opportunities to increase ability, but at the risk of exposing ignorance and drawing negative judgments from intellectual competence” (Dweck et al., 1995, 274). In simpler terms, learning goals focus on progress and eventual mastery even when failure may be experienced (Dweck, 1999). Progress and mastery are evaluated at an individual level with no cross peer comparison (Shim et al., 2013). Research has shown that students with learning goals seek mastery and growth opportunities with new tasks and exert more effort in achievement when faced with failure (Dweck, 1999). When students are more engaged in the learning process of tasks, failure is more likely to motivate continued effort (Dweck, 1999). This emphasis of continued effort and emphasis on progress and mastery aligns itself with the incremental theory of intelligence.

The research on implicit theories of intelligence as a mediating factor for performance vs. learning goals is inconsistent. Dweck proposed that an individual’s implicit theory of intelligence (i.e., entity vs. incremental) acts as a precursor of achievement goals (Dweck, 1999). In other words, an individual endorsing an entity theory of intelligence is more likely to adopt a performance goal orientation, whereas one who holds an incremental theory of intelligence is more likely to pursue a learning goal orientation (Blackwell et al., 2007). According to Dweck and Leggett’s (1988) theoretical model of entailment, an individual’s implicit theory of intelligence has a casual entailment with an individual’s goal orientation (see Figure 2).

Empirical support for this model is limited and contradictory at times. Braten and Stromso (2004) did not find support for this relationship among Norwegian college

students. A total of 80 first-year students participated in the study and were asked to complete a questionnaire comprised of the Schommer Epistemological Questionnaire (SEQ), a Norwegian version of Dweck's (1999) Theories of Intelligence Scale, and an adaptation of Midgley et. al., (1998) personal goal orientation scales (Braten & Stromso, 2004). All measures were given during the fall term of the students' first year and the goal orientation measure was given again during the fall term of second year (Brate & Stromso, 2004).

However, Roedel and Schraw (1995) found support for implicit theories of intelligence as a mediating factor for performance goals in a sample of college students. Roedel and Schraw (1995) had 157 undergraduate participants complete five booklets. The first booklet measured beliefs about the transfer of knowledge or controllability of knowledge, the second booklet measured learning and performance goal orientations, the third booklet included probability math problems, and the final two booklets were easier and more difficult versions of the booklet of math problems. Participants were asked to complete all booklets and given the choice between the easier and more difficult booklet. Roedel and Schraw (1995) reported that scores on the controllability of knowledge measure correlated with the performance scale ($r = .21, p = .01$ and $r = .17, p = .03$). The correlation between these items is in agreement with Dweck and Legett's (1988) model of entailment and that beliefs in a fixed ability are correlated with performance goal orientation (Roedell & Schraw, 1995).

Dupeyrat and Marine (2005) also found support for this model but only among implicit theories of intelligence and learning goals in a sample of French adults who had

returned to school ($N = 76$). Participants were given a 121-item questionnaire measuring student motivation and academic engagement (Dupeyrat & Marine, 2005). The measure was adapted and translated from existing measures including Hong, Chiu, and Dweck's (1995) implicit theories of intelligence scale and adaptations of various goal orientation scales (Dupeyrat & Marine, 2005). Two more items were added to the implicit theory of intelligence scale that specifically measured incremental beliefs, measuring beliefs on two distinct factors (i.e., entity and incremental) rather than on a continuum (Dupeyrat & Marine, 2005). Results from the study reported that there was a positive correlation between learning goals and the incremental theory of intelligence ($r = .27, p < .05$) and negatively correlated with the entity theory of intelligence ($r = -.31, p < .01$; Dupeyrat & Marine, 2005). Though these findings are incompatible, the inconsistency of the results may in part be due to small sample sizes.

The previous studies looked at the relationships between implicit theories of intelligence and goal orientation among college students. Only one study was found examining the theoretical model of entailment with teachers and found nonsignificant interactions between implicit theories of intelligence and learning goal orientation ($r = .13, p < .07$) and between implicit theories of intelligence and performance goal orientation ($r = .05, ns$) in a classroom setting (Shim et. al., 2013). A total of 209 primary and secondary school teachers participated in this study and were asked to complete an online questionnaire lasting approximately 20 minutes (Shim et. al., 2013). All measures were on a 7-point likert scale measuring implicit theories of intelligence, classroom goal structures, and achievement goals for teaching (Shim et. al., 2013).

Standardized Achievement Testing in the US

In 2001, the No Child Left Behind Act was implemented in hopes of closing the achievement gap and requiring teachers and schools to take accountability for classroom learning. As result of this act, a strong emphasis on standardized achievement testing was embedded in American culture. Now schools, teachers, and administrators are held accountable for student scores and ensuring that students reach competitive national standards.

Standardized achievement testing began as a means of measuring productivity (i.e., student scores; Nichols & Berliner, 2008). It was believed that in order to increase student scores, teachers and administrators needed to be held accountable for student learning, and testing became a means of accomplishing this (Nichols & Berliner, 2008). However, student productivity may not be accurately measured through standardized achievement tests. Standardized achievement tests are not able to account for unique classroom demographics (ELL students, SLD students, and students with behavioral problems) that impact student productivity and standardized achievement testing scores (Nichols & Berliner, 2008). These unique classroom characteristics influence how classrooms score on testing, how teachers teach, and how schools perform on state testing. According to past research, the use of standardized achievement testing in our culture has resulted in deskilling teachers, dumbing down the curriculum, pushing students out of school, and instilling fear and anxiety in students, teachers, and administrators (Darling-Hammond & Wise, 1985; Gilman & Reynolds, 1991; Jones & Whitford, 1997; Madaus, 1988a 1988b; Shepard, 1989). Not only is the use of

standardized achievement tests not accurately measuring classroom instruction, but it may also be having detrimental effects on teaching. Research has suggested that teachers are now more likely to teach for the test (Sternberg, 1999; Berliner, 2011).

According to Jones and Johnston (2004), teachers at a North Carolina elementary school reported that, since the implementation of standardized achievement testing, teaching has increased in reading, writing, and math but has decreased in social studies and science. Reading, writing, and math are assessed on standardized achievement tests; social studies and science are not. Furthermore, teachers reported teaching quality has improved in reading, writing, and math (Jones & Johnston, 2004). Teachers are now teaching for the test, resulting in curriculum narrowing and the loss of creative skills in the classroom (Berliner, 2011). As curriculum narrowing continues, classroom environments can easily impede achievement development in later grades as a function of the learning restrictions in earlier grades (Berliner, 2011). As areas of learning that are thought to be on standardized achievement tests are being taught more frequently, students' critical thinking skills are being limited and impeded (Berliner, 2011).

As teachers focus on teaching to the test in order for students to meet national standards, a pressure to perform emerges in order to maintain full-time teaching positions and school funding (Sternberg, 1999). The cultural practice of standardized achievement testing in the US and the pressure teachers feel from it may be contributing to how teachers view intelligence and how they organize their classrooms. This practice may be related to how teaching has transformed over the past 20 years and provide insight into how to close the achievement gap on a national level.

In summary, this paper reviewed the relation between teacher implicit theories of intelligence, pressure from standardized achievement testing, and performance versus learning goals in the classroom. These interactions provide insight into the cultural influence of standardized achievement testing towards implicit theories of intelligence and whether standardized achievement testing and implicit theories of intelligence influence performance versus learning goal orientations in the classroom.

CHAPTER III

CONCLUSION

In summary, there is an existing achievement gap within the US and between the US and varying countries. Factors contributing to this achievement gap include more than differences in curricula, teacher quality, and school funding (Geary, 1996; Hall Mark, 2013). Another possible factor contributing to both the national and international achievement gap are teachers' implicit theories of intelligence (e.g., entity vs. incremental). The entity theory of intelligence focuses on intelligence being fixed. Once a person reaches his/her maximum threshold of intelligence no further progress can be made (Blackwell et. al., 2007; Rattan et. al., 2012). On the other hand, an individual who adheres to an incremental theory of intelligence views intelligence as malleable. An individual can continue to increase their intelligence despite their inherent ability (Blackwell et al., 2007; Rattan et al., 2012).

Students who adhere to an entity theory of intelligence are more likely to blame failures on their intellectual ability, whereas students adhering to an incremental theory of intelligence attribute failures to a lack of effort (Dweck et.al., 1995). Similarly, how teachers respond to students' achievements and failures based on their theory of intelligence and how it aligns with their pedagogical practices (e.g., performance vs. learning) can have negative effects on students (Dweck et. al., 1995; Dweck, 1999; Mueller & Dweck, 1998; Rattan et al., 2012). Teachers promoting a performance goal

classroom focus on ability and evaluation compared to mastery and growth in a learning goal environment (Dweck, 1999; Shim et al., 2013; Leroy et. al., 2007).

Research suggests that teacher implicit theories of intelligence influence instructional practices, however it is still unclear what influences the *development* of implicit theories of intelligence. Rattan et. al., (2012) noted that culture is a motivating force in the development of implicit theories of intelligence. It was found that there exists differing views of implicit theories of intelligence between western (US) and nonwestern (India) countries (Rattan et. al., 2012). However, due to culture being a large construct with many aspects (e.g., thoughts, beliefs, and behaviors), one specific cultural practice that is proposed as a possible contributor to the development of teacher implicit theories of intelligence is the perceived pressure from standardized achievement testing (Ingraham, 2000).

With the gaps in the literature on the relation between these three constructs (e.g., implicit theories of intelligence, instructional practices, and perceived pressure from standardized achievement testing), it is important that future research first look at the differences between teachers with different characteristics (e.g., country, grade level) and the relation of these three constructs. Looking at individual teachers, and if their implicit theories of intelligence and perceived pressure from standardized achievement testing have unique contributions to their instructional practices can provide information about how teachers teach. This can benefit students in understanding the expectations of teachers and the pressure they feel to teach in a certain way. Identifying a possible cultural practice (e.g., standardized achievement testing and the pressure potentially

perceived from it) in the development of implicit theories of intelligence can not only provide insight into teachers and the academic differences across countries. By better understanding all these relations, more information can be given in order to better understand the achievement gap, both at a national and international level, in the hopes of closing it.

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APPENDICES

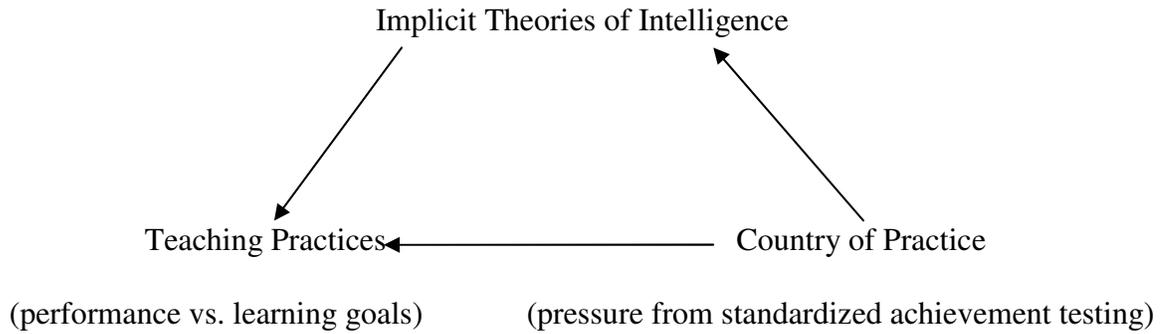


Figure 1. This figure illustrates the proposed relationship between implicit theories of intelligence, standardized achievement testing, and performance vs. learning goals.

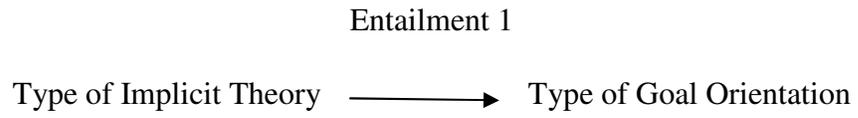


Figure 2. Causal Entailments implied by Dweck & Leggett 1988. This figure illustrates the proposed relation between implicit theories of intelligence and goal orientation.