THE RELATIONSHIP BETWEEN STEREOTYPE THREAT VULNERABILITY AND ACADEMIC
ENGAGEMENT AMONG GIFTED ELEMENTARY STUDENTS IN RURAL SCHOOLS

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by

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Abstract

The purpose of the present study was to explore the relationship between stereotype threat vulnerability based on gender, rural identification, and low socioeconomic status and students' academic engagement. The main research question of the study was concerned with the nature of this relationship. Additionally, the study explored a set of concomitant questions about the patterns of emotional and behavioral engagement, group identification, and stigma consciousness in a sample of 475 students identified as gifted in high-poverty rural schools. All the constructs were measured at the beginning of the third and end of the fourth grades using students' scores on self-reported measures. Results indicated that although students' engagement was high in both grades, there was a significant drop in emotional engagement in the fourth grade as compared to the third grade for both genders. Gender identification had a significant and large decline ($p < .001$), rural identification had a significant but small decline ($p < .05$) while low SES identification was stable and high across the two grades. There were no changes in the level of stigma consciousness. Rural stereotype vulnerability contributed positively to emotional engagement ($p < .001$) while gender stereotype threat vulnerability had a statistically significant negative relationship with emotional engagement ($p < .05$). Based on these results, it was suggested that elementary school is the right time, i.e., not too early, to implement interventions mitigating stereotype threat among vulnerable students. Considering the observed relative decline in engagement, teachers of gifted learners should not assume that gifted learners are always engaged. Rather, teachers should seek out strategies to sustain and increase these students' engagement. Place-based education was suggested as one such potential strategy for gifted rural learners. Methodological and conceptual limitations as well as directions for future research were discussed.

Key words: gifted education, rural education, stereotype threat, academic engagement

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APPROVAL OF THE DISSERTATION

This dissertation, The Relationship Between Stereotype Threat Vulnerability and Academic Engagement Among Gifted Elementary Students in Rural Schools, has been approved by the Graduate Faculty of the School of Education and Human Development in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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DEDICATION

To my mom – your love and support have been invaluable. You have made it so easy for me to

fall in love with learning, be it mathematics, science, languages, or music. You have always been

my inspiration and a source of enormous pride. It is such a gift to grow up knowing that your

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Chapter I

INTRODUCTION

In 2019, The National Association for Gifted Children published a position statement featuring an updated definition of giftedness (NAGC, 2019). This most recent definition emphasizes that giftedness is manifested among learners from all economic strata and from diverse racial, ethnic, and cultural backgrounds. The necessity to highlight heterogeneity among the gifted is indicative of the persistent problem of underrepresentation of students from certain populations in gifted education programs. Common underrepresented groups include Black, Latinx, English learners, twice-exceptional students, and students living in poverty. According to the NAGC position statement, many educators continue to believe that there are few students to identify in these groups in the first place. They base their judgement on the objectively demonstrable pervasive achievement gaps in education as well as on subjective stereotypical beliefs of what a typical gifted learner should look like, that is a student who is always high-achieving and highly engaged. Generally speaking, at least in mainstream Western culture, the expectation is that gifted students are motivated learners demonstrating superb academic performance (Speirs Neumeister et al., 2007). Yet, for some gifted children in marginalized groups or from diverse backgrounds, there may be other gifted behavior attributes that are not valued in a typical school context. Such is the case for many gifted learners residing in poor, rural communities.

Unsurprisingly, rural students are underrepresented in gifted education programs (Stambaugh, 2015). Many of these students learn under the conditions of limited educational opportunities, which may prevent them from performing to their fullest potential or from pursuing their passions. With few resources to spare, many rural schools have difficulty retaining qualified teachers, have outdated facilities and supplies, and are forced to focus on remedial programs providing educational triage for students who are likely to make the minimum cut score on the state standardized tests (Budge, 2006; Howley et al., 2009; Lavalley, 2018). In addition, geographic distance can make it challenging for rural

students to participate in extracurricular enrichment opportunities (Cross & Dixon, 1998; Richards & Stambaugh, 2015). Under these conditions, it can be much more difficult for rural students to develop and demonstrate their gifted behaviors in ways that are traditionally valued in mainstream educational culture. At the same time, it may be equally difficult for teachers in rural schools to notice these behaviors in students. Underfunded rural schools can rarely provide their teachers with the professional development necessary to recognize the characteristics of gifted learners from economically disadvantaged backgrounds (Azano et al., 2014; Green, 2013; Howley et al., 2009).

For gifted rural students, lack of resources is perhaps the most conspicuous cause of diminished opportunity. However, in addition to poverty and concomitant financial constraints experienced by rural schools, stereotypes about rural people and places can influence students' development and achievement. As noted by other scholars, rural communities are too often regarded as backward (Morris, 2012), "end of the earth," (Budge, 2006, p. 5) or "morally and intellectually deficient" (Gorski, 2012, p. 305). Such stereotypes can be seen as a more subtle covert cause of underrepresentation and underachievement of rural gifted learners. The discrediting attributes of stigma can affect rural students' perception of who they are as learners and individuals and lead to changes in their behavior. The peril lies in the invisibility of stigmatization for an observer: The conditions triggering the adverse effects are visible only to those whose social identity is under attack (Steele, 2010). Unaware of such conditions, educators may fall into the trap of dismissing the role of stereotyping in students' performance and, instead, focus on more tangible commonsense explanations of students' achievement due to lack of resources. Such explanations are valid and concomitant interventions to mitigate the lack of resources are much needed. However, without addressing the invisible "threat in the air" (Steele, 1997, p. 613) of stereotypes to rural students' identity, teachers are likely to continue overlooking rural students with talents.

At the same time, it should be also understood that not all students from minoritized groups will be equally affected by stigmatization – individuals differ in stigma awareness and stereotype susceptibility (Brown & Pinel, 2003; Picho & Brown, 2011). Some students may be more vulnerable because they belong to multiple marginalized groups based on place, socioeconomic class, gender, sexual orientation, ethnicity, or disability (Gonzales et al., 2002). Thus, for some rural students, it may well be the case that they perform not only under the pressure of the rural stigma, but are also forced to fend off societal stereotypes associated with their gender or being Black or Hispanic or Native American or a member of another stereotyped minority. Over the past two decades, research on stereotype threat in the context of education has focused on many minoritized groups including underperformance of Black (Alter et al., 2010; Steele & Aronson, 1995; Wasserberg, 2014), Native American (Jaramillo et al., 2015), and Latino students (Gonzales et al., 2002; Schmader & Johns, 2003), as well as stereotypes invoked by low socioeconomic status (Croizet & Claire, 1998; Désert et al., 2009; Harrison et al., 2006 Spencer & Castano, 2007), gender (Keller, 2010; McGlone & Aronson, 2006; Spencer et al., 1999), learning disability (May et al., 2014; Zhao et al., 2019), and place of origin (Clark et al., 2011). Yet, there are few empirical studies that take into consideration these multiple threats to social identity simultaneously to consider their putative additive effect on student performance.

Equally, there is little research into the effects of stereotype threat on gifted students, especially in K-12 settings. This is surprising considering that the relationship between stereotype susceptibility and achievement is most likely to affect those who value a particular domain, such as mathematics or language arts, and are "in the academic vanguard of their groups," (Steele, 1997, p. 613) which qualifies gifted learners as potentially more vulnerable to stereotype threat as compared to their peers. In the context of rural education, it can be assumed that it is those rural gifted learners who most strongly identify with a particular academic domain and are aware of their group (or multiple groups) stigmatization in relation to that domain who will be more prone to demonstrating lower performance.

The effects of stereotype threat have been largely researched in association with achievement outcomes under the conditions of high-stakes testing (Steele, 1997; Shapiro & Neuberg, 2007). More often than not, identification for gifted programs involves such high-stakes testing situations where traditional assessments are used to measure students' cognitive ability, achievement, or the combination thereof (Brodersen et al., 2018). Thus, the direct relevance and importance of studying the effects of stereotype threat in the context of gifted education becomes self-evident. Research (Steele, 2010) indicates that if a student's identity is threatened in the midst of test-taking such as an IQ test as part of collecting data for identification, the student may fail to perform to his or her highest aptitude and knowledge under the fear of being reduced to the negative stereotype about his or her group.

There is also a possibility of long-lasting, rather than one-time situational, effects of stereotype threat. Steele (1997, 2010) theorized that repeated exposure to identity threatening situations could lead to noncognitive changes such as students' disengagement from the learning process and disidentification from the domain. Empirical evidence aligns with Steele's theoretical proposition as, for example, it has been shown that under stereotype threat conditions, women choose to avoid leadership roles in favor of subordinate roles (Davies et al., 2005), female students show decreased achievement motivation in mathematics (Fogliati & Bussey, 2013), develop negative emotions about the domain (Picho, 2011), and tend to adopt performance-avoidance achievement goals (Smith et al., 2007).

At the same time, it should be noted that some of these noncognitive characteristics such as motivation and leadership potential are featured prominently among gifted learners' traits and behaviors and, as such, are often measured as part of gifted identification practices (Matthews, 2018). Such practices are more closely aligned with the conceptualization of giftedness as a multi-dimensional phenomenon and are meant to allow the identification of larger numbers of students, especially those who may score below the cutoff point on traditional cognitive assessments. However, from stereotype threat theory it follows that some of these behaviors can also be undermined if minoritized students

feel the pressure of societal stigma on repeated occasions. It is true that empirical studies of repeated

stereotype threat exposure on noncognitive traits were conducted primarily with adult and adolescent

student populations. However, the precedent is there: the effects of stereotype threat extend beyond

performance on cognitive assessments. Therefore, we cannot rule out that under the conditions of

continuous threat to identity, gifted students may continue to be overlooked even when non-test

assessments of motivation and leadership are considered in the process of identification. Thus, in the

context of gifted education of underrepresented populations, the understanding of the relationship

between stereotype threat and affective traits and behaviors should be of no less importance than the

understanding of effects of stereotype threat on cognitive performance during testing.

Two noncognitive behaviors that are often ascribed to gifted learners and sought out in their

identification are motivation and high academic engagement. Motivation is consistently listed as a

characteristic of gifted learners (Reis & Housand, 2008). At the same time, in educational psychology,

motivation is conceived primarily as an internal unobservable process that resides within a student

(Reeve, 2012). Generally, it is understood as intention preceding the act of engaging (Christenson et al.,

2012). As such, motivation represents a necessary but not a sufficient condition for academic

engagement. Engagement, on the other hand, is conceptualized as the outward representation of

motivation (Skinner & Pfitzer, 2012), and teachers rely primarily on observable indicators of engagement

to make inferences and judgements about students' motivation. Engagement can be used as one of the

key indicators of giftedness as, for example, is the case in the identification approach based on Renzulli's

Three-Ring Model (Renzulli, 1978; 2016). Learners are identified as gifted when they demonstrate

"action information" (Renzulli et al., 1981) through participation in Type III Enrichment interventions

which allow students to create authentic products for real audiences. Action information is defined as

"high levels of engagement information" (Callahan, 2018, p. 99) demonstrated by students when they

interact with the topic of their research or study area. Engagement-related vocabulary is noticeably

present across items from Scales for Rating the Behavioral Characteristics of Superior Students (SRBCSS; Renzulli et al., 2002). Thus, teachers are asked to evaluate students on such SRBCSS statements as "eagerly engages in reading related activities" or "is eager to solve challenging math problems." All this evidence points to the undeniable significance of the engagement concept within contemporary gifted identification framework.

In this study, I hypothesize that there is a possible association between stereotype threat and academic engagement. Evidence suggests that frequent exposure to stereotype threat has negative effects on motivational behaviors (see Thoman et al., 2013 for review). Since the concept of academic engagement falls within motivational literature, it is logical to assume that engagement will be inhibited by stereotype threat in a manner similar to how stereotype threatening situations affect other motivational constructs such as identification with the domain (Osborne, 1995; Woodcock et al., 2012) or students' interests (Smith et al., 2007). Largely, the potential association between stereotype threat and academic engagement can be grounded in theoretical propositions supporting the identity-behavior link, such as when students choose to engage or disengage based on accessibility of their various identities (Oyserman, 2015), their decision to act upon a certain identity (Kessels et al., 2014), or motivation to protect their social identity (Brewer, 1996). Threatening situations can potentially inhibit the accessibility of certain identities and associated behaviors. For example, marginalized gifted students influenced by stereotype threat may temporarily "lose" access to their gifted identity and, consequently, choose to act upon an alternative identity made salient by the stereotype. If the "content" of that alternative identity does not prioritize high engagement, students will not engage at the level they could have, had their gifted identity been present.

Purpose of the study

The purpose of the current study is to better understand the relationship between multiple stereotype threats and academic engagement among third and fourth grade gifted students in high-

poverty rural regions. In doing so, the study has the potential to help increase educators' awareness of stereotype threat to better support the academic engagement of gifted learners. Beyond this important practical implication, the study aims to contribute to the literature on stereotype threat by examining empirically how societal stigmatization and consequent stereotype threat may relate to noncognitive outcomes such as engagement, as well as how this process happens when multiple identities – place of origin, socioeconomic class, and gender - are stereotyped in negative ways.

Equally important, the study fills a gap in the gifted education literature on academic engagement. As discussed above, academic engagement is highly relevant for gifted education practices. However, the role of engagement in educational experiences of high-ability and gifted students remains largely unexplored. In part, this is due to misconceptions about the gifted student population: it is often assumed that these students are by definition motivated and engaged (McCormick, 2012). Yet gifted learners are not immune to academic disengagement because their educational experience, like the experience of all the learners, is bound by the social context, which has been linked to patterns of student engagement (Appleton et al., 2008; Opdenakker & Minnaert, 2011; Skinner et al., 1998).

Academic engagement is an important mediator in the educational process, connecting learning contexts and outcomes such as achievement (Alexander et al., 1993; Finn, 1989; Guthrie et al., 2012), relationship skills with peers and teachers (Skinner & Pitzer, 2012), persistence (Rumberger & Lim, 2008), and mental health well-being (Carter et al., 2007). Thus, when gifted learners do not fully engage in the learning process, they may underachieve and miss on the development of important socio-emotional skills. As a result, their giftedness may become less visible to their teachers.

Ultimately, my hope is that the results of this study can be translated into professional development opportunities for teachers in rural areas. Students who seem disengaged may actually be bored and, in either case, should not and cannot be dismissed as not making the gifted pool. Rather, it is

important to understand and seek to correct the underlying causes of such disengagement of talented students. Fortunately, when engagement suffers due to stereotype threat, such corrections are possible – previous studies have demonstrated the effectiveness of interventions to reduce stereotype threat for various groups of students (Johns et al., 2005; Huguet & Régner, 2007; Sherman et al., 2013). Raising teachers' awareness of the connection between stereotype threat and engagement among rural gifted learners is an important step en route to successfully identifying and serving these students in gifted education programs.

Definition of Terms

In the current study, *gifted* is defined in accordance with the definition of giftedness developed by NAGC (NAGC, 2019):

> "Students with gifts and talents perform – or have the capability to perform – at higher levels compared to others of the same age, experience, and environment in one or more domains. They require modification(s) to their educational experience(s) to learn and realize their potential. Student with gifts and talents:
>
> • Come from all racial, ethnic, and cultural populations, as well as all economic strata.
>
> • Require sufficient access to appropriate learning opportunities to realize their potential.
>
> • Can have learning and processing disorders that require specialized intervention and accommodation.
>
> • Need support and guidance to develop socially and emotionally as well as in their areas of talent.
>
> • Require varied services based on their changing needs".

According to this NAGC definition of giftedness, students can be identified as gifted in one or more domains, that is, giftedness is conceptualized as domain specific rather than domain general (Missett & McCormick, 2014). In this study, all the participants have been identified as gifted in the

language arts domain. Details about specific identification methods are provided in the Methods chapter.

Academic engagement is conceptualized as the extent to which a student is actively involved in classroom learning activities (Skinner & Pitzer, 2012; Reeve, 2012). This active involvement happens at three levels – behavioral, emotional, and cognitive (Fredricks et al., 2004; Rimm-Kaufman et al., 2015). *Behavioral engagement* is observed in students' on-task behaviors, effort, persistence, and perseverance with challenging tasks. *Emotional engagement* encompasses task-facilitating emotions of enjoyment, enthusiasm, fun, and satisfaction. *Cognitive engagement* is understood as the investment of effort and willingness to utilize various cognitive and self-regulatory strategies to master difficult skills and go beyond what is required. In the present study, I focus on behavioral and emotional components only. This decision was dictated by methodological considerations. The most appropriate and psychometrically defensible instrument for measuring engagement among elementary school students available at the time of the study – Engagement vs. Disaffection scale (Skinner et al., 1998; Skinner et al., 2009) – is a two-factor instrument gauging emotional and behavioral dimensions. Thus, cognitive engagement was not measured. This is further discussed in the limitations of the study.

The term *stereotype threat* refers to "the discomfort targets feel when they are at risk of fulfilling a negative stereotype about their group; the apprehension that they could behave in such a way as to confirm the stereotype – in the eyes of others, in their own eyes, or both at the same time" (Aronson et al., 1998). This broader definition has been chosen to reflect the effects of stereotype threat on various outcomes beyond test performance. In the study, stereotype threat is operationalized as *stereotype vulnerability* defined as the sum of individual risk factors contributing to how strongly an individual is affected by stereotype threat (Aronson & Steele, 2005). Group identification, domain identification, and stigma consciousness are three such risk factors considered here under the umbrella of stereotype vulnerability. *Domain identification* is understood as "the extent to which an individual

defines the Self through a role or performance in a particular domain" (Osborne et al., 2007, p.122). The

term *domain* refers to any content area or area of expertise, such as mathematics, music, or art. In this

case, we expect to see students' identification with the language arts domain since the participants have

been identified as gifted in this academic area. *Group identification* refers to "the degree to which an

individual considers his or her membership to a given group…to be central to his or her self-concept"

(Picho & Brown, 2011, p. 382). Individuals identifying with a group do not merely recognize that they

belong to a group, but also "derive a strong sense of identity from being a member of that group"

(Shapiro & Neuberg, 2007, p. 117). Thus, they attach value and emotional significance to membership in

their group (Tajfel, 1981). Finally, *stigma consciousness* is conceptualized as "the extent to which

individuals are chronically self-conscious of their stigmatized status" (Brown & Pinel, 2003, p. 627). A

more detailed consideration of each of the three factors within stereotype vulnerability is provided in

the literature review with a particular focus on group identification and stigma consciousness in

connection to the social identities of gender, place (rurality), and low socioeconomic status.

Chapter II

REVIEW OF RELEVANT LITERATURE

The following review of the literature focuses on the two key concepts under investigation –

academic engagement and stereotype threat. Accordingly, Chapter II is divided into two corresponding

sections. At the end of each section, I focus specifically on literature in relation to each concept in the

gifted education context.

Academic Engagement

The concept of engagement was introduced in the 1980s and was originally equated with

student participation in school activities (Natriello, 1984). Thus, early studies of engagement focused

only on students' observable behaviors and their relationship to academic achievement. Finn (1993), for

example, operationalized engagement through three factors of absenteeism/tardiness, participation in

school-related activities, and classroom behavior indicators. He found that scoring high on all three

factors was associated with the largest achievement gain in reading comprehension, mathematics,

science, and social studies. This early literature also drew attention to the scale of the problem – in

Finn's study, almost a quarter of students in an 18,307-student sample of 8th graders were classified as

nonparticipants, that is as students with low behavioral engagement.

Over time, the understanding of engagement has expanded beyond physically observable

student behaviors. Currently, there is substantial variation in the conceptual understanding of the

engagement construct. Appleton and colleagues (2008) in their meta-analytical literature review,

compiled a table of 19 conceptualizations of engagement. The reasons for such conceptual variability

are historical; three schools of thought have traditionally contributed to the theoretical development of

the construct (Reschly & Christenson, 2012).

Originally, interest in engagement was sparked by research and practice that aimed at

developing and implementing school drop-out prevention and interventions to reduce drop-out rates

(Finn, 1989; Reschly & Christenson, 2012). From understanding engagement in relation to marginalized and alienated students, some researchers (Fredricks et al., 2004; Marks, 2000) moved into the exploration of engagement in relation to student achievement for all students in the context of general school reform. These first two approaches to understanding engagement emphasize school-level indicators of engagement associated with successful school completion (e.g., student absences and tardiness, behavioral incidents, identification with school). In this regard, empirical studies arising from drop-out and school reform literature can be considered global in nature.

The third contribution to the development of the concept of engagement originated in the motivational literature through examination of individual differences in perceived control (Furrer & Skinner, 2003; Skinner et al., 1998; Valeski & Stipek, 2001). Unlike the global school-level engagement studies, research arising from motivational literature focuses more directly on what is happening in the classroom and why and students' reactions and interactions with the classroom environment. Thus, according to Skinner et al. (2009), engagement encompasses "the quality of student's participation with learning activities in the classroom, ranging from energized, enthusiastic, focused, emotionally positive interactions with academic tasks to apathetic withdrawals" (p. 494). The present study lies within this motivational research tradition of student engagement.

Facilitators of Engagement

Considering how important the outcomes of engagement are for student learning and well-being, it is essential to determine which factors either facilitate or inhibit student engagement with learning activities in various contexts. Below I follow Skinner and Pitzer's (2012) proposition to classify engagement facilitators into two interdependent categories of contextual and personal factors.

Contextual facilitators include support mechanisms provided by teachers, peers, and parents. Together, they create differential conditions for children's learning through provisions of warmth vs. rejection, structure vs. chaos, and autonomy support vs. coercion (Skinner & Pitzer, 2012; Tucker et al.,

2002; Wang & Eccles, 2013). For instance, students disengage when their cultural practices and values are ignored or devalued by teachers (Bingham & Okagaki, 2012). Engagement, on the other hand, is higher when teachers have high expectations for students' achievement and provide necessary help for learning (Marks, 2000). Equally, parents' school involvement promotes increased academic engagement across all grade levels (Connell et al., 1994; Marks, 2000). Further, the nature of academic work is considered a significant contextual facilitator of engagement (Gettinger & Walter, 2012). Authentic tasks that bring value and relevance to the students have been found to be intrinsically motivating and engaging (Newmann et al., 1992; Nystrand & Gamoran, 1991). For example, Marks (2000) found the effects of authentic instructional work to be very powerful – when added to the model, it eliminated the effects of students' prior achievement on engagement. Additionally, some studies found rigor and challenge of the task to be a facilitator of student engagement (Yazzie-Mintz & McCormick, 2012).

Skinner and Pitzer (2012) situate *personal* facilitators of engagement within the three basic psychological needs of competence, autonomy, and relatedness proposed and defined by Ryan and Deci in self-determination theory. Competence is defined as "our basic need to feel effectance and mastery" (Ryan & Deci, 2018, p. 11). Students' perceptions of ability, self-efficacy, and control are examples of competence-related facilitators of engagement (Valeski & Stipek, 2001). Autonomy is understood as the need to experience self as an agent. Within autonomy, opportunities for choice and students' voice (Assor, 2012) and students' goal orientations (Anderman & Patrick, 2012) have been studied as facilitators of engagement. Relatedness refers to the psychological need of an individual to be socially connected. It includes beliefs about "the self as lovable (or unworthy of love) and about the social world as trustworthy (or hostile)" (Furrer & Skinner, 2003, p. 148). The need for relatedness is universal across cultures and its fulfillment "provides students with the required emotional security for active engagement" (Lam et al., 2012, p. 80). Under this category, a sense of belonging in school has been associated with higher levels of engagement with challenging academic work (Goodenow, 1992). Furrer

and Skinner (2003) reported that perceived sense of relatedness was a stronger predictor of engagement than perceived control and concluded that students' feelings of connectedness represented "a key self-system process" (p. 158) with an energetic function to awaken "enthusiasm, interest, and willingness to participate in academic activities" (p. 158). Similarly, in a sample of Black students, Tucker et al. (2002) showed that perceived competence affected engagement only through perceived relatedness.

Across a number of studies, perceived relatedness to teachers appears to be a more important factor as compared to relatedness to peers and parents. For example, in Lam et al.'s study (2012), the correlation coefficient between perceived teacher support and engagement was the strongest among the three relationships of teacher, peer, and parent support and engagement. Similarly, Furrer and Skinner (2003) found that elementary school students with high perceived relatedness to their teacher reported higher emotional engagement compared with children who were highly related to their parents (but not teachers). Moreover, high relatedness to parents and peers did not compensate for the lack of relatedness to teachers.

Taken together, contextual factors create an educational environment that interacts with students' personal facilitators of engagement through the person-environment fit (Fredricks et al., 2004; Mahatmya et al., 2012). For instance, challenging activities will be engaging only when a student is cognitively and emotionally ready to tackle these activities. On the other hand, students' engagement will be undermined if there is a mismatch between students' need to express their interests and teacher's ability to provide differentiated curricular opportunities based on interest. Wang and Eccles (2013), for example, showed that the relationship between teacher support for autonomy and behavioral engagement was positive for high-ability students and negative for low-achieving students. Support for autonomy allows students to perceive their school activities as relevant to their interests and goals through availability of choice and decision-making opportunities about their learning.

However, the results of Wang and Eccles's study suggest that individual differences in academic ability play a role in whether students can "harness the opportunities afforded to them when choices are made available" (p. 20). Thus, in this case, we observe a clear interaction between contextual and personal factors, resulting in different levels of academic engagement.

Demographic Characteristics and Engagement

Demographic characteristics of students have long been considered as predictors of academic engagement. Since the focus of this study is on gifted rural boys and girls attending predominantly low-income schools, below I analyze engagement literature in relation to gender, socioeconomic class, rurality, and their intersection. Finally, I close this section with a discussion of academic engagement as it pertains to gifted students.

Socioeconomic class*.* Generally, academic engagement increases with higher level of SES (Finn, 1989; Finn & Cox, 1992; Lee & Smith, 1993). Students from economically disadvantaged families are less likely to enter elementary school with skills and the cultural capital necessary for successful engagement (Anger, 2012; Laureau, 2003). As a result, they enter school less engaged. However, socioeconomic class in itself is not a deterministic inhibitor of engagement. Using a sample of schools committed to restructuring based on equity, Marks (2000) showed that for elementary school students, the effects of socioeconomic class on engagement disappeared once the model was expanded to include teacher and parental support system. As discussed above, positive relationships with teachers seem particularly important for strong academic engagement.

Gender. Overall, girls are more academically engaged than boys across all grade levels (Finn, 1989; Finn & Cox, 1992; Lee & Smith, 1993, 1995; Marks, 2000). Moreover, this gender-based engagement gap seems to be universal as, for example, reported in Lam et al.'s study (2012) with a sample of adolescents from 12 countries. In an attempt to understand these gender-based differences, several studies tested whether gender moderated the relationship between contextual facilitators and

engagement and found no such effect for students' perceptions of teacher, peer, and parent support (Lam et al., 2012; Wang & Eccles, 2013). For both genders, these contextual factors contributed significantly and positively to behavioral and emotional engagement. Furrer and Skinner (2003), however, found that the effects of perceived relatedness to teachers on engagement were more pronounced for boys. So if boys' relationships with and trust in teachers are undermined, they will respond with much lower levels of engagement compared with girls.

At the same time, the level of engagement is also subject-specific, with girls showing less engagement in science and mathematics as compared to boys (Eccles, 2011). One explanation for these gendered differences is that engagement is tied to one's gender identity. Thus, Kessels et al. (2014) developed the Interests as Identity Regulation Model to describe the relationship between gender identity and engagement. According to the authors' theorizing, every school subject is imbued with defining characteristics (school prototype) that favor certain types of students, and students are sensitive to whether their present or future identities match those characteristics. Consequently, students choose to engage in certain subjects and not others as a way to develop or demonstrate their identity. The same identity-based explanation can apply to the choice between engaging or disengaging with school activities in general. Boys, for example, disengage from school because they perceive effort and engagement as feminine and view disengagement as the token of their masculinity.

Gender, Class, and Rurality. For rural boys, the level of incoming engagement in elementary school is not different from engagement levels shown by suburban boys – both groups show similar and lower engagement as compared to girls (Pyne, 2019)[1]. However, over school years, boys in rural areas experience a much steeper decline in engagement, almost twice as steep as the decline observed among suburban boys (Pyne, 2019). A plausible explanation for this negative trend can be inferred from

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[1] This is based on the teacher-reported measure of student engagement. The measure was not specific to any content area.

considerations of the intersection of gender, socioeconomic status, and place identities. Although boys living in various locales, including suburban, can find themselves struggling with discontinuity between their masculine identities and school values, boys living in poor rural communities, in particular, may be even more concerned about enacting their masculine identity (Morris, 2012). In these communities, masculinity embodies traditional rural values of hard work, responsibility, and morality and is also associated with relative economic stability. Morris refers to it as "respectable rural masculinity" (p. 33) because it shows that one is worthy of respect not only among school peers, but also within one's community. As such, it provides boys with high status and recognition and protects them from stigmatization based on poverty and their family reputation.

It should be noted that in rural schools students are viewed primarily through their family reputations by both teachers and peers (Seaton, 2007). These reputations are durable, almost permanent, whereby students are locked in their "pre-existing reputations" (Morris, 2012, p. 188). Boys from badly-reputed families feel a strong need to seek out strategies aimed at disassociating themselves from these discrediting reputations. So they may purposefully choose enacting masculinity as a way to save their name and avoid prejudice. This rural masculinity necessitates "physical labor and prowess rather than seemingly pointless academic bookwork" (Morris, 2012, p. 33). Although working hard is valued, school work, school effort, and non-physical jobs in the community are not perceived as hard work and, thus, cannot serve the purpose of gaining recognition and dignity. So, by choosing their masculine identity, rural boys gain respect and simultaneously de-attach themselves from school. Hence, we see a decline in academic engagement.

When rural girls enter elementary school, they enjoy the highest level of engagement among all the groups categorized by locale (urban, suburban, rural) and gender (Pyne, 2019). However, among groups of girls by locale, they are the only group that shows a negative trend in engagement over elementary school years. By third grade, rural girls have the lowest engagement as compared to both

suburban and urban girls. This downward trend can perhaps be explained by the overall prevalence of

masculine culture in rural schools (Morris, 2012) and the concomitant lack of support on the part of the

teachers (Seaton, 2007). Schools provide girls with scripts of submissive femininity that endorse the

hegemony of masculinity. Morris's and Seaton's ethnographic studies uncover how girls are expected to

practice femininity by being caring, polite, quiet, and passive. As a result, some girls, typically the ones

from families with good reputations, learn to play the expected "good girl" part by concealing their voice

and true selves, succumbing to "self-silencing, self-hatred, and shame" (Seaton, 2007, p. 10) and

expressing "self-deprecating views of their academic and other abilities, describing themselves as

"dumb" and acting in ways that…deemphasize their intelligence" (Morris, 2012, p. 12). While they

manage to earn their teachers' approval, the relationships these girls develop with teachers are not

based on authenticity and care – Seaton found that "good girls" felt isolated, shunned and "emotionally

disconnected from their teachers" (p. 6) despite being liked by them.

On the other end of the spectrum, there are low-income girls who, just like their male peers,

come to school confined by bad family reputations. Based on these reputations, teachers make pre-

judgements about these girls' characters, behaviors, and abilities. Typically, these are deemed

incompatible with the virtues of femininity and such girls are viewed as "loud, obnoxious, and

sometimes promiscuous" (Seaton, 2007, p. 5). Thus, teachers perceive them as resisting the "rules" of

expected femininity. In lieu of teachers' support, these female students encounter blaming and

stigmatization that Seaton equates to racial discrimination experienced by students of color. In a way,

rural girls are locked in the uninviting choice between being docile, liked, and yet not supported or being

outspoken, stigmatized, and outright rejected. In either case, the satisfaction of the need for relatedness

and teacher support are missing. Consequently, in any case, academic engagement of these girls is

undermined.

In the rural education context, the overall gendered gap in academic engagement matches the pattern observed nationally and internationally, with boys demonstrating lower engagement. At the same time, the endorsement of masculinity and stigmatization based on family reputations and socioeconomic class place both genders at a considerable disadvantage when it comes to fostering authentic relationships with teachers and developing positive self-perceptions. Such relationships cannot thrive under the conditions of forced identity choice. Consequently, both genders are put at risk of disengagement from academics.

Engagement of Gifted Learners

We know relatively little about academic engagement of gifted learners. Findings quoted below come from exploratory studies based on gifted students' and teachers' perceptions of what it means to be engaged for a gifted learner.

Gifted students report that when they are engaged, they experience a sense of flow characterized by sustained focus of "zoning out" or "losing oneself in learning" (Chandra Handa, 2020, p. 548). This happens when teachers foster deep understanding of complex concepts and provide opportunities for new learning (Chandra Handa, 2020; McCormick, 2012). Engagement also happens through meaningful interactions with peers when students raise and respond to questions, engage in high level discussions (Chandra Handa, 2020), or are involved in hands-on projects with gifted peers (McCormick, 2012). A teacher's role is instrumental in choosing tasks that pose challenge, interest, and relevance and, thus, engage gifted learners (Chandra Handa, 2020; Siegle et al., 2014). Finally, gifted students are engaged when teachers are "genuinely interested in them and their learning" (Siegle et al., 2014, p. 46).

This picture of academic engagement is certainly aligned with cognitive characteristics of gifted learners as tenacious and capable of attending to the task with persistent concentration (Hoh, 2008), and as those who prefer complexity and novelty (Chichekyan & Shore, 2014). Focusing on these

characteristics as permanent and durable attributes of a gifted child can, however, create a mythical view that all gifted learners are engaged at all times. Yet gifted learners vary in their level of academic engagement as, for example, indicated in cases of gifted underachievers and school drop-outs (Landis & Reschly, 2013; Renzulli & Park, 2000). Teachers and parents tend to overlook instances of low academic engagement in gifted learners. Thus, in a study of engagement among gifted elementary school students, McCormick (2012) described how teachers and parents of gifted students looked primarily at students' behavioral indicators to draw conclusions about whether they were engaged. Based on kids' behavior, these significant others falsely assumed that gifted students were always engaged – neither teachers nor parents could come up with examples of when these gifted learners were disengaged. Gifted students, however, were able to draw such examples easily. In these examples, they first described how they disengaged emotionally, then cognitively, and only finally behaviorally. It was the emotional attachment that figured prominently in their narratives, something that went unnoticed by the adults. Relationships, belonging, and emotional connectedness matter for gifted students just as they matter for everyone else. Based on McCormick's observations, it can be suggested that under conditions inhibiting academic engagement (i.e., when the basic needs of autonomy, competence, and relatedness are not satisfied), emotional engagement of gifted learners will suffer more than their behavioral engagement – gifted learners will still appear to be engaged in the task even if they have already de-attached themselves from the task emotionally.

With only three exploratory studies at hand, the understanding of academic engagement in gifted populations is still nascent. Even at the descriptive level, there is no research into engagement patterns among gifted learners separated by gender, race, socioeconomic status, or place. Therefore, in this study, I first attempt to partially fill in this gap in the extant literature by exploring variability of engagement among third and fourth-grade rural gifted students, stability of engagement across grades, and gendered differences in engagement. The study will allow me to look into patterns of engagement

at the intersection of rurality, socioeconomic class, gender, and giftedness. Importantly, following

McCormick's (2012) findings, I consider whether students differ in the levels of their behavioral and

emotional engagement. The two components of engagement are considered separately for questions of

variability, stability, and gender differences. Descriptive and comparative analysis is an important, but

only a first step in understanding patterns of engagement in gifted learners. At present, there is no

empirical research on plausible facilitators and inhibitors of academic engagement specifically in gifted

populations. Here I suggest that stereotype vulnerability is a probable factor in variability of engagement

among marginalized gifted students. In the next section, I review literature on stereotype threat and

argue that there is sufficient theoretical and empirical evidence to suggest that stereotype threat can

inhibit academic engagement of certain groups of gifted learners.

Stereotype Threat

Early social psychology works on the relationship between stigmatization and performance

suggested that minoritized students internalized negative societal images of themselves, and,

consequently, gained a sense of inferiority which led to performance decrements (Allport, 1954; Parsons

et al., 1983). In contrast, Steele (1997) suggested that the "fault" lied not within an individual but rather

in the evaluative situation that created conditions threatening to one's identity and affecting one's

performance. It was assumed that once these adverse conditions were lifted, the threat would be

reduced and the individual's cognitive functioning would return to normal.

Theoretically, Steele's proposition represented a major philosophical shift from the observer's

perspective that looked for reasons of failure within an individual and, thus, created a deficit view of

minoritized students to the actor's perspective where an individual had to tackle identity contingencies

residing in a given situation (Steele, 2010). Further, Leyens et al. (2000) provided empirical evidence for

the situational nature of stereotype threat by showing that the performance of traditionally

nonstigmatized groups such as White men could also be affected by threatening conditions. Since non-

stigmatized groups could not have internalized the stigma, the phenomenon had to lie within a given environment rather than a person. In its current standing, stereotype threat research recognizes both the effects of environmental cues on performance and individual differences in susceptibility to those cues (Spencer et al., 2016).

Situational Cues of Stereotype Threat

Numerous laboratory studies confirm that diagnosticity of an assessment as a test of ability or aptitude serves as a situational cue for stereotype threat (Désert et al., 2009; Harrison et al., 2006; Spencer & Castano, 2007; Steele & Aronson, 1995). Underperformance due to stereotype threat occurs when a socially stereotyped individual is made aware of the purpose of the test as evaluative of his or her intelligence. Such purpose does not need to be stated explicitly – it is more likely than not that an individual will assume diagnosticity and, consequently, underperform (Steele, 2010). Additionally, verbal cues such as telling the participants that the test is very important (Rydell, McConnell, & Beilock, 2009) or that it will reveal a test-taker's strengths and weaknesses (Marx & Stapel, 2006) have been found to amplify stereotype threat.

Further, any situational cue that increases the salience of one's stereotyped identity or reminds one of culturally held stereotypes can trigger stereotype threat. Such cues may include being asked to indicate one's gender, race, or family income before taking the test (Schmader, 2002; Spencer & Castano, 2007; Steele & Aronson, 1995), taking the test in a setting where one is outnumbered by the dominant group (Murphy et al., 2007), or interacting with members of the dominant group (McGlone et al., 2006), especially when dominant-group members exhibit identity-devaluing behaviors towards the stigmatized (Logel et al., 2009). Even very subtle threat-activating cues (i.e., with no explicit reference to subgroup differences in cognitive ability) can undermine the performance of minoritized groups (Nguyen & Ryan, 2008; Spencer et al., 2016).

Individual Differences

The extent to which the performance of stigmatized individuals is impacted by stereotype threatening situations is dependent on a number of individual differences. Below I review literature on three dispositional moderators of stereotype threat: centrality of stigmatized identity, stigma consciousness, and domain identification.

Centrality of Stigmatized Identity. Individuals vary in their identity centrality, i.e., in how strongly they identify with their social group (Ellermers et al., 2002; Settles, 2004; Tajfel, 1981). While these differences in centrality can be elicited by situational cues as described above, there are also more stable dispositional differences in group commitment that develop over one's life course as a result of cultural processes of group socialization. Such differences in identity centrality have been recorded for racial minority students (Cross et al., 1999) and gender identities (Burn, Aboud, & Moyles, 2000). Individuals with higher group identification are more motivated to engage in various strategies protecting their stigmatized social identity (Ellermers et al., 2002). This internal pressure to protect social identity can result in stronger impact of stereotype threat for stigmatized individuals with higher commitment to their social identity. At the same time, for non-stigmatized individuals, higher commitment to identity can result in the boost of performance under the conditions of stereotype threat. Thus, Schmader (2002) demonstrated that under gender stereotype threatening conditions, women with higher self-reported gender identification performed worse on a standardized test of math ability as compared to those women who reported lower identification with their gender group. For men, on the other hand, higher gender identification was associated with better performance in the situation when women's gender-related stereotype was evoked.

Stigma Consciousness. Individuals with higher levels of stigma consciousness have more concerns about being judged stereotypically, give more examples of being prejudiced, and tend to interpret ambiguous comments as discriminatory (Brown & Pinel, 2003; Pinel, 2004). Thus, stigma consciousness is different from stereotype awareness (Pinel, 2004) in that the first concept goes beyond

mere realization of the fact that one's group is viewed negatively and emphasizes "one's focus on one's

stereotyped status" (p. 40). Brown and Pinel (2003) demonstrated that women with high dispositional

stigma consciousness performed significantly worse than women with low stigma consciousness only

under the high-threat conditions. Brown & Lee (2005) showed the same effect in a study with Black and

Latino participants. Based on these findings, Brown and Pinel (2003) concluded that it was appropriate

to consider individual differences in dispositional stigma consciousness as a measure of stereotype

threat for more ecologically valid studies of the phenomenon.

       Domain identification. Historically, Steele and Aronson (1995) conceptualized stereotype threat

to explain performance deficit for a group of motivated high-achieving students attending a highly

selective university. Thus, by definition, these students were highly invested in the academics. Steele

(1997) was unequivocal in establishing the necessary precondition for stereotype threat vulnerability: he

theorized that only those individuals who strongly identified with the domain were affected by

stereotype threat. High identifiers perceived a particular domain as integral to their sense of self.

Therefore, failure to perform well in that domain was first and foremost a threat to *their self-concept*.

Thus, the domain identification requirement aligned with the framework of the theory that focused on

identity threat. However, subsequent empirical research was inconsistent in determining the

moderating effect of domain identification. While a host of studies (Aronson et al., 1999; Keller, 2007;

Leyens et al., 2000) confirmed Steele's theoretical proposition, other researchers presented

contradictory evidence. In their meta-analysis of stereotype threat studies, Nguyen and Ryan (2008)

concluded that moderately math-identified women were affected more than highly-identified and low-

identified women. The authors suggested the inconsistency in results was due to how different

researchers operationalized domain identification in their studies. For example, in some studies (e.g.,

Cullen et al.), domain identification was equated with ability. However, using ability as a proxy for

identification may raise validity concerns because domain identification is distinct from ability, and high-

achieving individuals may vary in how strongly they identify with a particular domain (Biek, 2006). In contrast, the use of validated measures of the construct of domain identification yielded consistent theory-congruent results (e.g., Biek, 2006; Keller, 2007, Tillman, 2012).

It can be concluded that centrality of stigmatized identity, stigma consciousness and domain identification are the three empirically-established moderators of stereotype threat. At the same time, all three are identity-related constructs and as such correspond to the tenets of stereotype threat theory. Centrality of identity and stigma consciousness can both be manipulated through situational cues. However, together with the domain identification construct, they also constitute dispositional individual differences of stereotype vulnerability. Picho and Brown (2011) created the Social Identities and Attitudes Scale (SIAS) based on the measures of the three moderators. The ability to measure such dispositional characteristics as they exist in individuals as opposed to eliciting them experimentally under certain conditions opens up important avenues for researching stereotype threat in ecologically valid conditions of a classroom where manipulating situational cues may be undesirable due to ethical and other considerations.

So far only a few studies have examined how the three dispositional moderators affect educational outcomes under natural conditions devoid of experimental priming. The results of such studies are mixed. In a study of high school students with disabilities, Zhao et al. (2019) reported a significant relationship between stereotype vulnerability and a global score of students' examinations across a number of school disciplines. On the other hand, Baldeón-Padilla et al. (2020) found no significant association between stereotype threat vulnerability and high-school students' math performance as reflected in their end-of-the-year grades. Similarly, El-Abd et al. (2019) concluded that stereotype threat vulnerability did not play a role in elementary school gifted students' performance on the end-of-the-unit assessment in the language arts. Probably, one should not expect consistency in findings across these studies considering vast differences in populations, contexts, and outcomes under

analysis. Also, the effects on outcomes other than standardized tests, which are typically considered in laboratory studies, may not be as pronounced. Overall, with so few studies of in-classroom stereotype threat, it would be premature to make any conclusions about the effects of stereotype threat vulnerability in naturalistic environments.

Identity Development as a Precursor to Stereotype Threat Vulnerability

Stereotype threat is essentially a threat to one's social identity. As such, the development of any type of stereotype threat in children should be considered in relation to the development of their concomitant social identity. For the purposes of the current study, it is important to consider developmental trends in social identity in middle childhood.

Originally, psychological theory pointed to adolescence as the prime time for identity development (Erikson, 1968/1994) and, consequently, for a long time, researchers focused predominantly on adolescence and adulthood in their empirical exploration of identity-related issues. More recently, however, scholars have criticized this approach and called for the need to investigate identity development in younger children (Ruble et al., 2004). In recent research, middle childhood has been characterized as critical for the development of one's ethnic identity (Brown, 2017) and as "the formative period for children's emergent social identities" (Rogers, 2020).

Indeed, middle childhood as a developmental period could be well-positioned to promote the integration of social category memberships into one's self-concept as well as to move to a more nuanced evaluation of emerging social identities. During this period, children's self becomes more complex as they learn to navigate new social environments outside family (Ruble et al., 2004). As a result of increased interactions with peers and significant adults such as teachers, children learn to recognize individual differences, master comparative processes of various social categories, and develop evaluative meanings in relation to these categories, i.e., they actively engage in social identity construction that goes beyond mere social category awareness and labelling. All in all, as a result of

these processes, social identities become significant to children's self-concept in middle childhood

(Ruble et al., 2004).

It is also important to consider that any type of social identity is a multidimensional concept

with various dimensions developing over the course of one's life (Carver et al., 2003; Halim & Ruble,

2010; Sellers et al., 1998). The development of these components is dependent on cognitive functioning

maturation and environmental cues. Therefore, identity formation is asynchronous, with some

components developing earlier than others (Umaña-Taylor et al., 2014).

Further, for stereotype threat to occur, it is sufficient that only some (and not necessarily all)

components of child's social identity have developed to such an extent that a child becomes conscious

of the threatening situation. Specifically, the three identity components whose development opens up

the very possibility for an individual to experience stereotype threat are centrality of one's identity,

salience, and public regard. These three components are directly related to the two established

moderators of stereotype threat: group identification and stigma consciousness. Indeed, as noted

above, group identification concerns the degree to which an individual considers a particular identity

central to his or her self-concept. Centrality determines how important a particular identity is to a child's

self-concept. Salience is also related to group identification and is defined as the extent to which a

certain identity is relevant to a child in a particular situation. The public regard component refers to how

individuals judge how other people evaluate them in terms of their identity, e.g., gender or ethnicity

(Halim & Ruble, 2010; Sellers et al., 1998). Hence, a child with a sufficiently developed public regard

component may become "self-conscious of their stigmatized status," (Brown & Pinel, 2003, p. 627) i. e.

show stigma consciousness.

Most research on identity development in middle childhood focuses on either ethnic-racial or

gender identity. Importantly, this research demonstrates that centrality, salience, and public regard

develop in middle childhood. Specifically, these identity components are developed between the ages of

7 and 10 for ethnic-racial identity (Lara-Cooper & Cooper, 2016; Umaña-Taylor et al., 2014) and somewhat earlier, between the ages of 5 and 8, for gender social identities (Ruble et al., 2004). Further, in their qualitative study of a diverse sample of elementary school students in Wales, Scourfield and colleagues (2006) made observations on salience, centrality, and public regard in the development of place (national and domestic) identities of this group of children. The researchers could clearly trace these identity components for 9-11-year-old students. While social class and place identity have received little attention in developmental psychology literature, it is possible to speculate that the developmental pattern for these types of social identities should follow in a similar track to what has been observed in relation to gender and ethnic-racial identities, namely that centrality, salience, and public regard of these identities are present in identities of upper elementary school students. This seems plausible due to universality of social comparison mechanisms underpinning the development of any type of social identity (Tajfel, 1981). In other words, since students master social comparison in middle childhood and since social comparison is instrumental in developing certain components of social identity in general, it should be possible to assume that these components will develop across different types of social identities during middle childhood. Thus, notwithstanding the absence of direct evidence for social class identity development in elementary school children and a scarcity of such evidence for place identity development, I will claim that based on theoretical propositions underlying social identity theory and research support for developmental patterns of gender and ethnic-racial identities, it can be strongly suggested that centrality, salience, and public regard of place and social class identities reach an appropriate developmental point to allow for meaningful research agenda into stereotype threat vulnerability during middle childhood.

Below I provide a more detailed review of the literature on stereotype threat vulnerability based on gender, place, and income as these three threats to identity are the focus of the current study.

Gendered Stereotype Threat Vulnerability

Gendered stereotypes have been one of the primary foci of stereotype threat research since the early laboratory studies aiming to explain the gender gap in mathematics performance among college students (e.g., Spencer, Steele, & Quinn, 1999). Invariably, this research shows that under conditions of stereotype threat women tend to underperform on engineering tasks (Bell et al., 2003), math tests (Brown & Pinel, 2003; Good et al., 2008; Keller, 2007; Schmader, 2002), and medical skills assessments (Myers et al., 2020), and can disidentify from STEM domains as a result of chronic stereotype threat exposure (Beasley & Fischer, 2012).

Far less attention has been paid to stereotyping in relation to men's aptitude in the language arts domain. At the same time, the achievement gap between boys and girls in English and language arts can parallel the notorious gender gap in the STEM fields (Petersen, 2018; Reardon et al., 2019; Stoet & Geary, 2013). This relative advantage of girls on verbal assessments has also been reported at the upper end of performance (Reilly et al., 2019), including the gifted student population (Olszewski-Kubilius & Lee, 2011).

Similar to how a gender achievement gap in mathematics can be partially explained by stereotype threat experience, it can be suggested that male students may underperform in the language arts domain when they become aware of the existing stereotypes about their group. Evidence for stereotypical beliefs about girls' advantage in the language arts is well-established. Elementary school students of both genders are aware of and endorse these language ability stereotypes (Martinot et al., 2012; Rowley et al., 2007). In Rowley et al.'s study, Black and White girls as well as White boys (but not Black boys) reported that girls were better at reading and writing. Plante et al. (2009) demonstrated that French Canadian middle- and high-school students perceived language as a predominantly female domain. This stereotypical assertion was stronger than a much more researched stereotype claim that math is for boys. Thus, it is likely that throughout school years, boys' gender identity becomes imbued with the belief that when it comes to reading and writing, they do not fare well as compared to girls.

This belief is perhaps reinforced through socialization with significant adults – teachers, both male and female, strongly favor girls over boys in reading and writing ability (Retelsdorf et al., 2015).

However, despite this evidence for early awareness of stereotypical beliefs in the language arts, the results of the studies investigating the effect of stereotype threat on male students are mixed. Pansu et al. (2016) found strong evidence of the effect of stereotype threat on boys' reading performance. In their study of third-grade students qualified as normal-readers, boys in the threat condition significantly underperformed as compared to girls and outperformed them in the condition of no-threat. In accordance with stereotype threat theory, this pattern was observed only among boys who identified highly with the language arts domain. On the other hand, in a series of four experimental studies, Chaffee et al. (2020) found no effect of stereotype threat on undergraduate male students' performance on language ability tests. Although stereotype priming raised participants' stereotypical conviction of women's advantage in the language arts, this effect did not translate into the actual changes in performance outcomes. Finally, Bedyńska et al. (2020) reported both direct and indirect (via working memory) effects of stereotype threat on language achievement among 13-year-old boys, only an indirect effect among the 14-year-olds, and no effect in the cohort of 15-year-old male students. It may be that older male students learn to withstand threatening situations by focusing on a competing stereotypical belief favoring male dominance in general intelligence (Chaffee, 2020). However, with so few studies exploring the phenomenon of gendered stereotype threat among male students, it is difficult to draw any meaningful conclusions about the effect of stereotype threat on this population in the language arts.

Place-based Stereotype Threat Vulnerability

Place Identity. Place identity has been a much-neglected concept in social psychology (Lewicka, 2011). However, understanding 'who we are' is closely related to 'where we are' (Dixon & Durrheim, 2000). Originally, the place identity concept was formulated within environmental psychology as a

component within one's personal identity that defined self in relation to the physical environment (Proshansky, 1978). Over time, place identity was reconceptualized as a social identity akin to other widely acknowledged group identifications such as gender or ethnic-racial identities (Peng et al., 2020). This social understanding emphasizes the significance of places as "contested arenas of collective being and belonging" with "political and collectively determined dimensions" (Dixon & Durrheim, 2000, p.30). At the same time, the positioning of self within social place is imbued with intense emotional meanings. This socio-emotional connection is reflected in alternative to place identity concepts such as place attachment (Hidalgo & Hernández, 2001), rootedness (McAndrew, 1998), sense of place (Hummon, 1992), and place dependence (Stokols & Schumaker, 1981). In this work, I will use place identity as a preferred concept because such usage recognizes the position of place within a broader nomenclature of multiple social identities as a concept comparable to other well-established social identities. Such recognition then allows a consideration of threat to one's social identity for those individuals who identify highly with their community.

Individuals engage in the construction of place identity largely through collective practices whereby they evaluate self in relation to communal values, traditions, and ideologies. More often than not, this evaluation occurs within the discourse of oppositions between "our place" as a symbol of our ideology and "their place" or their ideology (Rose, 1996). This process is reflected in the creation of multiple binary entities residing within the place identity concept such as First World/Third World, North/South, or urban/rural. Inevitably, such dichotomization mythologizes each group as homogenous "others" and facilitates the creation and perpetuation of stereotypical thinking. Thus, in mass media, residents of rural areas, and especially of Appalachia, are portrayed as hillbillies, rednecks, and white trash (Massey, 2017). These messages, all but in subtler ways, are propagated through school and university curricula (Theobald & Wood, 2010). In these stereotypes of rural identity, race (being White) and place are very much conflated with economic disadvantage (Mohatt & Mohatt, 2020; Wray &

Newitz, 1997). In essence, the privileged construct their own understanding of rural place identity as a

marker of poverty, and subsequently, of low intelligence, backwardness, and laziness. Cloaked in the

savior narrative, this oppressive construal of reality propagates escapism from the deficiencies of

rurality and into the progressivism and civility of urbanicity as commonsensical and necessary (Theobald

& Wood, 2010). Schools become "the principal institutions in which young people learn *authoritatively*

to leave rural places" (Howley & Howley, 2010, p. 46) so that it becomes inevitably difficult for rural

youth to dismiss the cultural message regarding what it means to be rural from the position of the

privileged non-rural culture (Theobald & Wood, 2010).

On the other end of the spectrum, one can find evidence for a locally and collectively

constructed positive rural identity that embraces traditional values of neighborliness, communal

cooperation, family, and religion (Richards & Stambaugh, 2015). This rural identity is characterized by

"shared and place-dependent sense of rural belonging" (Tieken, 2014, p. 5). Under certain

circumstances, these identities are then able to resist the perpetuation of the deficit rural identity

imposed by the dominant culture. Such is probably the case in what Howley and Howley (2010) describe

as durable-agrarian communities that prosper on much more egalitarian social relations. In these

communities, school culture mirrors community culture that focuses on shared responsibility of helping

and supporting each other. Unlike in the other two types of rural communities– resource-extraction and

suburbanizing – teachers in durable-agrarian communities do not "establish, and exploit, a *determining*

association between poverty and low achievement" (p. 42), thus rejecting diminishing myths about rural

inadequacy. Consequently, children, backed by support from teachers, parents, and other community

members, develop a healthy rural identity that prides itself on important human values of "frugality,

stewardship, enjoyment of work, and communality" (p. 47).

While there is no empirical research into development of rural identity in children, what is clear,

at least based on Howley and Howley's (2010) work, is that the idea of homogeneity of rural identity is

misleading. It is highly likely that children will develop different rural identities depending on how resistant their community is to the dogmas of stereotypical negative portrayal of rurality. The second important inference from the literature on rural identity is that school plays a vital role in directionality of rural identity development. It is in schools that rural children may learn for the first time that they are poor (Howley & Howley, 2010) and it is in schools that they may learn that "to be rural is to be sub-par" (Theobald & Wood, 2010, p. 17). Thus, school years become critical for the formation of rural identity. Rural children are caught up in negotiating between different, often contradictory, aspects of their rural identity, continuously re-examining their sense of belonging in the context of cultural messages emanating from local and global forces.

Place-based Stereotype Threat Research. Clark et al. (2011) conducted four studies in which they investigated the effects of place-based stereotype threat with a sample of undergraduate students who identified as southerners. The researchers manipulated the accessibility of stereotype and students' identification with the stereotyped group. The results were in line with stereotype threat theory. Both explicit and subtle priming for the stereotype of southerners as less intelligent inhibited students' performance on a challenging test of verbal and mathematics abilities. Students who were reminded about their place of origin before taking the test performed worse as compared to those who were not primed for their group identification. As is the case with many studies of stereotype threat, these results cannot be extrapolated to contexts outside laboratory work. Moreover, it is difficult to speculate whether dispositional, rather than lab-induced, stigma consciousness and group identification would lead to similar results. Finally, place-based stereotype threat has not been explored with children.

Low Socioeconomic Status Stereotype Threat Vulnerability

Students from lower socioeconomic classes face societal stigmatization based on their social class identity. The poor are stereotyped as less intelligent (Darley & Gross, 1983), uneducated,

unmotivated, and irresponsible (Cozzarelli et al., 2001), having low ability and being at-risk[2] (Brantlinger, 2003), linguistically deficient (Gorski, 2012), and incompetent (Durante & Fiske, 2017). Invariably, across these studies of stereotypes, lack of intelligence is a recurring trait attributed by middle class study participants to low-income individuals. Thus, Brantlinger (2003) showed how middle-class mothers, including two who were teachers, reconceptualized intelligence into a purely binary concept along social class lines. School achievement was interwoven into these mothers' narratives as an exclusive, definitive characteristic of the middle class. As the property of the middle class, achievement could not, by definition, be extended to the school experiences of low-income children. These stereotypes were endorsed even if study participants had had little or no prior contact with representatives of the lower-income class (Brantlinger, 2003).

In the US context, stereotyping about the poor is both a cultural and a social practice. Culturally, stigmatization of the poor as less intelligent can be viewed as a manifestation of American individualism, a deep-seated mindset that attributes success and failure to one's personal agency (Fisher et al, 2017). Socially, perpetuating income-related trait stereotypes justifies the existing social hierarchy and preserves the system as an easy-to-understand and safe social order (Batruch et al., 2017; Jost, 2019). From this perspective, the act of bifurcating intelligence along social class lines signals order whereas a perceived mismatch between a person's socioeconomic status and achievement threatens to intervene with what is deemed normal, right, and justified.

Social Class Identity and Stereotype Development in Children. From a developmental point of view, the notion of social class is rather complex because, unlike gender and race, social class categorization is often based on less visible and more subtle indication cues (Durante & Fiske, 2017). Nevertheless, preschoolers are already able to categorize people as rich or poor (Ramsey, 1991). By third

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[2] Brantlinger (2003) specifies that "at-risk" refers to a variety of negative outcomes including "school failure, grade repetition, low test scores, dropping out of school, early unwed pregnancy, substance abuse, inadequate parenting, chronic unemployment and/or underemployment" (p. 200).

grade, children learn to associate being rich with positive characteristics such as being smart and hard-working, and being poor with negative attributes (Baldus & Tribe, 1978). Children at this age begin to formulate explanations of wealth and poverty as reflective of an individual's positive or negative traits (Woods et al., 2005). In Sigelman's study (2012), first graders produced a mixed list of personal and circumstantial explanations for why the poor were poor. By 5th grade, however, there has been a clear shift in attributional thinking, with children ascribing "good outcomes" of the rich to their personal qualities of being smart and hardworking. Middle schoolers seek out alternative positive attributes of the poor to compensate for the group's alleged lack of intelligence. In Woods et al. study (2005), sixth and eighth graders pointed out that poor students did not do well academically, but instead excelled in sports and music. Thus, in the process of socialization into the dominant ideology of individualism, children learn to categorize domains of expertise into those that can belong only to the middle class (academics) and those in which the poor are allowed.

Students become aware of their own social class standing by the beginning of middle school (Durante & Fiske, 2017). It should be noted that children from low socioeconomic class share the tendency to offer trait-based explanations for the existence of social class division (Durante & Fiske, 2017). Thus, content-wise, low socioeconomic status identity reflects middle-class perceptions of the lower class and revolves primarily around negative attributes of low ability and lack of motivation. In this regard, children's identity attached to low socioeconomic class differs substantially from gender and place-based identities which feature a variety of both valorizing and stigmatizing attributes.

Low Income Identity Stereotype Threat Research. There is a paucity of literature exploring income-related stereotype threat, especially in the US context (Spencer & Castano, 2007). The first studies were conducted with French samples and revealed the expected theory-congruent effect of stereotype threat on students' test performance when the test was presented as diagnostic of intelligence (Croizet et Claire, 1998). However, unlike race- and gender-based stereotype threat, no effect was observed when

the researchers manipulated the salience of students' low-income group identification. In contrast, Spencer and Castano (2017) and Harrison et al. (2006) demonstrated that experimentally manipulated salience of low-income identification did moderate the effect of stereotype threat in the sample of U.S. college students. Spencer and Castano suggested that the difference in the outcomes with French and American students was due to class-related ideological differences between French and U.S. societies. Although low-income individuals are highly stigmatized in both societies, French society is characterized by much more open discussions around issues of class. In the U.S. context, however, one's social class identity remains largely hidden – it is less typical to discuss class structure and identify one's low income identity. Hence, American students should be more susceptible to social class identity priming when under certain circumstances they are forced to see the salience of their previously concealed low-income class group identification.

To my knowledge, only one study (Désert et al., 2009) investigated income-related stereotype threat in children. In an experimental study with French first and third graders, Désert and colleagues found that low SES students in the high-threat condition performed significantly worse on the Raven's matrix test than low SES students in the no-threat condition where the test was described to the participants as a game. The performance of high-income students was not affected by presentation of test as evaluative of students' intelligence. Additionally, the findings of the study suggested that both high and low SES elementary school children shared the stereotype about high-income students' intellectual superiority over low-income students. Low SES students in the no-threat condition endorsed the negative stereotype less than the high-income students in the same condition. In the high-threat condition, however, low SES students did not differ from their high-income peers in their endorsement of the negative stereotype about their group.

The effects of stereotype threat on children's performance in the U.S. context remains largely unexplored. Considering ideological and cultural differences noted above, it can be hypothesized that the results obtained with French samples will not necessarily translate into American educational reality.

Multiple Identity Threat

Theoretical Foundations. The idea that individuals hold multiple identities has been part of social psychology narrative for a long time. In his classic work *Principles of Psychology,* William James maintains that "a man has as many social selves as there are individuals who recognize him" (James, 1890/1982, p. 281). Since then, the multiplicity of identities has become axiomatic across various theories of identity. Early works focused on attempting to resolve the dilemma of how multiple social selves could be integrated within a single self. Mead (1934/2015), for example, suggested that the Self engaged in the inner dialogue between "I" and multiple social "Me"-s, integrating the latter into the new "I". Within contemporary theoretical work, Stryker (1980; Stryker & Burke, 2000) suggested that individuals construct a salience hierarchy of their multiple identities. Such hierarchy was conceptualized as being rather stable across time and situations, with each identity occupying a prominent integrated position within Self (Stryker & Burke, 2000). In contrast, Tajfel (1981) theorized that identities "may vary in salience in time and as a function of a variety of social situations" (p. 255). In his social identity theory, he posited that an individual had multiple social identities, with each identity contributing positively or negatively to his or her self-image. People are motivated to feel positively about themselves. So within a repertoire of one's available identities, an individual will activate those identities that fulfill that motivation and abandon those that threaten one's self-esteem and well-being. As a result, under various circumstances, some identities become more salient while other undesirable identities are actively inhibited (Bodenhausen & Macrae, 1998).

Most recently, the concept of multiplicity of identities has been re-evaluated within the framework of power relations between dominant and marginalized groups. The idea that individuals

could be excluded and oppressed based on the crossing of multiple social categories was originally advanced within critical feminist tradition under the concept of intersectionality (Creshnaw, 1991; King, 1988). Over the years, intersectionality has developed into a major research paradigm (McCall, 2005) that "mirrors the complexity of social life" (McCall, 2015, p. 1772) and allows researchers "to avoid oversimplifying human experience" (Delgado & Stefancic, 2017, p. 63). Stewart and McDermott (2004) delineated three central tenets of intersectionality in application to psychological research: "(a) no social group is homogenous, (b) people must be located in terms of social structures that capture the power relations implied by those structures, and (c) there are unique, nonadditive effects of identifying with more than one social group" (pp. 531 – 532). Following this theoretical perspective, in this work, I consider how children experience school at the intersection of their rural, class, and gender identities, the three social categories imbued with inherent power relations.

Stereotype Threat Based on Multiple Identities. Early studies of stereotype threat neglect multiplicity of identities, focusing instead on dichotomization within a single identity, such as race, gender or class. Thus the reality that individuals may hold multiple social identities whose combination may alter academic performance was largely ignored. Considering that for an individual his or her various identities can be associated with either positive or negative outcomes (Tajfel, 1981), it is possible to construct several theoretical scenarios for how stereotype threat will affect performance depending on a combinational array of salient identities with different societal valences.

Multiple Devalued Identities. An individual with several devalued salient identities may experience a double-minority effect where the stigmatized identities will "interact to influence the individual in a way that is greater than the sum of the independent effects of those identities" (Gonzales et al., 2002, p. 659). In particular, being a member of one stigmatized group can make an individual more attuned to stereotypes related to his or her other devalued identity. Thus, when Gonzales et al. (2002) examined the effects of double-minority status on math performance, they found that Latino

women experienced greater gender-based stereotype effects as compared to White women. In this case, something about being Latino triggered increased stigma consciousness in relation to stereotypes about being a woman. However, the reverse effect did not hold – being a woman did not make women more sensitive to stereotypes about being Latino and, as a result, women did not experience greater ethnicity-based stereotype effects. Similarly, Tine and Gotlieb (2013) found that among individuals with one, two, or three stereotyped identities, those with most stereotyped identities based on gender, income, and race were most strongly affected by stereotype threat. Further, the authors showed that income-based stereotype threat was the most pronounced, followed by race and gender-based stereotype threat. In line with these results, in their meta-analysis of stereotype threat effect, Nguyen and Ryan (2008) concluded that, on average, women experienced smaller performance decrements due to stereotype threat as compared to ethnic minority groups. Both Gonzales et al. (2002) and Tine and Gotlieb (2013) speculated that more robust stereotype threat effects of some group categorizations could be associated with statistical distinctiveness of a particular group, i.e., the smaller the stigmatized group is, the greater the impact of stereotype threat will be. This is perhaps due to the fact that individuals develop deeper affiliation with smaller groups, which makes identities based on such small group identification more central and, hence, more susceptible to stereotype threat. Since women make up about half of our society, a much larger proportion compared to individual ethnic-racial groups and low-income individuals, gender-based stereotype threat can be expected to wield the least effect among the three identity stereotypes. Low-income stereotype threat, on the other hand, will be the greatest. Not only there are fewer individuals living in poverty[3], but, as discussed above, at least in the U.S. context, this identity is also highly concealable (Spencer & Castano, 2007), making the group even

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[3] According to U.S. Census, the official poverty rate in the U.S. in 2019 was at 10.5%.
https://www.census.gov/library/publications/2020/demo/p60-270.html

more invisible as compared to gender or race, which can be identified through visual markers of difference.

Combination of Advantageous and Devalued Identities. An alternative scenario of multiple threat to identity will develop when an individual holds a mix of advantageous and devalued identities. First, it should be noted that contextually advantageous identities typically lead to stereotype lift where individuals with non-stereotyped or positively stereotyped identity will perform better under the conditions that negatively stereotype an outgroup than under conditions reducing stereotype threat. Stereotype lift is defined as "the performance boost caused by the awareness that an outgroup is negatively stereotyped" (Walton & Cohen, 2003, p. 456). This performance enhancement is the expected extension of social comparison mechanisms. Each group, along with concomitant social identity, exists in relation to another group and identity (Erikson, 1968/1994; Tajfel, 1981). Characteristics of one's own in-group become significant "in relation to perceived differences from other groups and the value connotation of these differences" (Tajfel, 1981, p. 258). Such characteristics include inferences about adequacy of one's performance on intellectual tasks. How well one performs is gauged through "standard norms of how well representative groups perform given activities" (Bandura, 1997, p. 87) – people will experience a boost in their self-efficacy when comparing their performance with attainments of a socially devalued group. Subsequently, this elevation in self-efficacy leads to significant relative surge in achievement outcomes. Indeed, stereotype lift has been reported for high-income students under conditions that explicitly stereotype against low-income individuals (Harrison et al., 2006; Spencer & Castano, 2007), men when performing on tests of mathematical ability (Inzlicht & Ben-Zeev, 2000; Schmader, 2002), White students on verbal and mathematical tasks (Steele & Aronson, 1995), and elementary school girls completing a reading test (Pansu et al., 2016).

Walton and Cohen (2003) conducted a meta-analysis of studies with non-stereotyped groups and concluded that in evaluative situations, individuals with advantageous identities engaged in

normative social comparisons with socially devalued groups automatically, that is even when there was no explicit reference to existing stereotypes about the stigmatized group. In most cases, simply knowing that the test would assess one's ability was sufficient to unleash stereotype lifting mechanisms. However, Marx and Stapel (2006) contested Walton and Cohen's conclusions about automaticity of comparative practices by showing that non-stereotyped individuals experienced stereotype lift only when they were pushed to activate their advantageous social identity. In contrast, stigmatized individuals resorted to comparative practices with the dominant group automatically, even when there was no explicit reference to the stereotype about their group. In the context of multiplicity of identities discussed here, this empirical conclusion might imply that unless there is an explicit cue that taps into one's advantageous identity, an individual with an array of devalued and advantageous identities will rely on his or her stigmatized identity and experience stereotype threat rather than stereotype lift. At the same time, it should be noted that this implication stems from research that tested single identity stereotype threat and, therefore, may not necessarily hold for individuals with both advantageous and stigmatized identities.

To my knowledge, there are only two studies that examine performance of individuals with a combination of advantageous and stereotyped identities. Both focus on gender. Shih and colleagues (1999) conducted a randomized control experimental study with Asian-American women, in which they activated participants' Asian identity, female identity, or neither (control group) before asking them to complete a challenging test of mathematical ability. As predicted, the participants experienced stereotype lift when their positively stereotyped Asian identity was activated and they performed significantly worse when the researchers activated participants' gender identity. A limitation of Shih et al.'s study was that the researchers did not examine the situation when both identities were activated simultaneously.

Rydell et al. (2009) conducted an experiment in which they specifically aimed to activate an advantageous identity of college female students – being a college student, and their stereotyped identity – being female. When both gender and college identities were active, participants performed as well as those whose identities were not activated or who had only their college identity activated. The researchers concluded that with the accessibility of two conflicting identities, one would choose the identity that associates one with a positively stereotyped group. Interestingly, the results of the study also indicated that those whose identities were not activated performed as well as those who were primed for college identity salience or for both college and gender identities. In other words, it seems that all the participants in the control condition chose to act upon their college, and not female, identity. What can be inferred then is that additional priming for advantageous identity is not necessary because an individual automatically searches for the most positive identity within his or her repertoire of identities and performs in accordance with that identity. However, this logic denies the very idea of stereotype threat and contradicts previous findings. The majority of research on stereotype threat has been conducted with college students, who, quite apparently, hold both a stereotyped identity (e.g., gender, race) and a college student identity (e.g., Steele, 1997). Yet, across many studies, these vulnerable student participants fail to tap into their advantageous college identity, including in situations comparable to the control group in Rydell et al.'s study, when participants are simply given the instruction to complete a test and not purposefully primed for their stereotyped identity. In other words, the very situation of stereotype threat (e.g., diagnosticity of the test) makes the advantageous identity less accessible to stigmatized individuals, leaving little chance for them to make use of that identity. Yet, in Rydell et al.'s study, the participants in the control condition were somehow able to subconsciously choose "the right" college identity over "the wrong" female identity and perform on par with those students who were primed for their college identity. One potential explanation could be that abandoning certain identities may be much more difficult for certain individuals, for example, because

these identities are centrally integrated into one's self-concept and because losing such an identity may

jeopardize one's psychological need to be different (Brewer, 1996). Such identities may be essential to

one's well-being beyond testing (evaluative situation), so that one cannot simply afford to lose them,

even temporarily for the purposes of enhanced performance. Unfortunately, Rydell and colleagues do

not offer explanations for this seeming anomaly, and the question of how participants choose among

several contradictory identities in more ecologically-valid situations such as a classroom remains largely

unresolved. The scarcity of research around multiple contradictory identity threat precludes reaching

meaningful conclusions about how such individuals cope with threatening situations.

Psychological Mechanisms of Stereotype Threat

In this section, I delineate psychological mechanisms inherent in stereotype threat. These

explanations of what happens cognitively and emotionally during one's exposure to stereotype threat

are important in that they allow making meaningful connections to certain outcomes, such as academic

engagement, which is the focus of this study.

Anxiety as an Explanation of Underperformance. Early works suggested that underperformance

was associated with anxiety that a target individual developed during the situation of stereotype threat

(Aronson et al., 1998; Spencer et al., 1999). This anxiety, or additional pressure, came from the need to

disconfirm the stereotype about oneself as a representative of a group or about the group as a whole.

Blascovich et al. (2001) reported a significant increase in the mean arterial pressure reactivity of target

participants under stereotype threat, which they interpreted as indicative of heightened anxiety.

Similarly, Osborne (2007) relied on a number of physiological indices (skin conductance and

temperature, blood pressure) to register an increase in participants' anxiety levels.

The anxiety hypothesis is aligned with Goffman's theoretical work on stigma consciousness.

According to Goffman, stigmatized individuals are under constant pressure from "having to be self-

conscious" (Goffman, 1963, p. 14) about the impression they are making on others. Fear and anxiety

come from being on the look-out for the possibility of making even the smallest mistakes because even

minor failings of such individuals will be ascribed to stigmatized differences from the majority group

while the same failings of someone in the majority group will be thought about as less significant and

dismissed altogether. Interestingly, Goffman also theorized that stigmatized individuals could be anxious

about not confirming the stereotype as much as about confirming it. Accomplishments of such

individuals are often interpreted as extraordinary when those in the majority group are surprised that

an individual acts outside of the zone that is considered appropriate and normal for his or her group (as

dictated by the existing stereotype). Thus, arises the fear of becoming "an unusual person" (Goffman, p.

15).

Under the stereotype threat situation, a stereotyped student may potentially fear that others

will categorize him or her along the lines of micro-aggressive statements such as "She is a woman, but

she can do math really well" or "He reads and writes too well for someone who comes from such a poor

family." McGee (2018) describes such feelings of emotional distress and anxiety among Black high-

achieving STEM students when they succeed beyond what others "prescribe" to them as normal. Their

classmates refer to them as "Black geniuses" (p. 2) and express "shock and awe" (p. 6) at their

achievement. So these high-achieving Black students' predicament is that it does not really matter

whether they confirm the stereotype or manage to disconfirm it. In either case, they are the ones who

lose. Their becoming "extraordinary people" does not dispel, and perhaps even reinforces, the negative

stereotype about their group in the eyes of the majority. Disconfirming the stereotype leads to what

Shapiro and Neuberg (2007) have classified as group-reputation threat, that is, "fear that my behavior

will confirm, in the minds of outgroup members, that the negative stereotypes held of my group are

true of my group" (p. 113). Overall, it can be concluded that stereotyped individuals experience anxiety

from multiple sources of identity threat: fear of confirming stereotype about self, fear of not confirming

stereotype about self and the concomitant fear of confirming stereotype about group through own

performance.

   Cognitive Mechanisms. While not completely discarding the anxiety hypothesis, Schmader and

colleagues (Schmader et al., 2008; Schmader & Beilock, 2012) consider anxiety to be an overly simplistic

explanation of stereotype threat. Instead, they have proposed a more complex cognitive model of

stereotype threat which can accommodate anxiety as an element resulting from underlying

psychological processes. The authors suggest that stereotype threat is activated automatically, without

person's conscious awareness of the process. Threatening situations activate a cognitive schema of the

negative stereotype ("People in this group do poorly in this domain") that creates logical inconsistency

with positive statements about self ("I do well in the domain") and one's belonging to the stereotyped

group ("I belong to this group"). Once these three cognitively dissonant propositions have been

activated, a person then tries to resolve the resulting cognitive imbalance by "collecting" evidence in

favor or against these propositions. This leads to negative feelings of self-doubt and increased vigilance

for cues that help one "balance" the propositions, with heightened attention to signs that may lead to

the unwanted outcome of confirming the stereotype. Under these conditions, cognitive processing of

information will be different for non-stereotyped and stereotyped individuals. For the latter, any

mistake or feelings of stress and anxiety will then be overinterpreted as a sign of personal failure. This

increased vigilance as well as attempts to regulate negative emotions and thoughts associated with

potential failure will require an individual to rely extensively on the central executive component of

working memory, thus depleting his or her self-regulatory resources necessary for the successful

performance on a complex cognitive task (Hutchison et al., 2013; Johns et al., 2008; Schmader & Johns,

2003). Essentially, what happens is the shift in focus and attention from the task itself to a new cognitive

"project" of resolving the imbalance created by the negative stereotype. Consequently, we can expect

more pronounced underperformance on challenging tasks that involve critical thinking and problem-

solving and are highly dependent on proper functioning of working memory. Indeed, numerous studies reveal that stereotype threat effects are the strongest when students are involved in the execution of challenging tasks (Keller, 2007; Neuville & Croizet; 2007; Spencer & Castano, 2007).

Social-relational Worries. The comprehensive model outlined above posits that stereotyped individuals become more vigilant during evaluative situations. It should be noted, however, that such individuals direct their attention not only to cues that can directly undermine their performance (e.g., mistakes), but also to cues that might communicate whether they belong in a particular setting. Walton and Carr (2012) suggest that in the threatening context, stereotyped individuals experience "a state of belonging uncertainty" (p. 92) which impairs their motivation to perform. The need for belonging, or relatedness, as it is called within the self-determination theory framework, is one of the fundamental psychological needs (Baumeister & Leary, 1995; Ryan & Deci, 2018). That is why people are generally very sensitive to their social bonds (Walton & Cohen, 2007). A stigmatized individual feels uncertainty because even if significant others accept him or her, there is still doubt about whether "in their hearts" (Goffman, 1963, p.14) they would define a stigmatized individual in terms of his or her stigmatized identity and, thus, view him or her as inferior. This uncertainty about how others view his or her performance translates into reduced trust and, subsequently, into impaired social relationships (Spencer et al., 2016).

Outcomes of Stereotype Threat Beyond Test Performance

The majority of research within stereotype threat framework focuses on situational effects during high-stakes testing. Thus, stereotype threat is viewed as a single threat incident, even if with major consequences for performance. However, some researchers question this "single-incident" approach and suggest that students tend to have repeated exposure to stereotype threat in various everyday educational contexts (McGee & Martin, 2011). As such, stereotype threat can have detrimental effects on various motivational processes beyond performance in stand-alone evaluative

situations such as testing (Bedyńska et al., 2020; Inzlicht & Kang, 2010; Spencer et al., 2016; Thoman et al., 2013).

Disidentification. Steele (1997) defined domain disidentification as "a reconceptualization of the self and of one's values so as to remove the domain as a self-identity, as a basis of self-evaluation" (p. 614). Disidentification develops over many years of stereotyping experiences and indicates the state when it may be too late to intervene (Picho & Brown, 2011). Disidentification cannot be conceptualized as the absence of domain identification, which is considered one of the pre-requisites of stereotype threat. Rather, it is "the active distancing of one's self-esteem from a category or domain" (Thoman et al., 2013, p. 219). Thus, it can be viewed as a mechanism through which a stereotyped individual protects his or her self-esteem (Steele, 1997). Indeed, Harrison et al. (2006) found that stereotype threat decreased academic identification among low-income college students, but it did not influence students' self-esteem. The authors concluded that these stereotyped participants sought to actively disidentify with the field as a strategy to resolve the cognitive imbalance and preserve their self-esteem. Over time, self-esteem of stereotyped students shows lower correlation with academic outcomes as if students dis-attached their self-esteem from academics (Osborne, 1999). This strategy, however, is self-handicapping as "the protection of self-esteem can become a liability for learning and growth" (Aronson, 2002, p. 290).

While any student can experience disidentification, for minority students, the function of disidentifying from the field is fundamentally different. Typically, students disidentify from an area of weakness. In this case, it is a healthy adaptive mechanism. Stereotyped students, however, disidentify from their areas of strength. It is not only their failure to perform that triggers disidentification. Rather, it arises from "social-relational worries" that lead students to question their belonging in the field (Aronson, 2002; McGee, 2018).

Academic disidentification has also been reported among secondary school students. Osborne (1995) used data from the National Educational Longitudinal Survey to show the developmental nature of disidentification. In his study, Black students experienced a drastic increase in disidentification starting from the 8th and through the 12th grade. He suggested that the trend was due to stereotype threat but did not present corroborative evidence. Bedyńska and her colleagues (2020) focused specifically on the relationship between stereotype threat and disidentification. They demonstrated the effects of chronic gender-based stereotype threat on disidentification from the language arts domain in three cohorts of high school male students. The researchers also tested two mediating mechanisms between stereotype threat and disidentification. Interestingly, they found that the cognitive mechanism via working memory depletion mediated the relationship between stereotype threat and student achievement, but not between stereotype threat and domain disidentification. So it can be assumed that the cognitive mechanism is perhaps more suitable for the explanation of single-incident stereotype threat effects. The second tested motivational mediation via learned helplessness was statistically significant. Learned helplessness is developed as a result of exposure to uncontrollable situations in which an individual learns that outcomes are independent of responses and becomes demotivated to initiate any further activity in the domain (Sedek & Kofta, 1990). Bedyńska et al.'s study shows that the underlying processes for single-incident and repeated stereotype threat can be somewhat different. The latter affects motivational constructs, such as disidentification, via motivational mechanisms or the belonging uncertainty mechanism discussed above.

Domain disidentification has not been explored with younger students. On the one hand, it can be assumed that such studies would be inappropriate because first students need to develop identification with the domain. On the other hand, certain populations, such as gifted students, may develop strong identification with the field of their giftedness at a younger age. In this case, disidentification as a consequence of stereotype threat may also occur at a younger age.

Low Academic Engagement. The connection between stereotype threat and academic engagement can be hypothesized on at least five grounds. First, this connection follows from one of the main postulates of identity theory positing that behavior is the function of identity (Mead 1934/2015). If stereotype threat is first and foremost a threat to one's identity, then it follows that stereotype threat should result in changes in various behaviors. Second, as discussed above, academic engagement hinges largely on successful relationships with parents, peers, and especially, teachers (Furrer & Skinner, 2003; Lam et al., 2012; Marks, 2000; Skinner & Pitzer, 2012). At the same time, stereotype threat undermines feelings of belonging and trust, which leads a stereotyped person to question the authenticity and sustainability of these relationships. This belonging uncertainty can be especially detrimental for emotional engagement which is developmentally dependent on meaningful interactions with caring others (Mahatmya et al., 2012) and is often conceptualized through indicators of belonging (Appleton et al., 2006; Christenson et al, 2008). Third, it is only fair to suggest that as much as students may choose to disidentify from the domain to strategically protect their self-esteem under threatening conditions, they may also choose to lower the level of their engagement as a more temporary, compared to complete disidentification, defense mechanism. Fourth, learned helplessness can also be the connecting mechanism between stereotype threat conditions that create uncontrollable situations for stereotyped students and subsequent decision to withdraw from activities. Finally, emotional engagement presupposes the absence of negative emotions such as anxiety and fear (Reeve, 2012). Yet, these same emotions are experienced during stereotype threat. This definitional contradiction nullifies the possibility for the existence of both constructs in one space. Indeed, students can transfer negative emotions experienced due to stereotype threat to their perception of the subject area itself. In a phenomenological study, Picho (2011) explored the experiences of high school female students enrolled in honors and advanced placement mathematics classes and found that students with high susceptibility to stereotype threat "experienced a wide range of negative emotions regarding both mathematics and

the context in which the subject was taught" (p. i). Stereotyped students may also experience emotional ambiguity between positive feelings of their interaction with the activity itself and negative feelings causing them to distance themselves from the said activity. The current study does not aim to establish which one of the five proposed explanations for the connection between stereotype threat and engagement is most plausible. What is important is that various theoretical accounts support such an association, clearing the road for empirical investigations.

Empirical Support. The results of several studies indicate that people choose avoidance tactics and are less motivated to participate in activities when under stereotype threat. Stone (2002), for example, reported that White athletes under the experimental conditions of stereotype threat practiced significantly less than their non-stereotyped peers. Similarly, Grand (2017) found that women participating in a three-day self-directed training session spent increasingly less time engaging in learning task-relevant materials when they were confronted with gender-based stereotype threat. These studies are conducted with samples of adult population and do not directly examine stereotype threat in relation to academic engagement. However, they point to the possibility of such a relationship because, conceptually, both participation and spending time on task are indicators of academic engagement.

So far, only one empirical study has been conducted to examine the connection between stereotype threat and academic engagement. Sears (2005) found that stereotype threat had a negative effect on engagement of middle- and upper-class Black and Latino high school students. The centrality of race identity and gender did not moderate the relationship. In contrast to most studies of stereotype threat, the researcher relied on self-report measures of both concepts rather than on experimental priming of stereotype threat in order to explore the relationship based on the perceptions of the study participants. However, the construct validity of the two measures used in the study comes into question. First, Sears operationalized stereotype threat as the strength of perceived discrimination, which may

underrepresent the "true" construct as it omits group and domain identification considered within

stereotype threat vulnerability (Picho, 2011). Sears created and used her own measure, and while she

provided evidence for strong internal consistency of the self-created scale as used in the study, she had

not conducted any pilot studies to substantiate the construct validity of the measure. Further questions

arise when it comes to the academic engagement scale. Again, the measure was self-created by the

researcher based on her understanding of engagement as "interest, effort, and persistence" (p. 47). The

most serious issue with this definition is that it presents engagement as a unidimensional construct,

conflating emotional and behavioral components. No construct validity evidence was presented and the

internal consistency of the scale while reported by the author as adequate (α = 0.54), is certainly below

the often-suggested standard of 0.7 (Shultz et al., 2014) and far from what one typically finds across

various validated measures of academic engagement. So while the results of the study are in line with

the theoretical grounding for the connection between stereotype threat and engagement, what exactly

is being measured in the study becomes unclear.

Stereotype Threat and Giftedness

From the theoretical standpoint, stereotype threat should affect gifted students more than non-

identified students. First, this assumption is based on the fact that gifted students typically develop

stronger identification with their domain of interest, which is considered as a pre-requisite for

stereotype threat susceptibility (Steele, 1997). High ability and domain identification are not completely

congruent (Biek, 2006). But many school districts in their gifted identification practices rely on

definitions of giftedness that go beyond ability alone and include motivational factors such as task

commitment. Thus, identified gifted students are often those who care about the domain and their

performance in the domain, which can lead to their higher susceptibility to stereotype threat. Second,

stereotype threat effects are strongest when students engage in challenging tasks. For instance, Spencer

and Castano (2007) tested the effects of stereotype threat on students involved in a proof-reading

activity and in performance on a set of challenging questions of the verbal section of GRE. They found that the results were significant only for the GRE condition and concluded that the difference was due to the proof-reading activity being less challenging. In fact, other studies have confirmed that stereotyped students perform on non-challenging tasks better under the conditions of stereotype threat than in non-stereotyped situations (Ben-Zeev et al., 2005; O'Brien & Crandall, 2003). Again, the connection to gifted education here is self-evident: since gifted learners are more likely to be engaged in challenging activities, they may be more susceptible to stereotype threat.

Gifted education researchers have supported the importance of stereotype threat phenomenon in the experiences of underrepresented groups of gifted students, but mostly at the theoretical level. Worrell (2007) explored ethnic-racial identities of Black and Hispanic gifted students, and based on his findings about the salience of these identities, he suggested that stereotype threat could be considered as an explanation for these students' lower achievement. Conceptually, it was also suggested that stereotype threat contributed to underrepresentation (Collins et al., 2019) and emotional distress (Anderson & Martin, 2018) of gifted Black girls. Crawford et al. (2020) included stereotype threat into their theoretical model of underrepresentation of racial/ethnic minority students in gifted programs. Specifically, the authors derived their model from Bronfenbrenner's bioecological systems theory and placed stereotype threat, along with implicit bias and definitions of giftedness, within the macrosystem factors category. Finally, in their seminal article on talent development, Subotnik et al. (2011) not only suggested that stereotype threat could influence students' potential and talent development, but also put the phenomenon on the list of important research agenda topics.

Unfortunately, there has been barely any response to this call at the empirical level. It is true that there have been studies of stereotype threat with samples of high-achieving students attending elite universities (e.g., Aronson & Inzlicht, 2004; Steele & Aronson, 1995). But this research has been conducted outside of the gifted education framework, thus, leaving out details about participants' gifted

characteristics and behaviors, as well as their experiences with gifted identification and programming.
All of these are essential for understanding educational experiences of gifted learners. The absence of
stereotype threat research in relation to younger gifted students is even more pronounced. El-Abd et
al.'s (2019) is the only empirical study of stereotype threat in relation to elementary school-aged gifted
population. The purpose of the study was to investigate various factors contributing to literacy
achievement for students identified as gifted in rural areas. Among these factors, the authors
considered the effects of gender-based stereotype threat on students' performance on the end-of-the-
unit assessment and found that the relationship was not statistically significant.

Current Study

The current study is related to El-Abd et al.'s investigation in that it draws on data from the
Promoting PLACE (Place, Literacy, Achievement, Community, and Engagement) in Rural Schools, a
longitudinal randomized control trial project designed with the purpose to provide evidence-based
advanced language arts curriculum for elementary school students in high-poverty rural schools. In
contrast to El-Abd et al.'s study, the present investigation relies on a complete dataset of three cohorts
of identified students and focuses specifically on stereotype threat. Moreover, in the current study, I
consider multiple-identity threat based on gender, rural identification, and low-income. El-Abd and
colleagues theorized that stereotype threat based on rural identity should be less salient since all the
students in the sample came from rural areas. Therefore, they made a decision to exclude rural-based
stereotype threat from their analysis. However, considering that rural identity can be positive and
students may develop a sense of pride in relation to rural place, as well as the fact that rural-identified
students are in the majority at their schools, it can be hypothesized that these students may experience
stereotype lift based on their rural identity, which is also worth exploring. Thus, within the framework of
this study, I consider whether rurality helps this group of gifted students boost their engagement.
Finally, I add to the analysis stereotype vulnerability based on low-income. From theoretical

perspectives and based on previous empirical studies, we can expect the effects of this stereotype threat to be the strongest. Since low income is strongly stigmatized in the U.S. context, even among low-income individuals themselves, it is quite possible that this type of stereotype threat affects not only those low-income students who find themselves in middle or upper-class learning environments, but also those low SES students who go to predominantly low-income schools, which is the case with this sample of students.

Below I provide a summary of what the present study adds to the existing literature on stereotype threat:

1) This study explores the effects of stereotype threat in the natural school environment where assessments make up only one, and typically much smaller, part of students' everyday learning experiences. Hence, the focus of the study is on stereotype threat in relation to academic engagement with everyday activities rather than on single-incident test performance. The study adds to a still nascent trend to investigate stereotype threat within non-experimental contexts and in relation to outcomes other than performance on a test.

2) In this study, I explore stereotype threat among gifted elementary school-aged children. Participants in the study were identified for gifted services either using Project PLACE identification criteria or through identification procedures in place in their respective school districts. Both are outlined in the Methods chapter below. Clearly situating the study within gifted education discourse avoids conjectures about the sample and allows exploring the results as they relate to a well-defined group of learners – gifted students from high-poverty rural areas. In this regard, then, the study adds not only to the literature on stereotype threat by investigating the phenomenon among a group of students that has not received due attention before, but also to gifted education literature on underrepresentation of this group of students in gifted programming.

3) In this study, I also seek to fill in the gap in stereotype threat literature in terms of understanding of the phenomenon among younger children. Specifically, extant literature does not address the effects of place-based and income-based stereotype threats among school-aged children. Moreover, we do not know if children vary in their susceptibility to stereotype threat at this age. This knowledge, however, is important because it can shed light on whether it makes sense to conduct stereotype threat interventions with younger children.

4) Finally, the present study adds to the literature on multiple-identity threats and, particularly, to the thread of research that examines the effects on individuals who hold a combination of advantageous and negative identities. Within the current study, it is hypothesized that rural identification will be positively associated with academic engagement in the language arts domain, gender identification will have positive associations for girls and negative for boys because the latter are typically stereotyped as less capable in the language arts, and low-income identification will be negatively associated with engagement.

Chapter III

METHODS

Research Questions and Hypotheses

Considering the paucity of research on both academic engagement and stereotype threat in relation to gifted students, I first pose exploratory questions through which I seek to describe the two constructs as they pertain to rural gifted elementary school students. In particular, I am asking the following questions:

1) What is the level and variability of academic engagement in gifted learners? With this question, I seek to demonstrate whether most gifted learners are indeed highly engaged, as is commonly assumed (McCormick, 2012).

2) How stable is academic engagement across two grade levels in elementary school for both genders? Based on previous research results in general student samples (Pyne, 2019), I hypothesize that rural gifted learners will similarly show somewhat lower engagement levels in fourth grade as compared to their engagement in third grade. Following the results of previous studies that consistently point to the gendered engagement gap favoring girls (Lam et al., 2012; Marks, 2000) as well as documented evidence suggesting that boys perceive both academic engagement (Kessles et al., 2014) and language (Plante et al., 2009) as a feminine domain, I also hypothesize that gifted rural girls will start off with higher levels of academic engagement in the language arts. However, in line with Pyne's (2019) findings on rural girls' sharp decrease in engagement by the end of elementary school, I suggest that gifted rural girls may experience a sharper decline in engagement from third to fourth grade. It should be noted that these initial hypotheses are based solely on findings pertaining to general, and not gifted, student populations. Therefore, trends among gifted students may differ.

3) How stable are group identification and stigma consciousness across third and fourth grades for both genders? Identification with social groups develops throughout life course in the process of socialization. In general, elementary school students may be expected to have less stability in group identification as compared to adolescents. At the same time, at least within the field of gifted education, there are theoretical propositions suggesting that gifted students may have an earlier onset of identity formation due to their precocity in the development of complex cognitive functions necessary for the development of social identity (Frank & McBee, 2003; Gross, 1988; Groth, 1973; Howard-Hamilton & Franks, 1995). However, there is no empirical evidence either supporting or refuting this theoretical claim. Therefore, I will start the exploration of this question without any hypotheses in mind.

Beyond these exploratory questions, in this study, I seek to establish a possible connection between academic engagement and various stereotype threats. I also seek to learn which of the threats to identity has the strongest impact on engagement and whether engagement of students with multiple threats to identity is affected more as compared to those who are vulnerable only to one type of stereotype. In this regard, I will be asking the following research questions:

4) What is the relationship between academic engagement and stereotype threat vulnerability based on gender, low socioeconomic class, and rural place identification? How is this relationship different for male and female students? Here, I will base my hypotheses on evidence stemming from the association between stereotype threat vulnerability and academic achievement. Accordingly, I will hypothesize that female and male students with higher levels of socioeconomic class vulnerability will show lower engagement. Second, I will hypothesize that gifted rural boys, but not girls, will engage less if they have higher levels of gender-based stereotype threat vulnerability. Girls, on the other hand, may experience

stereotype lift, demonstrating higher engagement with higher levels of gender

identification. Finally, I will hypothesize that rural stereotype vulnerability will increase

students' engagement because strong rural identification will help students feel more

attached to their school, peers, and teachers.

5) Is there a difference in academic engagement between students who experience multiple

threats to identity and those with a single identity threat? In line with previous research

findings on the association between the number of identity threats and student

achievement (Tine & Gotlieb, 2013), I will hypothesize that students with multiple threats to

identity will engage significantly less as compared to those with a single threat.

Across all the research questions outlined above, academic engagement will be considered

separately in its emotional and behavioral components.

Data

Data for the current study were collected as part of a federally funded, five-year study, Project

PLACE. The overarching purpose of the project was to investigate the effectiveness of the advanced

place-based language arts curriculum on literacy achievement of gifted learners residing in high-poverty

rural areas. More specifically, Project PLACE had the following five goals:

1) Implementation of an identification process to identify increased numbers of gifted students

in rural schools, particularly those who are of high poverty;

2) The development of high quality, place-based third and fourth-grade language arts

curriculum based on the CLEAR curriculum model;

3) The adaptation of effective strategies developed by Carol Dweck and Joshua Aronson (and

their colleagues) to increase belief in a growth mindset among identified students and

reduce the impact of stereotype threat in the identified rural gifted students;

4) Increased achievement in reading and writing by the identified gifted rural students;

5) Increased student engagement and self-efficacy in identified gifted rural student (Callahan & Azano, 2019).

Place-conscious philosophy of education

The implementation plan for the goals of the project was largely grounded in place-conscious (or place-based) education philosophy. This philosophy stems from the understanding that places are essentially pedagogical, i.e., they "teach us who, what, and where we are, as well as how we might live our lives" (Gruenewald, 2003a, p. 623). As such, places are essential for the development of students' identities and healthy learning. Places are significant sources of knowledge about self, one's community with its culture, history, ecology, and, ultimately, in relation to other places and the rest of the world.

Yet, modern schooling has largely become place-less in that place is often ignored and supplanted with standardized place identity-free content and skills that strive to homogenize students' educational experiences while disregarding their diverse lived experiences and, thus, creating "the enforced isolation of children and youth from culture and ecosystem" (Gruenewald, 2003a, p. 625). This intentional disregard of the place narrative in educational practices perpetuates the ideological discourse of cultural dominance that "moves everyone toward the political center" (Gruenewald, 2003a, p. 633). Thus, in a place-less educational system, students' understanding, positioning, and appreciation of self as richly unique can be jeopardized, leading to self-doubt and heightened vulnerability to power-laden narratives such as those that, for example, stigmatize rural people as backward and less intelligent.

In contrast, place-conscious educational philosophy promotes policies, strategies, and practices that relate directly to how students experience their immediate world (Gruenewald, 2003b). As such, place-conscious education rests on the importance of students' identity and their unique difference (Gruenewald, 2003a). Place-conscious education is indeed a philosophy because it can provide holistic ideological grounding or a theoretical framework for various educational policies and practices.

Traditionally, such place-based practices were primarily infused into curriculum and instruction. Project PLACE team, however, chose intentionally to move beyond place-conscious curricular content and rely on place-conscious theoretical framework across the entire design of the project. Thus, rural place became simultaneously the content and the context of the project (Azano & Callahan, 2021). Theorizing place as context allowed to localize educational challenges of rural gifted learners and address spatial inequalities with evidence-based practices (Azano & Callahan, 2021). Specifically, place-conscious philosophy was applied to frame project's approach to identification of students for gifted services, teacher professional development, curriculum writing and implementation, and interventions to mitigate stereotype threat and promote growth mindset.

PLACE Project Design

To address the goals of the project, Project PLACE followed a randomized control trial (RCT) design with students in the treatment condition receiving interventions aimed at increasing their literacy achievement as well as at producing changes in affective outcomes of academic engagement, stereotype threat, growth mindset, and self-efficacy. In the current study, I will not be purposefully comparing project participants in the treatment and control conditions because I am not concerned with the effectiveness of provided interventions as such. Rather, I intend to extend our understanding of the two affective outcomes of stereotype threat and academic engagement by suggesting to look into the relationship between the two constructs. Thus, in the current study, stereotype threat and academic engagement are considered not as separate outcomes to be altered via an intervention as implied by the goals of Project PLACE, but rather as a predictor (stereotype threat) and an outcome (academic engagement). Importantly, however, my methodology will reflect the RCT design inherent in Project PLACE implementation because ignoring potential treatment effects could result in biased estimates in the relationships between the constructs under study. Therefore, below I describe random assignment as an integral part of the sampling procedure used in Project PLACE.

Sampling Procedures. Participating districts were selected through purposive sampling. Since the focus of Project PLACE was on achievement of rural students from high-poverty rural area, any district was considered eligible for participation if it was classified as rural (fringe, distant, or remote) by the National Center for Educational Statistics and if at least 50% of the students in the district received free or reduced lunch. Superintendents and coordinators of gifted programs in these qualified districts were contacted with the invitation to participate in the project. Two districts agreed to participate in Cohort 1; six new districts joined for Cohort 2 with the first two districts maintaining their participation; and, finally, nine districts participated in Cohort 3, including five Cohort 2 districts that decided to continue with the project. For the current study, I include data from all 12 participating districts across the three cohorts of students. Districts varied in their size, from the smallest serving just over 700 elementary school students to the two largest districts with over 2,500 students.

All the participating districts were randomly assigned to either treatment or control conditions. Random assignment was made by district rather than at the school level because randomization by school could have created conditions for diffusion of treatment as in some districts gifted services were provided by only one gifted education specialist for students in all the elementary schools within district. Out of 12 participating districts, seven districts were in the treatment condition and five were assigned to the control condition. The initial assignment was equally balanced between the conditions with the total of 14 districts; however, two Cohort 2 districts dropped shortly after joining the project, creating a slight imbalance in the final sample.

Students identified as gifted in the treatment districts received instruction in four language arts units of the Promoting PLACE curriculum during their third and fourth grade years. These units for high-performing students were written based on Virginia Standards of Learning and Common Core State Standards. Additionally, at the end of each school year, these students received two half-day WebQuest-style interventions aimed at promoting a growth mindset and overcoming stereotype threat. Students in

the control condition received instruction that is typically provided by their schools for gifted students. They did not participate in mindset interventions.

Student Identification

Too often, authors of empirical studies involving high-performing students provide a very general description of their sample through statements such as "students were in the gifted program." However, such generalizations mislead by creating an illusionary portrait of a seemingly uniform population of gifted students about which we seek to establish some universal truth, whereas in reality gifted samples often differ from one another due to significant variations in applied definitions of giftedness and identification methods implemented by schools. In this regard, Callahan and Moon (2007) suggest that "at a minimum, researchers should provide an explanation of the procedures or criteria used for identification of students as gifted within the school" (p. 313). In this section, I describe how students in my sample were identified for gifted services either through identification measures developed by the Project PLACE team or via an identification process offered by students' respective districts.

Identification of Students by Project PLACE. Project Place researchers conceptualized an alternative identification process that tapped into a more diverse manifestation of gifted traits exhibited by students in rural low-income communities. The purpose of this alternative identification method was to increase the number of identified students from high-poverty schools by dismantling gatekeeping practices such as gifted identification based on teacher nomination only, stringent and very high cut-off scores, and the reliance on national rather than local norms.

In contrast, PLACE identification method was based on universal screening in the second grade. All the students in treatment and control districts were administered the Verbal Battery of the Cognitive Abilities Test (Lohman, 2012). A higher-level test – Level 9 rather than Level 8, which is designed for second-grade students – was used in order to raise the test ceiling. Furthermore, teachers were asked to

rate students on the reading, creativity, and motivation subscales of the Scales for Rating the Behavioral

Characteristics of Superior Students (SRBCSS; Renzulli et al., 2010). Prior to completing SRBCSS scales,

teachers had received professional development training designed by Project PLACE research team.

During the training, special consideration was given to discussions and examples of what giftedness

looks like in students from rural communities.

Final decisions about students' placements in the gifted education programs were made during

district identification meetings based on the recommendations from the PLACE research staff. In

particular, PLACE research team created student profiles with CogAT and SRBCSS data, based on *locally*

calculated norms. For further consideration, only those students were kept who scored above the 75th

percentile on both measures. Among these students, PLACE researchers highlighted various

combinations of high scores on CogAT and SRBCSS. For example, one profile included students who

scored above the 90th percentile on CogAT and more than two standard deviations above the mean on

at least two rating scales; another profile comprised students who scored above the 75th percentile on

CogAT and more than two standard deviations above the mean on all three SRBCSS subscales used in

the study. These profiles were then discussed at meetings with district personnel. A total of 288

students (or 64%) in the sample were identified through Project PLACE criteria. As final decisions about

student identification for gifted services rested within districts, specific profiles of identified students in

the sample varied somewhat across the districts. For example, a few districts insisted on raising the

minimum score on CogAT from the 75th to the 90th percentile, local norms. Refer to Table 1 for

descriptive statistics on CogAT and SRBCSS for students who were identified using Project PLACE

identification criteria.

Table 1

Descriptive Statistics for Identification Measures for Place-Identified Students

District	CogAT-Verbal		Reading		Motivation		Creativity	
	Mean (SD)	Range	Class z-score	Range	Class z-score	Range	Class z-score	Range
A	90.7 (6.1)	76.0 – 99.0	1.4(0.4)	0.7 – 1.9	1.4(0.3)	1.1 – 1.8	1.3(0.5)	0.3 – 2.2
B	92.0 (5.9)	76.1 – 99.0	0.9(0.7)	0.0 – 2.2	0.8(0.8)	-0.5 – 1.8	0.8(0.9)	-0.7 – 2.1
C	94.1 (5.1)	77.2 – 99.9	1.0(0.7)	-0.8 – 1.7	0.9(0.8)	-0.8 – 2.2	0.7(0.8)	-0.9 – 1.7
D	90.6 (6.1)	78.8 – 100.0	0.9(0.6)	-0.3 – 2.5	1.0(0.5)	-0.1 – 1.8	0.9(0.5)	-0.2 – 1.9
E	94.6 (3.6)	88.4 – 100.0	1.1(0.4)	-0.1 – 1.8	1.2(0.5)	-0.2 – 2.0	0.8(0.8)	-0.4 – 1.9
F	91.8 (6.1)	76.0 – 99.7	0.9(0.8)	-3.5 – 1.8	1.0(0.6)	-0.6 – 2.2	0.8(0.9)	-1.8 – 2.2
G	95.3 (2.3)	91.5 – 97.7	1.1 (0.3)	0.7 – 1.4	0.9(0.4)	0.5 – 1.6	0.9(0.7)	-0.6 – 1.5
H	96.5 (1.5)	94.5 – 99.7	1.2 (0.5)	0.0 – 2.5	1.2(0.6)	0.0 – 3.0	1.2(0.5)	0.0 – 1.9
I	94.8 (2.7)	91.1 – 99.3	0.9 (0.8)	-0.2 – 2.6	0.8(1.1)	-1.5 – 3.1	0.6(0.9)	-0.6 – 1.7
J	89.5 (7.3)	75.9 – 99.9	1.3 (0.7)	-0.4 – 2.2	1.2(0.7)	-0.6 – 2.3	1.0(0.7)	-0.7 – 2.0
K	92.6 (6.3)	75.1 – 99.9	0.7 (1.1)	-1.7 – 1.9	0.6(1.0)	-1.9 – 1.7	0.4(1.2)	-2.4 – 1.8
L	94.9 (2.3)	92.0 – 99.0	0.8 (0.7)	-0.2 – 1.6	0.8(0.6)	0.1 – 1.5	0.6(0.5)	-0.3 – 1.1
Total	**92.5 (5.9)**	**75.1 – 100.0**	**1.0 (0.7)**	**-3.5 – 2.6**	**1.0(0.7)**	**-1.9 – 3.1**	**0.8(0.8)**	**-2.4 – 2.2**

Identification of Students by Districts*.* In general, across districts, there was considerable

diversity in how they identified students for gifted services. So rather than comparing districts amongst

themselves, I will delineate major differences between common trends noted across districts and the

alternative identification process implemented through Project PLACE (as described above). First, it

should be noted, that the majority of districts identified students only in General Intellectual Aptitude

and not in specific areas such as mathematics or language arts whereas Project PLACE identification was

purposefully focused on identification of students in language arts, exemplifying the "golden rule" of

gifted education – alignment between identification and subsequent programming (Callahan et al.,

2018). Second, only six districts used universal screening and none of the districts relied on local norms

when considering eligibility for gifted services. Districts used a variety of traditional and nontraditional

assessments to identify students for gifted services, including Naglieri Nonverbal Ability Test (NNAT),

Wechsler Abbreviated Scale Intelligence (WASI), Raven Progressive Matrices, Kaufman Brief Intelligence

Test (KBIT), Gifted Evaluation Scale (GES), and Virginia Standards of Learning (SOL) testing. Across

districts, the range of cut-off scores on these assessments varied from the 86th to 96th national

percentiles. In many instances, districts relied on the conjunctive "and" approach to identification,

combining students' scores on multiple assessments (McBee et al., 2014). Thus, to qualify for the gifted

program, students were required to meet cut-off scores not on one, but on multiple assessments. This

practice resulted in very low numbers of students qualified for the services; in some districts, there were

as few as one or two students identified as gifted.

Participant Characteristics

Both students who were identified by their districts and those who were identified through the

alternative method developed and implemented through Project PLACE became participants in a two-

year Project PLACE study. In total, 529 students representing three cohorts are included in the full

Project PLACE dataset. From this initial dataset, I excluded 54 students for whom we do not have any

data beyond performance on identification measures. Although identified, these students did not

participate in the project. The most common reason for participants' discontinuing with the study was

that these students moved from participating districts. So, for the purposes of the current study, the

final sample will include 475 participants, with 303 students in treatment districts and 172 students in

control districts. Refer to Table 2 for details about students' performance on identification measures

across participating districts.

Fifty-one percent of the students in the sample are female, and 88% are White, including

Hispanic. We did not collect information on individual students' socioeconomic status because our

sampling procedures, as described above, included only rural districts with high-poverty levels. At the

same time, it should be noted that the absence of demographic characteristics in the sample beyond

gender poses certain external validity challenges as the current sample cannot be easily compared to

other populations (e.g., population of gifted students in general), which raises questions about potential

generalizability of the results. This will be further discussed in the limitations of the study.

Table 2

Descriptive Statistics for Identification Measures for the Sample of Place-identified and District-identified

Students

District	CogAT-Verbal local		Reading		Motivation		Creativity	
	Mean (SD)	Range	Class z-score	Range	Class z-score	Range	Class z-score	Range
A	89.3(11.1)	38.0 – 100.	1.5(0.5)	0.7 – 2.7	1.5(0.3)	1.0 – 2.3	1.5(0.4)	0.3 – 2.4
B	91.0(9.0)	68.0 – 100	1.0(0.6)	0.0 -2.2	0.9(0.8)	-0.5 – 1.8	0.9(0.7)	-0.3 – 1.8
C	87.9(16.2)	35.7 – 100	0.8(0.9)	-1.9 – 2.3	1.0(0.8)	-0.8 – 2.7	0.8(0.7)	-0.9 – 1.7
D	89.7(10.1)	50.0 – 100	0.9(0.8)	-1.9 – 2.5	0.9(0.7)	-1.4 – 1.8	0.9(0.6)	-0.8 – 1.9
E	94.3(3.8)	86.7 – 100	1.1(0.4)	-0.1 – 1.8	1.2(0.5)	-0.2 – 2.0	0.8(0.7)	-0.4 – 1.9
F	88.6(13.9)	32.5 – 100	1.0(0.7)	-3.5 – 2.3	1.0(0.6)	-0.6 – 2.2	0.9(0.8)	-1.3 – 2.2
G	96.0(2.9)	91.5 – 100	1.3(0.4)	0.7 – 1.9	1.2(0.6)	0.5 – 2.1	1.2(0.7)	-0.6 – 2.6
H	90.3(13.0)	43.9 – 100	1.3(0.5)	0.0 – 2.8	1.2(0.6)	-0.6 – 3.0	1.2(0.6)	-2.3 – 2.2
I	95.2(2.5)	91.8 – 99.3	1.0(0.7)	-0.2 – 2.6	0.9(1.1)	-1.5 – 3.1	0.7(0.9)	-0.6 – 1.7
J	88.4(10.7)	37.9 – 100	1.2(0.7)	-0.4 – 2.2	1.2(0.7)	-0.6 – 2.3	0.6(0.9)	-2.0 – 2.0
K	77.0(22.3)	6.4 – 100	0.6(1.0)	-1.7 – 1.9	0.6(0.8)	-1.9 -1.8	0.6(0.9)	-2.0 – 2.0
L	83.0(16.6)	47.0 – 99.0	0.8(.8)	-0.7 – 1.7	0.9(0.6)	-0.2 – 2.0	0.9(0.7)	-0.5 – 2.3
TOTAL	**88.2(14.3)**	**6.4 – 100.0**	**1.0(0.7)**	**-3.5 – 2.8**	**1.0(0.7)**	**-1.9 – 3.1**	**1.0(0.8)**	**-2.3 – 2.6**

Data Collection

Data for the project were collected by the principal investigators and a research team of

graduate students. I joined the project during the last two years of its implementation when Cohort 2

students were in the second year of the study. Therefore, I participated only in post-treatment data

collection for students in Cohort 2 and Cohort 3.

Pre-treatment data on stereotype threat and student engagement were collected in the fall of

students' third grade, and post-treatment data on the same scales were gathered in late spring or early

summer of the fourth grade. Both treatment and control group students completed the scales.

Instrumentation

Academic Engagement

Scale Development. To measure academic engagement, Project PLACE researchers modified student self-report Engagement vs. Disaffection Scale developed by Skinner and her colleagues (Skinner et al., 1998; Skinner et al., 2009). Skinner et al. (2009) developed the instrument based on the definition of academic engagement as a bi-dimensional construct consisting of behavioral and emotional engagement – the definition that was discussed in the literature review above and adopted for the current study. Further, a unique feature of construct conceptualization at the center of Skinner's instrument was the separation between engagement and disaffection. The latter was conceptualized by the authors as the opposite of engagement, that is, characterized by emotions and behaviors indicative of the absence of engagement. Thus, the resulting construct schema in the Engagement vs. Disaffection Scale was represented as a two-by-two matrix with the following set of cells: emotional engagement, behavioral engagement, emotional disaffection, and behavioral disaffection. An important assumption in the conceptualization of engagement used by the authors was the ability of students to discern whether they were motivated or not (Skinner et al., 2009).

Skinner and colleagues (Skinner et al., 2009) gathered evidence for validity with a sample of students in third through sixth grades. The authors correlated subscales of the instrument with measures of key markers of motivation such as perceived control, sense of relatedness, autonomy orientation, academic optimism, goal orientations, and reactions to academic challenges. Correlations between engagement and these markers of motivation were strong and positive suggesting evidence for convergent construct validity of the instrument. Evidence for criterion validity of the instrument was explored in the study that compared student scores on the scales with scores on teacher-reported scale for the same sample of students. Correlations between the two instruments ranged from 0.21 and 0.24 for the two emotional subscales to 0.32 and 0.38 for the behavioral subscales. As expected, correlations were higher for the behavioral measures that are more easily observable. Cronbach alpha reliability

coefficients for behavioral engagement were 0.61 (fall administration) and 0.72 (spring administration), and for emotional engagement reliability values were 0.76 and 0.82.

Project Place researchers piloted the Engagement vs. Disaffection scale with a group of fifth-through eighth-grade students participating in a university-held enrichment program. Based on the EFA results, the team revised the scale as a two-factor instrument comprised of a five-item Behavioral Engagement subscale and a four-item Emotional Engagement factor[4]. Callahan et al. (2020) provide a detailed account of this revision process. The final round of CFA for the Student Engagement scale indicated that the two-factor model was an acceptable fit for the data.

Scoring. The Student Engagement scale is a four-point Likert-type instrument with the value of 1 = "Not at all true," 2 = "Not very true," 3 = "Sort of true," and 4= "Very true". For each factor, the scores across items were averaged in order to obtain two single scores with a continuous distribution and in the same 1-4 range as the items on the scale.

Reliability and Validity. In the pilot study, reliability estimates based on polychoric ordinal alpha were 0.87 for the Emotional Engagement and 0.85 for the Behavioral Engagement factor (Callahan et al., 2020). With the sample used in the current study, Cronbach's alpha for Behavioral Engagement administered during the pre-treatment phase in the third grade is estimated at 0.76 and for the post-treatment phase in the fourth grade the estimate is 0.71. For Emotional Engagement, the estimates for the pre-treatment and post-treatment administration of the scale are at 0.80 and 0.82 respectively.

Evidence for validity offered by Skinner and colleagues on their original measure was deemed sufficient for the use of the instrument with the current sample.

Stereotype Threat

Scale Development. Project PLACE research team created "Who I am and How I Learn" (WIAHIL) scale measuring stereotype threat in relation to gender, ethnicity, socioeconomic status, and rural place.

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[4] See Appendix F for a full list of items in the Academic Engagement scale.

The scale was developed from the Social Identities and Attitudes Scale (SIAS; Picho & Brown, 2011). The original SIAS scale is an integrated 30-item measure incorporating six factors of mathematics, gender, ethnicity, stigma consciousnesses, and negative affect. Picho and her colleagues developed the scale based on established research into moderators of stereotype threat (e.g., stigma consciousness and group identification) with the intention to allow the exploration of stereotype threat susceptibility in naturalistic classroom conditions, reflecting possible co-existence of multiple threats to identity. The scale allows for identification of the degree to which one or another type of stereotype threat affects an individual and for consideration of interactive effects of various stereotype threats.

The original scale showed strong psychometric properties. Estimated reliability for the six factors of SIAS varied between 0.81 and 0.95 in Picho & Brown's (2011) study and between 0.81 and 0.94 in Smith and Cokley's (2016) confirmatory factor analysis of the scale. The authors of the scale provided evidence for validity of SIAS for samples of college-age (Picho & Brown, 2011) and high-school students (Picho, 2011).

Project PLACE researchers tailored the original SIAS scale to the purposes of the project. The first challenge was to expand the scale to include factors covering additional areas of stereotype susceptibility, namely stereotype threat based on rural place, low socioeconomic status, and identification with the language arts domain. The researchers created new items following the format of SIAS original items. For example, in the low SES stigma consciousness subscale, a new item "Other people judge me because of how much money my family has" was modeled after the SIAS item "Most people judge me on the basis of my ethnicity." These new items were reviewed by experts in gifted education, literacy, and elementary education fields and, subsequently, were revised following experts' recommendations. Second, the scale was adapted to elementary school students. For that, the format was changed from the original SIAS format of a 7-point Likert scale to a 5-point gradation, which is more suitable for younger participants. The original items from SIAS were also re-written to fit the cognitive

demands of elementary school children. Following that, the researchers administered the revised scale to nine gifted third and fourth grade students and revised the items further based on the feedback provided by these students in cognitive interviews. Further, the revised scale was piloted with two samples of third and fourth grade students identified as gifted. Finally, one more round of data analysis was conducted to examine the psychometric properties of the scale. Callahan et al. (2020) provide a detailed account of validating the WIAHIL scale.

The results of Confirmatory Factor Analysis proposed a nine-factor structure of the scale: Gender Identification, Gender Stigma Consciousness, Ethnicity Identification, Ethnic Stigma Consciousness, Rural Identification, Rural Consciousness, Low Income Identification, Low Income Stigma Consciousness, and Reading and Writing Identification. In the current study, I will use seven WIAHIL subscales: Gender Identification, Gender Stigma Consciousness, Rural Identification, Rural Consciousness, Low-Income Identification, Low-Income Stigma Consciousness, and Reading and Writing Identification. Items for all subscales used in the study are listed in Appendix F.

Scoring. Since WIAHIL was developed based on the SIAS scale, I will first discuss the procedure for scoring on the original SIAS scale as it was done in Picho's (2011) study. In her work, scoring was closely aligned with stereotype threat theory. As discussed in the literature review, it is largely believed that only those individuals who identify strongly with the domain that may experience stereotype threat. Thus, Picho first established a cut-off score for the Math Identification subscale to divide the sample into those participants who identified highly with the domain and those who did not. She argued for a 5.5 cut-off score for a seven-point Likert scale because that value was just above the value of 5 "Somewhat Agree." As a second step, Picho averaged scores on each remaining factor and then combined the averages into a single score. Again, she used the same cut-off of 5.5 to categorize participants into those who ranked high or low on each factor. For the combined score she multiplied 5.5 by the number of factors in the combined score to obtain a cut-off value. Picho suggested that those

who were in the "high" category on Math identification and in the "high" category on the combined score from other factors could be characterized as highly susceptible to stereotype threat.

In the current study, I take a slightly modified approach to scoring. Following Picho's recommendations and stereotype threat theory, I will categorize study participants into those who strongly identify with reading and writing and those who do not. Differently from a seven-point SIAS scale, The WIAHIL subscales were rated on a five-point Likert scale with 1 = "Strongly disagree," 2 = "Disagree," 3 = "Neither agree nor disagree," 4 =" Agree,, and 5 = Strongly agree." Thus, I will adopt a cut-off value of 4.0 corresponding to "Agree" for the Reading and Writing Identification factor. In alignment with stereotype threat theory, I will hypothesize that only those students who are in the strong identification category can experience stereotype threat vulnerability. I will also create averages for each of the remaining six factors and will construct three combination scores by adding averages on Rural Identification and Rural Stigma Consciousness to create a unified Rural stereotype threat susceptibility score, Gender Identification and Gender Stigma Consciousness for the Gender stereotype threat stereotype threat, and Low SES Identification and Low SES Stigma Consciousness for stereotype threat susceptibility due to low income. Differently from Picho's approach, however, I will keep the three unified scores as continuous variables rather than substituting them for binary variables with a threshold value for "high" vs. "low" stereotype threat susceptibility.

Reliability and Validity. Callahan et al. (2020) provide internal consistency estimates for WIAHIL scale for the two pilot studies and the final sample used for CFA analysis. In Table 3, I provide Cronbach's α reliability estimates for the seven factors of interest as reported in the final round of analysis by Callahan and the team and for the pre-treatment and post-treatment administration of the scale with the sample (N=475) used in the current study.

Table 3

Reliability Estimates for the WIAHIL Scale

WIAHIL Factors	Estimates from Callahan et al. (2020)	Estimates for the current study	
		Pre-treatment	Post-treatment
Gender Identification	0.67	0.70	0.76
Gender Stigma Consciousness	0.81	0.76	0.77
Rural Identification	0.50	0.50	0.48
Rural Stigma Consciousness	0.76	0.71	0.73
Low Income Identification	0.69	0.69	0.69
Low Income Consciousness	0.85	0.81	0.85
Reading and Writing Identification	0.85	0.82	0.84

Cronbach α coefficients in the current study generally correspond to the internal consistency estimates reported for the pilot study sample. With the exception of the Rural Identification factor, all other coefficients surpass the acceptable threshold of 0.70. The coefficient for Low Income Identification ($\alpha = 0.69$) approximates the conventional cut-off value. It should be noted that Cronbach's alpha expresses a lower bound to the reliability and true reliability may in fact be greater than what is suggested by alpha, especially when certain assumptions are violated (Sijtsma, 2009). In particular, Cronbach's α will underestimate reliability if the tau equivalency assumption is violated, and especially so for scales with a low number of items (Yang & Green, 2011). This may well be the case for the Rural Identification scale – it is comprised of only three items that vary greatly in factor loading estimates ranging from 0.388 to 0.790 based on CFA conducted by Callahan and colleagues (2020). In his seminal publication on coefficient alpha, Cronbach stated that "a test need not approach a perfect scale to be interpretable. Items with quite low intercorrelations can yield an interpretable scale" (p. 332). Therefore, while I acknowledge a relatively lower alpha for the Rural Identification scale, I consider the scale to be interpretable and psychometrically sound for the analysis proposed in this study.

Data Diagnostics

When considering the most appropriate analytic strategy for each research question, I completed relevant data diagnostics that revealed two issues that need to be addressed prior to the analysis: missingness and non-normality of the variables of interest.

Normality

To explore normality, I examined histograms of distributions for each factor variable in the WIAHIL scale and the Student Engagement scale and tested for normality using Shapiro-Wilk test. Descriptive statistics for each factor variable, including skew and kurtosis values, can be found in Appendix A. The only normally distributed variables at the 0.05 level were the post-treatment Gender Identification factor and the post-treatment Gender Stigma Consciousness factor. Normality for these distributions was preserved for female and male students. All individual items within scales were not normally-distributed. I describe how I handled violations of normality within the analytic strategy section of this chapter.

Missing Data

As discussed above, the complete sample includes data on 475 participants. For pre-treatment measures of engagement and stereotype threat, the percent of missing data ranged between 10.1 (for both emotional and behavioral engagement) and 11.6% (for low socioeconomic status stigma consciousness factor). Missingness by district ranged between 0 and 29.8%. Refer to table A1 for detailed information on by-district missing data percentage.

For all the students, the Student Engagement and the WIAHIL scales were administered in one set. In the vast majority of cases, those participants who have missing data for the Engagement scale have also missing data for all the WIAHIL subscales. While we cannot rule out that the stereotype threat items received a somewhat higher percentage of missed responses due to the sensitive nature of the construct, it is more likely than not that the higher percentage of missingness is due to respondent

fatigue or inattentiveness – stereotype threat items were placed at the very end of the questionnaire following the Student Engagement and several other scales.

When both engagement and stereotype threat items were missing, the most common reasons for missingness were that students left the district participating in the study (35% of all missing cases), were identified for the gifted program by their districts and joined the program after the project had started and, thus, did not complete the pre-treatment measures (27%), and opted out of the gifted program (5%). For the remaining 33% of cases, the exact reason for missingness is unknown, but considering that the majority of the participants in this category have missing values across all the items in the survey, the most likely reason for missingness in this case is that students were not in school on the day of data collection.

For post-treatment data, the percent of missingness was higher, with just below 23% for both emotional and behavioral engagement factors and at 23.8% for all the stereotype threat subscales. As compared to pre-treatment data, there was a larger variation in missingness by district with the range between 0 and 70 % (Table A1). Only four participants have missing values at the individual item level. Again, the most likely explanation is participant fatigue because all the missed responses are situated at the end of the scale. In all the other cases, however, if values are missing, they are missing for the entire instrument. These missing values are not necessarily due to attrition. Similar to what we observe with pre-treatment data, it is highly likely that students were not in schools when the instrument was administered (65 % of all missing cases). The remaining missing cases are divided between participants who left the district (19%) and students whose parents opted out of gifted services (16%).

The percent missing for the gender variable was at 1.5%, or 7 cases. There were no missing cases for the binary treatment/control condition variable.

To consider potential bias due to missing data, I compared responses of study participants with missing and non-missing data. In particular, I analyzed differences in baseline measures for students

with complete post-treatment data and those who represent attrited cases. The only statistically

significant difference between these two groups was on measures of pre-treatment rural identification

(t = 2.58, p < .01) and domain identification (t = 2.29, p < .05). However, these differences were minimal

as confirmed by small Cohen's d effect size values of 0.28 and 0.25 respectively. I also compared

students with missing and complete pre-treatment data on outcome measures of interest. There were

no statistically significant differences on any of the measures between these two groups. Refer to Table

A3 and A4 for details on the two comparisons.

Multiple Imputation. Since the percentage of missing values was relatively large, I chose to

perform multiple imputation and work with an imputed dataset for those research questions where it

was possible to conduct the relevant analysis with imputed data. However, where statistical software

capabilities or the type of analysis itself precluded from using imputed data, I either relied on complete

cases or on alternative estimation procedures for data with missingness – they are discussed further in

the chapter when I describe analytic strategies for each research question. Finally, it should be noted

that multiple imputation is designed for inference rather than for working with descriptive statistics.

Therefore, all the descriptive statistics are reported on the original data with missing values.

I performed multivariate imputation by chained equations (MICE) using Stata16 statistical

software. MICE is a very flexible technique that accounts for statistical uncertainty when imputations are

performed and allows to handle different types of variables (Azur et al., 2011). In MICE, each variable is

imputed using its own imputation model.

Missingness in survey data poses certain challenges for imputation, such as a large number of

nonnormally distributed categorical variables, which is the case in the present data. While it may be

preferable to perform imputation at the individual item level, such imputation models invariably pose

convergence issues (Plumpton et al., 2016). Recently, Simons et al. (2015) showed that there was little

difference between the choice of either imputing individual items or scale totals when the pattern of

missing values was such that a respondent missed all (rather than only some individual) items on the

scale. Since, as discussed above, this missingness pattern is present in the data for the current study, I

chose to impute scale totals rather than individual items. All the scale totals were continuous variables.

However, only two – gender identification post-treatment and gender stigma consciousness post-

treatment – followed normal distributions. For all those continuous nonnormal scale total variables,

imputation modeling was conducted based on the predictive mean matching (PMM) method using ten

nearest neighbors, as recommended by Morris et al. (2014). PMM method results in a close

approximation of the imputed variable distribution to the distribution of the original variable because

the sampling of imputed values is conducted only from the observed values of the variable (Royston &

White, 2011). Therefore, the imputed values are also in the range of the original variable distribution.

The remaining normally distributed scale totals of post-treatment gender identification and gender

stigma consciousness were imputed using the truncated regression model in order to confine imputed

values to the original range of variable distributions. Finally, missing gender values were imputed with

the help of the logistic regression for binary variables.

First, I conducted a Markov chain simulation by running multiple independent chains in order to

determine whether the proposed modeling resulted in the convergence of the iterative methods

algorithm. To monitor convergence, I examined trace plots of the distributions of imputed values

against iteration numbers. Convergence was reached almost immediately with no visible trends across

all the chains.

To determine the number of required imputations, I used a two-stage procedure recommended

by von Hippel (2020). Specifically, von Hippel suggested that for standard error estimates to be

replicable from one sample of M imputed datasets to another, the required number of imputations

should be estimated as a quadratic, rather than a linear, function of the fraction of missing information

(FMI). The number of required imputations will also vary depending on the chosen coefficient of

variation (CV), which reflects imputation variation in the standard error estimate. During the first stage, I conducted a pilot analysis with 20 imputations in order to obtain a pilot standard error estimate for each parameter and a conservative estimate of FMI. In the second stage, the recommended number of additional imputations was calculated based on the estimated FMI and the CV value of 0.05. Additional 63 imputations were then produced using the same modelling, which resulted in the total of 83 imputed datasets.

For post-imputation diagnostics, I examined kernel density plots comparing distributions in the observed, imputed, and completed samples for each continuous variable in the imputation model. For the gender variable, I compared proportions in observed and imputed data. Generally, it is expected that there will be some deviations between observed and missing values; however, these deviations should not be extreme (Abayomi et al., 2012). So, in examining imputed data, my intention was to flag any easily observable serious violations that could potentially indicate a problem with the imputations. Appendix I has a sample of overlaid kernel density plots of original, imputed, and combined data for the 10th and 70th imputations. There were no extreme departures found between imputed and observed data.

Analytic Strategy

In this section, I describe data analysis procedure for each of the five research questions outlined at the beginning of this chapter.

RQ1. *What is the level and variability of academic engagement in gifted learners?*

Since the purpose behind the first research question was purely exploratory, my initial analysis focused on descriptive statistics to present a general picture of emotional and behavioral engagement in the current sample of gifted rural students. Next, I compared means and standard deviations of emotional and behavioral engagement in my sample with means and standard deviations for the same factors as reported in Furrer and Skinner's (2003) study. The sample in Furrer and Skinner's study (N =

316) is comprised of third and fourth grade students residing in a rural-suburban district.   The intention

behind this comparison was to explore whether the two samples – the rural gifted in the current study

and the one in Furrer and Skinner's study – can theoretically come from the same population. In

particular, I decided to test the hypothesis corresponding to the claim that gifted students are more

highly engaged in comparison to those students who are not identified as gifted. Therefore, I

hypothesized that both emotional and behavioral engagement means would be higher in my sample for

both grades and for both genders as compared to the corresponding means from Furrer and Skinner's

sample.

To test this hypothesis, I did a two-sample t-test of independent samples. Since I did not have

access to the data used in Furrer and Skinner, I relied on STATA's immediate command that allows

performing analysis based on the summary statistics rather than on individual-level data. The t ratio

follows Student's t distribution under the assumptions of independent samples, normally distributed

populations, and homogeneity of variance. The first assumption of the independence of samples was

met. With regards to the second assumption, it should be noted that both emotional and behavioral

engagement variable distributions in my sample show a considerable skew to the left. However, such

departure from population normality can be tolerated with a large enough sample under the terms of

the central limit theorem. Checking the homogeneity of variance assumption is unattainable when only

the summary statistics are available and the data are not normally distributed. While the violation of the

assumption is not problematic if sample sizes are large enough and of approximately the same size,

Student's t-test will be severely biased in case of unequal variances and unequal sample sizes (Delacre et

al., 2017). In the current analysis, sample sizes, while large, cannot be assumed as equal: for the third

grade, the samples are N= 93 in Furrer and Skinner's study and N= 427 (complete case only) in the

Project PLACE sample, and for the fourth grade, the corresponding sample sizes are N = 223 and N=366

respectively. For unequal sample sizes, it is recommended to apply the Welch formula (Rasch et al.,

2007), which also assumes unequal variances. The Welch t-test is a "safe" choice for mean comparison and it yields similar to Student's t-test results unless sample sizes and variances are very different.

RQ2. How stable is academic engagement across two grade levels in elementary school for both genders?

To answer this research question, I compared student engagement level in third and fourth grades. The original data were set up as repeated measures dataset in the wide format with third and fourth grade engagement responses entered as separate variables for each individual. For this question, I worked with the multiply imputed dataset. This dataset was converted into the long format resulting in 950 observations of engagement totals, which were then modeled as a linear function of the binary *year* variable representing third (coded as 0) or fourth grade (coded as 1). To account for the RCT design of the study, I included as a covariate the binary variable of treatment/control into the regression equation, with "1" representing treatment group students. Additionally, as I was also interested in learning whether engagement differed by gender, I included the gender variable ("1" = boys) into my regression model. Finally, to account for student clustering in schools, included in the models is an unobserved variable Z that varies from school to school and is coded as a series of 58 indicator variables (one omitted as a reference group) representing schools. Since students reported levels of their engagement twice, the observations were not independent. I relied on robust standard errors adjusting for within-cluster correlations in order to account for the lack of independence of observations within individuals. I ran two separate fixed-effects regression models for emotional and behavioral engagement where each student *i* is observed in class *j* at time *t*.

$$Emotional\ Engagement_{ijt} = \beta_0 + \beta_1 year + \beta_2 gender + \beta_3 condition + \epsilon_i$$

$$Behavioral\ Engagement_{ijt} = \beta_0 + \beta_1 year + \beta_2 gender + \beta_3 condition + \epsilon_i$$

To explore whether rural gifted girls and boys experienced different patterns of engagement in third and fourth grade, I ran the same model with an added interaction term between *year* and *gender* variables.

RQ3. *How stable are group identification and stigma consciousness across two grade levels in elementary school for both genders?*

The analytic approach was identical to that described for RQ 2. In particular, I modeled each group identification and stigma consciousness dependent variable as a function of the binary variable *year* using a long-formatted multiply imputed dataset with 950 repeated measures responses.

$$Group\ Identification_{ijt} = \beta_0 + \beta_1 year + \beta_2 gender + \beta_3 condition + \epsilon_i$$

$$Stigma\ Consciousness_{ijt} = \beta_0 + \beta_1 year + \beta_2 gender + \beta_3 condition + \epsilon_i$$

The same models were then estimated with added interactions between *gender* and *year* variables.

The level of group identification and stigma consciousness were explored only through descriptive statistics in the current sample. Inferential judgements were not feasible due to the lack of previous studies on the phenomena of interest using similar measures with elementary school students.

RQ4. What is the relationship between academic engagement and stereotype threat vulnerability based on gender, low socioeconomic class, and rural place identification? How is this relationship different for male and female students?

To answer the central question of this study, I relied on two alternative statistical approaches: multiple regression analysis and structural equation modelling (SEM). The decision to consider two alternative methods was made due to comparative advantages and limitations each method can offer. I believe relying on two methods allows taking a more nuanced approach to answering the question and also leads to more sound conclusions. Below I describe regression modelling and SEM in more detail as well as discuss advantages and limitations of SEM as compared to OLS in the context of the study.

Regression Modelling

For the regression analysis, I first constructed the following identical models for the dependent

variables of emotional and behavioral engagement consisting of all stereotype threat vulnerability

predictors:

$$Emotional\ Engagement_i = \beta_0 + \beta_1 piorengagement_i + \beta_2 genderstereotype_i +$$
$$\beta_3 lowsesstereotype_i + \beta_4 ruralstereotype_i + \beta_5 gender_i + \beta_5 condition_i + \epsilon_i$$

$$Behavioral\ Engagement_i = \beta_0 + \beta_1 piorengagement_i + \beta_2 genderstereotype_i +$$
$$\beta_3 lowsesstereotype_i + \beta_4 ruralstereotype_i + \beta_5 gender_i + \beta_5 condition_i + \epsilon_i$$

The two dependent variables of emotional and behavioral engagement were total scores of the

scales administered to the participants in fourth grade. Prior engagement refers to the same totals

measured in third grade. The three stereotype vulnerability predictors of interest were constructed as

sums of identification and stigma consciousness averages, as measured in fourth grade. Finally, I

included two control variables of gender and condition. As described above, robust clustered standard

errors were used to account for heteroskedasticity across 53 clusters of observations.

To consider whether the relationship between stereotype threat and academic engagement

differed for male and female students, I ran the same two models with added interactions between

stereotype threat and gender.

As a second step in the regression analysis, I added to my model a binary variable indicating

students' level of reading and writing identification (coded as 1 for high identification and as 0 for low

identification) and an interaction term between stereotype threat vulnerability and reading and writing

identification. This was done in line with the stereotype threat theory tenet stating that only those

individuals who identify strongly with the domain are vulnerable to stereotype threat. Below is the

regression model equation for the relationship between gender stereotype threat vulnerability and

emotional engagement. Models for the other two stereotype threat vulnerability predictors and for behavioral engagement are constructed in the same way.

$$Emotional\ Engagement_i = \beta_0 + \beta_1 pirorengagement_i + \beta_2 genderstereotype_i + \beta_3 lowsesstereotype_i + \beta_4 ruralstereotype_i + \beta_5 gender_i + \beta_5 condition_i + \beta_6 readwriteid_i + \beta_7 genderstereotype_i \times readwriteid_i + \epsilon_i$$

Structural Equation Modelling (SEM)

In answering RQ 4, SEM can offer several important advantages over the OLS techniques. Most significantly, SEM allows to account for the measurement error and, thus, produce unbiased estimates of the relationships between variables. In contrast to OLS, SEM includes both observed and latent variables, which is appropriate for the current study where all the predictors and dependent variables are conceived as scale factors rather than observed variables. Finally, SEM is a multivariate technique that allows to model complex relationships between exogenous and multiple endogenous variables. Thus, relying on SEM, in the current study, it is possible to consider simultaneously the relationship between stereotype threat factors and both emotional and behavioral engagement.

At the same time, it should be noted that specifically for the current sample, SEM has also certain limitations. First of all, in contrast to OLS, SEM analysis cannot be conducted using the multiply imputed dataset, which leads to the analysis based on a much smaller sample – 366 observations as opposed to 475. While it is possible to rely on appropriate estimation techniques to obtain unbiased estimates, as discussed below, a smaller sample size limits the complexity of modelling itself. For instance, insufficient sample size precludes from considerations of interactive terms and multiple group variables. In SEM, such an analysis would require a much larger sample. This is where OLS is particularly advantageous.

SEM modeling involves five steps: model specification, identification, estimation, testing, and modification (Schumacker & Lomax, 2016). Importantly, the process is iterative. Following model

estimation, model fit is assessed to determine how well the model explains the data. If the fit is not

satisfactory, the initial model is modified, which leads to re-specification of the initial model. Below I

provide details for the first three steps of specification, identification, and estimation in relation to the

initial model. The final re-specified model along with parameter estimates is described in the Results

chapter.

 Specification. The proposed structural equation model for the current study, depicted in Figure

1, is comprised of eight latent variables corresponding to factors in the WIAHIL and Student Engagement

scales. The model corresponds to the hypothesis that each stereotype threat factor has a direct

association with both emotional and behavioral engagement. In the model, stereotype threat latent

variables represent exogenous variables because they are not influenced by other variables, and the two

engagement variables are endogenous. The latter are also specified as correlated variables based on

previous studies proposing that the two concepts are interrelated (Reeve, 2012).

Figure 1

Proposed structural equation model
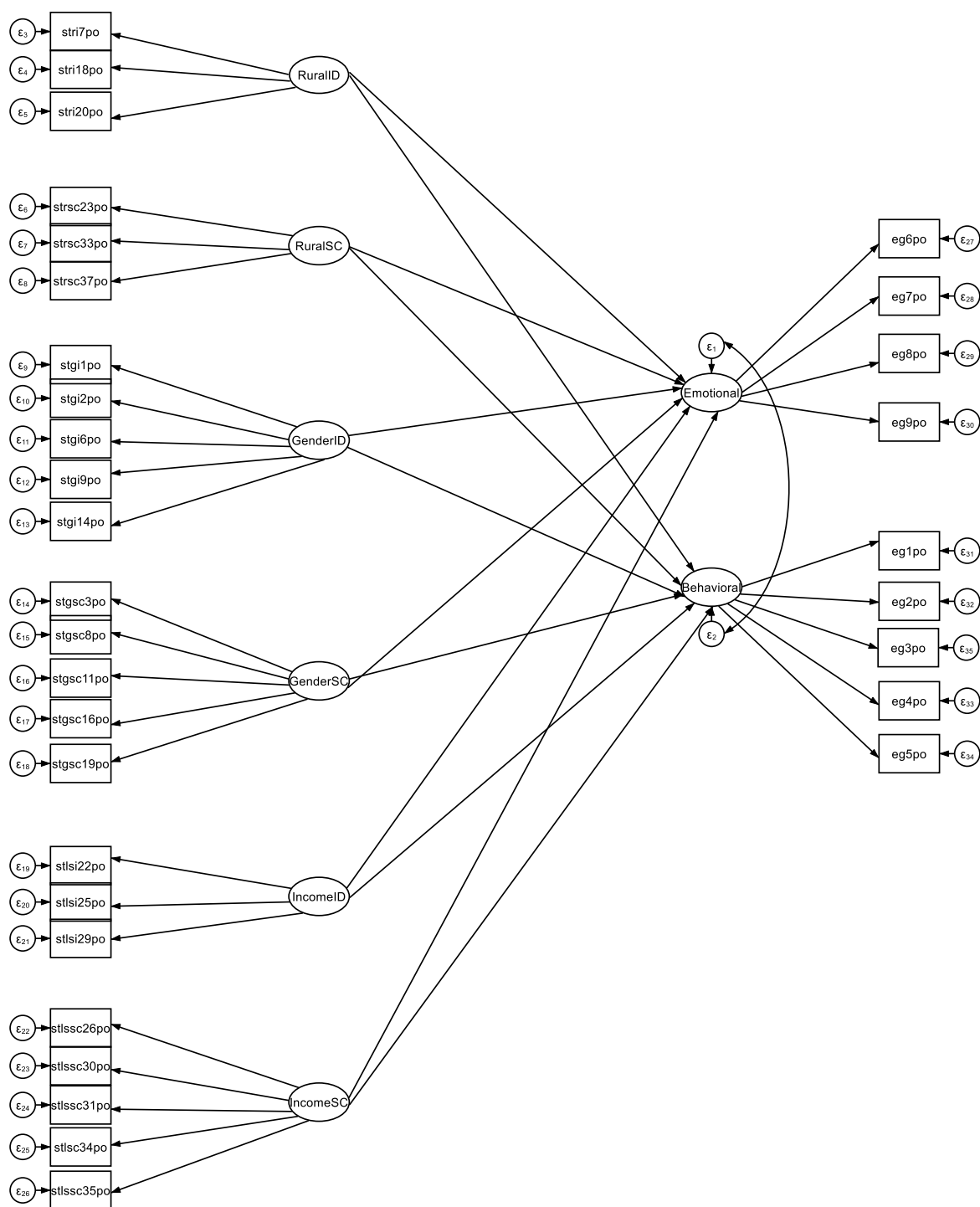
Identification. For any SEM model to be identified, every latent variable in the model should be scaled and the model degrees of freedom should be at least zero (Kline 2006). Identification in SEM is a two-step procedure including identification for the measurement model and the structural model.

In the measurement model, there are 33 observed indicator variables. Therefore, the number of known pieces of information in the input variance-covariance matrix is equal to 33(33+1)/2=561. The number of unique parameters is determined by the number of indicator error variances, factor loadings, and factor variances and covariances, which gives us a total of 102 unique parameters (33 error variances, 33 loadings, 28 factor covariances, and 8 variances). To scale latent factors, eight factor loadings were fixed to one using the reference variable method, thus yielding a total of 102-8=94 freely estimated parameters. The degrees of freedom are then determined as the difference between knowns and the freely estimated parameters df = 561 – 94 = 467. The measurement model meets the requirements of identification.

The structural portion of the SEM model represents a recursive path model and, as such, is identified based on the property identification rule of recursive path models – such models are always identified, whether they make up a structural component of SEM with latent variables or represent a stand-alone path model (Kline, 2016). All in all, the entire SEM model in this study has 561 known pieces of information and 79 freely estimated parameters comprised of 33 error variances, 25 factor loadings, eight factor variances, coefficients for 12 direct effects of exogenous latent variables on endogenous variables of behavioral and emotional engagement, and one covariance between the latter. The df for the SEM model are then calculated as 561-79 = 482. Thus, the full structural equation model is overidentified.

Estimation. SEM is essentially a large-sample technique, with more complex models requiring bigger samples (Kline, 2016). So, considering the amount of missing information in the current sample, SEM may not be appropriate unless missingness is properly addressed. First, it should be noted that the

multiply imputed dataset could not be used for the SEM analysis because, due to convergence issues, variables were imputed at the total score, rather than an individual item level. An alternative to using multiple imputation is to rely on parameter estimation methods that take missing information into consideration. To address missingness, I used the full information maximum likelihood (FIML) estimation method. FIML handles missing data and does parameter and standard error estimation in a single step (Graham, 2009). In SEM, FIML is advantageous compared to both listwise and pairwise deletion as FIML parameter estimates are generally unbiased under both MCAR and MAR conditions and stay unaffected by the amount of missing data while listwise and pairwise deletion produce unbiased parameters only under MCAR and result in an increase in parameter bias with increased rates of missing data (Enders, 2001).

Yet another concern with the current data is the prevalence of nonnormally distributed variables. Generally, SEM studies rely on maximum likelihood estimation method which assumes multivariate normality (Kline, 2016). To handle nonnormality, it is possible to either transform nonnormally distributed variables, use robust maximum likelihood with corrections, or use alternative to maximum likelihood methods such as the weighted least squares (WLS) or the diagonally weighted least squares method (DWLS; Gana & Broc, 2019). For the current study, the second solution is more preferable. Transforming is not recommended if a variable is inherently non-normal, i.e., non-normality is expected a priori due to the nature of the concept or strong theoretical assumptions (Kline, 2016), which is at least the case with engagement scale items – from previous studies and theory we can expect elementary school students to be more highly engaged, thus yielding a negatively skewed distribution of the scores. WLS is not suitable because it requires very large samples and DWLS, while yielding accurate estimates for smaller samples, runs into problems with more than 20 variables (Gana & Broc, 2019).

To address violations of multivariate normality, I used robust Huber-White standard errors and the Yuan-Bentler χ^2 maximum likelihood estimator which produces a scaled model test statistic (Yuan & Bentler, 2000). Importantly, this technique can be used for both complete and incomplete data. To perform SEM analysis, I used R lavaan package which allows to request both FIML and the Yuan-Bentler correction, thus addressing non-normality and missingness at the same time.

Estimation was conducted as a two-step process. The first step involved estimation of the measurement model. The initial measurement model was then modified according to suggested modification indices until satisfactory goodness-of-fit statistics were reached. Estimation for the SEM model was then conducted based on this modified measurement model. To account for the RCT design, the model was estimated for two groups of students – treatment and control.

RQ 5. Is there a difference in academic engagement between students who experience multiple threats to identity and those with a single identity threat?

To answer this research question, I used multiple regression modeling with emotional and behavioral engagement as dependent variables. First, I used a cut-off score of 4.0 on each WIAHIL subscale (as described in Stereotype Threat Scoring section above) to create binary stereotype threat susceptibility variables with 1 representing the existence of threat and 0 referring to no threat. Then, I constructed a multicategorical variable of multiple identity threat, with the value of zero corresponding to no threat (1% of students), value of one to those cases with a single stereotype threat (10% of students), value of two with two stereotype threats (21%), and three denoting the presence of all three stereotype threats (68%). Finally, I estimated the following regression models with the multicategorical variable of multiple identity threat represented as a set of indicator variables for the number of experienced threats, omitting the reference "no threat" category:

$$Behavioral\ Engagement_i = \beta_0 + \beta_1 threat1 + \beta_2 threat2 + \beta_3 threat3 + \epsilon_i$$

$$Emotional\ Engagement_i = \beta_0 + \beta_1 threat1 + \beta_2 threat2 + \beta_3 threat3 + \epsilon_i$$

Then I tested the same models controlling for the treatment/control group and students'

engagement levels in third grade. As described above, I used robust standard errors adjusting for within-

cluster correlations.

Table 4 below summarizes analytic strategies for each research question.

Table 4

Summary of Analytic Strategies

Question	Estimation	Missing data solution	Statistical software used
RQ 1. What is the level and variability of academic engagement in gifted learners?	two-sample t-test of independent samples	complete cases only	STATA 16
RQ 2. How stable is academic engagement across two grade levels in elementary school for both genders?	Fixed-effects with robust standard errors adjusting for within-cluster correlations.	Multiple imputation	STATA 16
RQ 3. How stable are group identification and stigma consciousness across two grade levels in elementary school for both genders?	Fixed-effects with robust standard errors adjusting for within-cluster correlations.	Multiple imputation	STATA 16
RQ 4. What is the relationship between academic engagement and stereotype threat vulnerability based on gender, low socioeconomic class, and rural place identification? How is this relationship different for male and female students?	OLS with robust standard errors adjusting for within-cluster correlations.	Multiple imputation	STATA 16
	SEM with robust Huber-White standard errors and the Yuan-Bentler χ^2 ML estimator	FIML	R lavaan package
RQ 5. Is there a difference in academic engagement between students who experience multiple threats to identity and those with a single identity threat?	OLS with robust standard errors adjusting for within-cluster correlations.	Multiple imputation	STATA 16

Chapter IV

RESULTS

Research Question 1: What is the Level and Variability of Academic Engagement in Gifted Learners?

Gifted students in my sample showed high levels of emotional and behavioral engagement across both third and fourth grades. Similar to results of previous research into academic engagement, students' emotional engagement was somewhat lower than their behavioral engagement. That is, based on the descriptive analysis, in the third grade, the mean score for emotional engagement was 3.31 and for behavioral engagement 3.74. In the fourth grade, the mean score for emotional engagement dropped to 3.17 while behavioral engagement stayed very close to the third-grade level at 3.71.

All four distributions were negatively skewed, with third grade behavioral engagement distribution having the highest skew in absolute value terms. Refer to Figure B1 for histograms of frequency distributions and Table B1 for descriptive statistics. In fact, 58% of students in the third grade scored at the maximum value of 4.0 on the behavioral engagement subscale. In contrast, only 26% of students in the same grade reported this maximum score on emotional engagement. For the fourth grade, the percentages of students with the highest 4.0 engagement level was lower – 48% for behavioral and 14% for emotional engagement. Interestingly, in the third grade, almost all the students who had the maximum emotional engagement also scored at the maximum value of behavioral engagement (M=3.93, SD=0.17). This was not true, however, for students with the highest behavioral engagement – there was more variability in emotional engagement among these students (M=3.54, SD=0.58). This pattern was also present in the fourth grade. This points to the primacy of emotional engagement, at least with the current sample, i.e., if students are highly engaged emotionally, it is also likely that they will be highly engaged behaviorally. However, high behavioral engagement does not as frequently translate into emotional engagement.

Next, I compared behavioral and emotional engagement of gifted rural students in my sample to engagement measured with the same instrument for students in Furrer and Skinner's (2003) study. The results of the independent samples t-test for each grade and type of engagement are provided in Table B2. As hypothesized, gifted students in the present sample reported significantly higher behavioral engagement in both third and fourth grades as compared to students in Furrer and Skinner's study. Cohen's d effect size was large in both cases, with d = 1.36 for the third-grade difference in behavioral engagement means and d = 1.02 for the fourth grade difference. The difference in emotional engagement between the two groups in the third grade was also statistically significant (t = 2.98, p = .002) with gifted students having higher emotional engagement. However, Cohen's d = 0.29 suggested that the difference was small. Finally, contrary to my hypothesis, gifted rural students did not report higher emotional engagement in the fourth grade (t = -0.41, p = 0.66). Overall, it can be concluded that, as compared to general elementary student population, gifted rural students in my sample reported higher behavioral engagement in both grades and somewhat higher emotional engagement in the third grade.

Research Question 2: How Stable is Academic Engagement Across Two Grade Levels in Elementary School for Both Genders?

Descriptive statistics

The second research question concerns the stability of engagement across third and fourth grades in both genders. Refer to Table C1 for means and standard deviations of engagement scores for both genders and Figure C1 for comparative boxplots across grades and genders. Descriptive statistics point to lower emotional and behavioral engagement among boys in both third and fourth grades as compared to girls, which is consistent with the literature on engagement of elementary school students. Further, both genders had a relatively equal drop in emotional engagement from third to fourth grades,

with a between-grade decrease of 0.16 for boys and a 0.15 decrease for girls. In contrast, behavioral

engagement stayed at the same level for both genders.

I have also considered the role of the Place-based curriculum in the stability of engagement for

both genders. Based on the descriptive statistics of the measures, girls in the treatment group were the

only group of students who had a slight increase in emotional and behavioral engagement in the fourth

grade as compared to the third grade. For this group, the difference in emotional engagement between

grades constituted only 0.01 points and in behavioral engagement 0.02 points. For all the other groups,

there was a drop in both emotional and behavioral engagement. Boys in the treatment group had a

rather small decrease in engagement – they reported 0.02 points less on emotional engagement and

0.04 less on behavioral engagement in the fourth grade. Drops in behavioral engagement for both

genders in the control group were also rather small – 0.05 and 0.06 points for boys and girls

respectively. Interestingly, it was in the emotional engagement where students in the control group

reported most loss in their engagement, with boys reporting being 0.13 points less engaged and girls

0.24 points less emotionally engaged in the fourth grade as compared to emotional engagement levels

in the third grade.

Regression Analysis Results

The results of the regression analysis showed that behavioral engagement was stable across the

two grades. The coefficient for the predictor of interest *year* was not statistically significant (β = -.04, t =

-1.20, p = .233) indicating that there was no difference in students' behavioral engagement levels in the

third and fourth grades. The coefficients for gender and condition were both statistically significant.

Controlling for all the other variables in the model, boys, on average, were 0.14 SD (t = - 3.45, p =.001)

lower on the self-reported behavioral engagement scale as compared to girls. Students in the treatment

condition reported higher levels of behavioral engagement as compared to students in the control

group, with the difference of .97 SD (t = 9.26, p =.000).

As planned, I also tested an interaction term between gender and year variables. However, the coefficient for this interaction was not statistically significant ($t = -0.57$, $p = .570$). Additionally, since condition and gender were both statistically significant, I tested models with various interaction terms between gender and condition, year and condition, and between gender, year, and condition. None of these interactions showed statistical significance.

Unlike the behavioral component, emotional engagement showed a downward change from third to fourth grade. The coefficient for *year* was statistically significant ($t = -3.68$, $p = .000$), with students in the fourth grade reporting engagement .11 SD less than in the third grade. Coefficients for gender ($t = -4.06$, $p = .000$) and condition ($t = 8.20$, $p = .000$) were also statistically significant. Boys reported being .16 SD less emotionally engaged than girls and students in the treatment condition were .67 SD more emotionally engaged as compared to their peers in the control group. Thus, the magnitude of standard coefficients for gender was similar for behavioral and emotional engagement. The standardized beta coefficient for condition was larger in the behavioral engagement model, which may suggest that sustaining emotional engagement with the help of an intervention such as a Place-based curriculum is more challenging. Similar to the results obtained for behavioral engagement, none of the tested interactive terms were statistically significant. Table C2 summarizes the results for both behavioral and emotional engagement modeling.

Research Question 3: How Stable are Group Identification and Stigma Consciousness Across Two Grade Levels in Elementary School for Both Genders?

Group identification

Descriptive statistics point to variability on all group identification scales for both genders across the two grade levels. In particular, SD ranged between the lowest of 0.74 points for girls reporting rural identification in the fourth grade and the highest of 1.04 points for girls reporting low SES group identification in the third grade. In general, for each subscale and gender group, SD values were very

close across the two grades. Based on SD values, the only noticeable decrease in variability across grades was for girls reporting rural group identification. IQR values varied from 1.0 on rural identification in the fourth grade for both genders to 1.4 on rural identification in the third grade. Figure D1 provides box plots of distributions for each subscale for both genders and Table D1 gives descriptive statistics for each measure.

Distributions for rural and low SES subscales were negatively skewed in both grades, with the largest negative skew of -0.95 in the third grade rural subscale for girls. This negative skewness across the two grades indicates that many boys and girls in the sample identified rather strongly with being rural and from low SES. In contrast, the skewness values for gender group identification distributions were close to zero in the third grade and positive for both genders in the fourth grade. In general, as compared to the third grade distributions, in the fourth grade there was a tendency, even if slight, in distributions moving in the positive skew direction for all the subscales with the exception of low SES identification subscale for boys, where the distribution became more negatively skewed, perhaps signaling that, as they grew older, even more boys became aware of their lower social class standing (Durante & Fiske, 2017).

The results of the regression analysis show that in comparison to the third grade, in the fourth grade, students' group identification level dropped for gender and rural identification. Thus, students in the fourth grade reported, on average, their gender identification as .24 SD lower ($t = -7.42$, $p = .000$) than identification in the third grade and their rural group identification as .07 SD lower ($t = -2.19$, $p = .029$). Although the latter coefficient was statistically significant, the magnitude of the drop in rural identification was rather small, and much lower than the corresponding drop in gender identification. Finally, the coefficient for the predictor of interest *year* was not statistically significant in the low SES identification model, indicating that this type of identification was stable across the two grade levels. The coefficient for gender and the interaction term between gender and year were not statistically

significant in any of the models. The only other statistically significant coefficient was for the predictor *condition* in the gender identification model, with students in the treatment group reporting lower gender identification (t = - 4.56, *p* =.000). Refer to Table D2 for the results of the three group identification regression models.

Stigma Consciousness

Students also varied in their self-reporting of stigma consciousness. SD values for stigma consciousness were in the range between .71 for Low SES among girls and the highest of .95 for the gender stigma consciousness subscale among girls. IQR values ranged between 1.0 for low SES subscale for girls in both grades and rural stigma consciousness for girls in the fourth grade and 1.4 for gender stigma consciousness for boys in both grades.

All the distributions were positively skewed, with the largest skewness value of 1.42 for the rural stigma consciousness subscale scores reported by boys in the fourth grade. Gender stigma consciousness scales for both genders had the lowest skewness. Across the grades, skewness was retained for all the subscales except for the rural stigma consciousness among girls where there was a move of the distribution towards 0 and the low SES stigma consciousness among boys where the distribution became more positively skewed in the fourth grade. Thus, even more boys reported lower low SES stigma consciousness in the fourth grade, and more girls chose to report higher rural stigma consciousness.

The results of the regression analysis are provided in Table D4. They indicate that all three types of stigma consciousness were stable across the two grades as the coefficient for *year* was not statistically significant. The only statistically significant coefficient was for condition in the low SES stigma model. Students in the treatment condition reported a .33 SD higher stigma consciousness as compared to students in the control group. I also tested each model with an interactive term between

year and *gender* and, additionally, the low SES model with an interaction between *year* and *condition.* None of the tested interactions were statistically significant.

All in all, the analyses show that gender identification was the only measure that lacked stability across the two grades. There was no statistical difference in the scores between the two grades on the other two group identification measures and on the three stigma consciousness measures.

Research Question 4: What is the Relationship Between Academic Engagement and Stereotype Threat Vulnerability Based on Gender, Low Socioeconomic Class, and Rural Place Identification? How is This Relationship Different for Male and Female Students?

Regression Analysis

First, I regressed behavioral and emotional engagement on three types of stereotype threat vulnerability, gender, and condition. The results of these models are presented in Table E3.

For behavioral engagement, out of three stereotype threat vulnerability predictors of interest, only rural stereotype showed statistical significance (t = 2.12, p =.04). A one standard deviation increase on rural stereotype threat vulnerability scale was associated with a .12 SD increase in behavioral engagement. The coefficients for prior behavioral engagement and gender were also statistically significant. For each increase of one standard deviation in prior engagement, students, on average, had a .28 standard deviation (t = 3.98, p =.00) increase in behavioral engagement in fourth grade. Controlling for all the other variables in the model, boys reported being .12 standard deviations lower on behavioral engagement as compared to girls.

In the emotional engagement outcome model, rural stereotype again was the only statistically significant stereotype vulnerability coefficient (t = 3.96, p =.00). The magnitude of the coefficient was larger as compared to the same coefficient in the behavioral engagement outcome model. Thus, for each increase of one standard deviation in rural stereotype vulnerability, there was a .23 standard deviation increase in emotional engagement. It should also be noted that gender stereotype threat

vulnerability was marginally significant (t = -2.00, p =.051), with larger values corresponding to lower emotional engagement. Among the remaining covariates, only prior emotional engagement was statistically significant (t = 4.22, p =.00), with each gain in one standard deviation on prior engagement corresponding to a .30 standard deviation increase in emotional engagement in the fourth grade.

These two models were then tested with interactive terms between each type of stereotype threat vulnerability and gender. None of the interactions were statistically significant and there was no statistically significant increase in the R-squared value as compared to the models without interactions. Tables E4 and E5 provide results of the models with these interactive terms.

As the next step in the analysis, I added a binary variable of language arts domain identification to each model. Table E6 provides the results for these analyses. Adding the domain identification predictor increased adjusted R-squared by .02 in the behavioral engagement outcome model and by .04 in the emotional engagement model. With the added domain identification predictor, none of the stereotype threat vulnerability coefficients were significant in the behavioral engagement outcome model. Like previously, prior engagement was statistically significant (t = 3.91, p =.001), with each increase of one standard deviation in prior engagement corresponding to a .27 standard deviation increase in behavioral engagement in the fourth grade. Controlling for all the other variables in the model, boys were .11 standard deviations lower on behavioral engagement (t = -2.11, p =.041). Finally, domain identification level was also statistically significant (t = 2.56, p =.014), with a one standard deviation increase associated with a .15 standard deviation increase on behavioral engagement.

In the expanded emotional engagement model, rural stereotype threat and gender stereotype threat were statistically significant. Thus, a one standard deviation gain on the rural stereotype threat scale was associated with a .21 standard deviation increase on the emotional engagement scale (t = 3.61, p =.001) while a one standard deviation increase in gender stereotype vulnerability corresponded to a .16 decrease in emotional engagement (t = -2.24, p =.030). The coefficient for low SES stereotype

threat vulnerability was not statistically significant. Additionally, prior emotional engagement and domain identification were both statistically significant. Students reporting a one standard deviation higher domain identification reported being .21 standard deviations higher on emotional engagement (t = 4.10, p =.000) and a one standard deviation increase on prior emotional engagement led to a .28 standard deviation gain on emotional engagement in the fourth grade (t = 4.24, p =.000).

Finally, I tested emotional and behavioral engagement outcomes models with an added interaction between each type of stereotype threat vulnerability and language arts domain identification. None of the interactions were statistically significant, indicating that associative patterns between stereotype threat and engagement were not different for students with low and high levels of domain identification. The results for this modeling are provided in Tables E7 and E8.

Structural Equation Modeling Analysis

As described in the Methods chapter, first I conducted CFA of the measurement model underlying the hypothesized structural equation model. The fit of the proposed model was determined by multiple absolute and comparative fit indices. In my judgements, I followed guidelines proposed by Hu and Bentler (1999) who recommend the following cutoff criteria for goodness-of-fit indices: (1) RMSEA values close to or below .06; (2) SRMR values close to or below .08; (3) CFI and TLI values close to or above .95. It should be noted that while I report χ^2 value and its significance for each model, I choose not to rely on the χ^2 test for assessing the compatibility of the model to the data because it has been acknowledged that this statistical test is highly sensitive to sample size (Gana & Broc, 2019). Thus, I consider model's fit to data as acceptable even in the absence of nonsignificant χ^2 when the other goodness-of-fit indices meet the cutoff values outlined above. Finally, in evaluating each model, I also examined "potential areas of localized strain" (Brown, 2015, p. 74). In particular, I scanned the results for the absence of Heywood cases and the direction and statistical significance of parameter estimates.

Initially, the fit of the hypothesized measurement model to the data was not acceptable, $\chi^2(467)$ = 862.49, p < 0.001; CFI = .89; TLI = 0.88; RMSEA = .05; SRMR = .05. All the loadings were statistically significant at p < .001 with the direction of indicator estimates as predicted. There were no cases of negative variances.

I re-specified the initial model based on the largest and theoretically reasonable modification indices (mi) suggesting paths to reduce χ^2. Specifically, I added a covariance (mi = 41.45) between item 1 and item 2 on the Behavioral Engagement scale[5], between item 1 and item 3 (mi = 24.19), item 2 and item 14 (mi = 88.51), and between item 3 and item 4 (mi = 24.34) on Gender Identification scale.

Respecified Model 1. Although the revised model showed a better fit as compared to the initial model, goodness-of-fit indices indicated that the fit was still not acceptable, $\chi^2(467)$ = 738.87, p < 0.001; CFI = .92; TLI = 0.91; RMSEA = .04; SRMR = .05. The four added covariances were statistically significant, so I preserved them for further re-specifications of the model. Further, as suggested by modification indices obtained after running Respecified Model 1, I added two covariances between item 3 on Low SES Identification scale and item 2 on Rural Identification scale (mi = 11.59), and between item 3 on Gender Stigma Consciousness scale and item 1 on Low SES Stigma Consciousness scale (mi = 12.49). The other modification indices either suggested correlations that were not reasonable from the theoretical standpoint or that were in opposite to expected direction. Therefore, I did not include them into the re-specified model, even if they could significantly improve the fit. Finally, two modification indices suggested the model fit would improve if item 3 "When I am in class, I participate in class discussions" on Behavioral Engagement scale was allowed to load on Emotional Engagement latent variable (mi = 15.01) and item 1 "My teacher thinks I act the way I do because I am a boy" on Gender Stigma Consciousness scale was allowed to load on Gender Identification scale (mi = 31.35). I made the decision to remove both items. Item 1 on Gender Stigma Consciousness scale was removed due to very large

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[5] See Appendix F for items of Engagement and Stereotype Threat Vulnerability Scales.

modification index. Removing item 3 from Behavioral Engagement scale was also reasonable based on

alpha-if deleted reliability – it was the only item on the scale whose deletion improved the overall α of

the Behavioral Engagement scale.

Respecified Model 2. The resulting measurement model did not exhibit any areas of localized

strain and could be considered as having an acceptable fit to the data based on goodness-of-fit indices,

χ^2(400) = 563.64, p < 0.001; CFI = .95; TLI = 0.94; RMSEA = .04; SRMR = .05. This model was

overidentified with 127 free parameters.

SEM Model. SEM modeling was completed based on re-specified Model 2 with added paths

from the six latent variables representing stereotype threat vulnerability to two latent variables of

emotional and behavioral engagement. Figure F2 represents the final SEM Model that was used for the

analysis. The overall fit of the model to the data was good, χ^2(400) = 563.64, p < 0.001; CFI = .95; TLI =

.94; RMSEA = .04; SRMR = .05. Parameter estimators, including standardized and unstandardized

solutions, are presented in Table F1.

Results showed that rural identification contributed significantly and positively to students'

behavioral engagement (*β = .35, p = .033*). For one standard deviation increase in students' rural

identification, students' behavioral engagement increased by .35 standard deviations. The other paths

did not show statistical significance in relation to behavioral engagement. Four coefficients were

statistically significant in relation to students' emotional engagement. Again, rural identification

contributed positively, with one standard deviation increase leading to .56 standard deviation increase

in emotional engagement (*β = .56, p = .003)*. Thus, in comparison to the relationship observed with the

behavioral engagement, the magnitude of the rural identification coefficient was larger in this case. Both

gender identification and gender stigma consciousness paths were statistically significant. For one

standard deviation increase in gender identification, there was a .34 increase in emotional engagement

(*β = .34, p = .040)* and for one standard deviation increase in gender stigma consciousness students

experienced a .50 standard deviation drop in emotional engagement. So the magnitude of the

coefficient for gender stigma consciousness was larger as compared to gender identification. Finally, and

surprisingly, low SES stigma consciousness had a positive association with emotional engagement. In

particular, one standard deviation increase in stigma consciousness was associated with a .28 increase in

emotional engagement ($\beta = .28, p = .032$). It should be noted that the bivariate correlation between low

SES stigma consciousness factor and emotional engagement was significant and positive. The reversal of

the sign in the full model can be explained by the presence of a suppressor covariate. In this case, rural

stigma consciousness acts as a suppressor – it has a near zero bivariate correlation with the outcome of

emotional engagement and, at the same time, a high .60 correlation with low SES stigma consciousness.

As such, when included in modeling, it explains irrelevant predictive variance in the low SES stigma

consciousness predictor and, thus, yields an increase in beta weight for the latter.

Research Question 5: Is There a Difference in Academic Engagement Between Students Who

Experience Multiple Threats to Identity and Those with a Single Identity Threat?

Considering that rural stereotype vulnerability had a positive association with engagement and,

thus, could be viewed as stereotype lift rather than threat, I had to modify the indicator variable for the

number of stereotype threats to exclude stereotype threat based on rural identification. So the indicator

variable of interest was constructed to include three categories of students, with 0 corresponding to no

threat, 1 – for students with either gender or income stereotype threat vulnerability, and 2 – for

students with both gender and income stereotype threat vulnerability. Like previously, I hypothesized

that students with the largest number of stereotypes will have lower emotional and behavioral

engagement.

The results of the multiple regression analysis are provided in Table G1. The coefficients for the

category of one stereotype threat and two stereotype threats were not statistically significant, which

indicates that controlling for previous level of engagement, condition, and gender, there was no

difference in either emotional or behavioral engagement between students who reported two, one, or

no stereotype threat vulnerability.

Chapter V

DISCUSSION

Academic Engagement of Gifted Learners

The academic engagement levels for gifted learners in the study were high. Moreover, compared to a sample of students not identified as gifted, gifted rural learners in my study had significantly higher levels of both behavioral and emotional engagement in the third grade. So, on the one hand, the results of the study may be taken to provide some evidence for an oft-claimed belief that gifted students are indeed highly engaged learners. However, based on the results, this "optimistic" statement should be taken with certain caveats. Specifically, the engagement advantage of gifted learners seems to hold only for more visible behavioral engagement. Indeed, there was no drop in behavioral engagement over the course of two grades and the magnitude of the difference in behavioral engagement between students in my sample and a sample from general elementary school population was rather large. Therefore, most likely what teachers observe in the classroom is that students who are identified as gifted engage more actively with the lesson as compared to their peers by raising their hand, participating in discussions, and, generally, exhibiting greater effort and hard work. All these are observable indicators of behavioral engagement.

However, the emotional engagement results tell a strikingly different story. First, gifted rural students in my sample did not differ from other elementary school students in emotional engagement in the fourth grade. So, in a way, as it applies to emotional engagement, the statement 'if gifted then always highly engaged' becomes a myth, at least as it pertains to rural gifted learners. Second, similar to students who are not gifted-identified, rural gifted learners' emotional engagement was prone to a significant decline in the fourth grade as compared to the third grade. In this regard, being gifted did not protect gifted rural students from disengaging emotionally over time.

Here it should be noted that for teachers these downward changes in emotional engagement may stay invisible under the cover of students' continuously high levels of behavioral engagement. Skinner and Pitzer (2012), for example, note that teachers and parents tend to focus mostly on students' on-task behavior, disregarding underlying affective processes. This fact is reflected in a significantly larger discrepancy between how teachers assess students' emotional engagement and how students themselves report their emotional engagement as compared to the discrepancy in such measures of behavioral engagement (Skinner et al., 2008). Most likely the issue is not that teachers do not want to or do not know how to focus on students' emotions. The matter of fact is that it may be quite challenging to catch and correctly interpret emotions and feelings.

Further, it should be noted that with gifted learners in particular, teachers' (and parents') tendency to overlook emotional engagement may be even stronger – it is unlikely that teachers will even question the level of gifted students' emotional engagement considering the wide-spread belief in high engagement levels of these students as noted, for example, in McCormick's (2012) qualitative study of academic engagement among elementary school gifted learners.

Importantly, the results of the study point to what I call *the primacy of emotional engagement*. Highly emotionally engaged students will also engage behaviorally at a high level. Yet, as stated above, students can be engaged behaviorally but disengaged emotionally. These findings parallel McCormick's (2012) observations of sequenced disengagement on the part of gifted learners: they first disengaged emotionally, then cognitively, and, finally, behaviorally. From the practical standpoint, this means that teachers will be better off focusing first and foremost on students' emotional engagement. In this case, it is highly likely that high levels of behavioral engagement will follow. This may present a challenge, however. On the one hand, there is a need to focus on emotional engagement. On the other hand, it is the emotional engagement that may be more difficult for teachers to gauge and to sustain.

Gender and Engagement of Gifted Rural Students

Unsurprisingly, boys in my study showed lower behavioral and emotional engagement than girls in both grades. This finding is in line with a large body of research demonstrating that across school years, girls invariably report higher academic engagement. At the same time, it should be noted that the magnitude of the gap in my study was rather small as indicated by standardized coefficients, with the difference of .14 SD for behavioral engagement and .16 SD for emotional engagement. In contrast, Marks (2000), for example, in her study reported a larger gender gap of .30 SD and Pyne (2020) found that as children started school in kindergarten the gender difference in behavioral engagement was already at .40 SD and by fifth grade this gap increased to .50 SD. Even though it may be tempting to assume so, it is unlikely that the smaller difference found in the current study is due to students' giftedness. Rather, the difference in the magnitude of academic engagement gender gap can be explained by how engagement was measured in the current study vs. studies reporting larger coefficients. Thus, both Marks (2000) and Pyne (2020) relied on teacher reported measures, and Marks used a blended measure of emotional and behavioral engagement.

In contrast, Furrer and Skinner (2003) used a student reported measure of behavioral and emotional engagement. For behavioral engagement, the magnitude of gender difference (β = .13 SD) was on par with the coefficient obtained in the current study. So it can be concluded that the gender gap in behavioral engagement observed among gifted rural students is similar to the gap among students not identified as gifted. However, in Furrer and Skinner's study, there was no gender difference on students' self-reported measure of emotional engagement while in the current study the difference was small but significant. It can be that gifted rural girls were more highly engaged because they identified more strongly with the language arts domain as compared to boys – the gender difference in the language arts domain identification was statistically significant, with girls reporting stronger identification, and the coefficient for domain identification contributed positively and significantly to academic engagement.

At the same time, the downward trend in emotional engagement across the two school years was identical for both genders. In other words, gifted rural girls did not manage to hold on to their higher level of emotional engagement despite higher levels of domain identification in both grades. Apparently, there are additional contributors to this decline in emotional engagement among gifted rural girls. In this regard, it would be instructive to compare the pattern found in the current study to the patterns obtained by Pyne (2019; 2020). In particular, Pyne (2020) observed that the gender gap in engagement widened as boys' engagement decreased across grades while girls' engagement, on the other hand, increased. This was the general pattern across all locales with the exception of rural girls, who experienced a sharp decline in engagement. The trend observed in the current study then followed Pyne's rural pattern. It seems that it was the rural context that was defining in how girls engaged, or rather disengaged, emotionally relative to their engagement level in the third grade.

Gifted girls' decline in engagement in the language arts should be especially concerning for educators. Boys' lower engagement, while also worrisome, is often expected based on prior research and, thus, may be more of a focus on the part of educators. Girls' relative disengagement, on the other hand, can be easily overlooked in the rural context because it goes counter to the expected pattern, and especially in a more 'feminine' language arts domain where girls, and gifted girls in particular, are stereotypically expected to succeed more than boys (Plante et al., 2009; Reterlsdorf et al., 2015).

In addition, differently from achievement, which is captured in assessment results over time, decline in academic engagement is less visible for teachers in the U.S. educational system where teachers typically do not move up with students from grade to grade. In such a system, a fourth-grade teacher will essentially observe the same pattern as a third-grade teacher, namely, that girls are more engaged than boys, and will miss the downward trend in both genders from the previous grade. Again, potentially this may prompt a teacher to pay more attention to how boys rather than girls engage in their class at a given moment, overlooking the fact that girls may also experience a decline in

engagement as compared to the previous year. So, although the results of the current study point to gifted rural girls having higher emotional and behavioral engagement as compared to boys, teachers and other educators should pay equal attention to how rural gifted students of both genders engage in the language arts classes. This is especially important considering that in high-poverty rural schools both genders are at risk for lower engagement due to prevailing culture of masculinity and the resulting disconnect between students and teachers (Morris, 2012; Seaton, 2007).

Group Identification and Stigma Consciousness

Unsurprisingly, rural identification and low SES identification were high and stable[6] across the two grades for both genders. This is largely a reflection of the current sample – all students attended schools in high-poverty rural districts. At the same time, it should be noted that there was still variability within student responses on the two measures despite this seeming homogeneity of the sample.

Rural Identification

Variability in rural identification of children residing in rural areas can perhaps be explained by differences in their social experiences of rural place. Place identity is essentially a social identity and, as such, rests on individual's standing within available socio-cultural networks (Dixon & Durrheim, 2000; Peng et al., 2020). Further, Scourfield et al. (2006) posit that individuals participate in various social networks that may or may not overlap with the geographical locale where they reside. A strong sense of belonging in the community is then determined by how constrained one's social networks are to the local community. Conversely, individuals with more external ties will develop less attachment to their locale.

While children's social networks are naturally more restricted to their place due to limited mobility, children still vary in their own social experiences of place (Scourfield et al., 2006). Differences

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[6] Even though the coefficient for *year* was statistically significant for rural identification, the magnitude of change was very small, which allows to consider rural identification as relatively stable across the two grades.

in experiences may be determined by family social networks inside and outside the community, as well as by the centrality of children's other social identities such as gender, ethnicity, or social class. The degree of students' attachment to rural place will ultimately lie at the intersection of these identities. In this regard, it is important to emphasize that rural space is becoming increasingly more diverse (Anthony-Stevens & Langford, 2020; Showalter et al., 2019). For instance, counter to common beliefs about rural place as predominantly White, rural districts participating in the study were located within counties that differed considerably in terms of ethnic-racial demographics, with the range in percentage of White (not Hispanic) population between 54% and 97%[7]. So, in this regard, school districts in the sample were quite diverse, with those located in rural Appalachia being mostly White, those in the Central Southern Virginia having a large Black student population, and districts on the Eastern Shore having a notable proportion of immigrant students. These demographic variations along with concomitant cultural and historical factors set the stage for a diversity of ruralities across districts. Thus, what students experience is not some abstract homogenous rurality, but rather a specific rurality endemic to each region.

We may wonder how such diverse experiences may contribute to students' level of rural identification. Although establishing such specific connections between students' rural experiences and rural identification at the level of statistical significance was beyond the purview of this study, it is noteworthy to consider some peculiar observations from the descriptive statistics of the sample. Notably, the two districts where students reported the highest level of rural identification were predominantly White (97% and 95%) while in the district with the lowest reported rural identification the percentage of White population was one of the lowest – at 61%. Additionally, based on my knowledge of districts' locations, I considered whether students' experiences of rurality could vary due to differences in the proximity of school divisions to suburban and urban areas (Howley & Howley,

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[7] Based on U.S. Census data reported in 2020.

2010). Indeed, rural districts with lower scores on rural identification were located closer to urban

centers as compared to districts with higher reported values, thus potentially providing more

opportunities for students' families to develop social ties outside the immediate rural community, e.g.,

via employment. This rather informal observation provides a potential candidate variable for explaining

variation in the level of students' rural identification. As such, this observation may inform future

research into the relationship between students' experiences of rurality based on school districts'

location and the level of rural identification. Such studies will want to rely on a larger sample of districts

and a more formal operationalization of school districts' proximity to urban and suburban centers,

which can be done, for example, through a categorical variable reflecting NCES classification of rural

districts as fringe, remote, or distant, or a more nuanced construction of a proximity variable (e.g.,

Partridge & Rickman, 2008).

Overall, based on the diversity and geographic location factors, it is possible to suggest that

variability in rural identification found in the present study may stem from differences in students'

experiences of their rural place as supported conceptually through intersectionality (Creshnaw, 1991;

Stewart & McDermott, 2004) or availability of socio-cultural networks (Scourfield et al., 2006).

It is important for educators to be aware of rural students' differentiated identification with

their rural place. Thus, place-based curriculum designed for a rural learner should respond to this

multiplicity of rural experiences, becoming the curriculum of rural places. For instance, when developing

a curricular intervention for project PLACE, the research team first surveyed teachers to understand the

meaning and experiences of rural place from the perspective of teachers who work in each community.

This resulted in curricular modifications reflective of district-specific industries, histories, and

sociocultural traditions (Callahan & Missett, 2021). Further, students were also continuously afforded

opportunities to share and reflect upon their unique place-based experiences because, as stated above,

even within the same district and community, students may experience place differently.

Low SES Identification

Although averages for low SES identification were also high – above 3.0 on a 5.0-point scale,

they were lower than rural identification means across both genders and grades (see Table D1 and Table

D2). In other words, students more readily identified with being rural than with having low

socioeconomic status. However, it would be challenging to draw any definitive conclusions about how

gifted rural students identified with low SES. Several scenarios are possible.

The most basic explanation would be that a somewhat lower average on low SES was reflective

of students' true socioeconomic standing, i.e., not all students came from low SES families. Second, it is

also possible that some students preferred not to identify strongly with low SES because, in contrast to

gender and rural identification, this type of social identity tends to always bear stigmatizing attributes.

As discussed in the literature review, elementary school children associate positive attributes with being

rich and negative attributes with being poor (Baldus & Tribe, 1978; Sigelman, 2012).

Finally, the question remains open as to whether elementary school children are yet able to

develop this type of group identification – in this case, a lower average may be indicative of some

students' choosing the neutral response option. On the one hand, literature suggests that children

become aware of their own social class by the beginning of middle school (Durante & Fiske, 2017), i.e.,

somewhat later than the developmental period represented in the current sample. On the other hand,

at least based on research into other types of social identity such as race and gender, centrality and

salience of identity develop between ages 7 and 10 (Umaña-Taylor et al., 2014). The results of the

current study point towards stability of low SES identification across third and fourth grade. It is equally

possible that students have already developed this type of identification prior to third grade and, hence,

it has plateaued and shows stability, or that at least some students will go on to develop low SES

identification later. In this regard, it should be noted that although the interactive term between year

and gender was not significant in the study, descriptive statistics show an increase in boys' low SES

identification in the fourth grade as compared to the third grade.

Gender Identification

Gender identification was the only type of group identification that showed a significant change

from third to fourth grade and the only type of identification that followed a normal distribution. This

"instability" of gender identification may be indicative of students' being in flux and actively exploring

their gender identity in upper elementary school grades. Again, considering that gender centrality and

salience develop in middle childhood (Halim & Ruble, 2010), it comes as no surprise that students would

be in the exploration stage of their gender in third and fourth grades.

Interestingly, there was no difference in centrality of gender identification between gifted rural

boys and girls even though studies with nonrural populations show that elementary school girls tend to

have a higher level of gender centrality (Turner & Brown, 2007), typically because one's minoritized

status on a particular social identity leads to higher significance of that identity in one's self-concept as,

for example, is the case of ethnic minority students who have higher ethnic-racial identification with

their group as compared to White students (Phinney, 1992; Phinney et al., 1994). The absence of the

expected difference in gender identification between boys and girls in the current study can be

explained by the importance of other group identifications that fill in a larger space in students' self-

concept. In other words, regardless of gender, for rural gifted elementary students, identifying with rural

place and low SES may be more pertinent to their self-concept.

Stigma Consciousness

Children in the current study in both third and fourth grades reported higher levels of gender

stereotype consciousness as compared to rural and low SES stereotyping. Naturally, this may stem from

differences in exposure experiences. Typically, stereotype threat vulnerability would be highest in the

presence of the nonstigmatized group (McGlone et al., 2006; Murphy et al., 2007). While the immediate

environment of study participants includes both genders, this environment limits children's encounters with other groups within place and social class categories.

It is important to note that with the current sample all three types of group stigma consciousness showed variability and stability across the two years. In other words, gifted rural children in upper elementary grades already vary in dispositional stereotype threat vulnerability. This bears implications for educational interventions aimed at mitigating stereotype threat – elementary school age should be considered appropriate, i.e., not too early, for implementing such preventive measures. This may be particularly true for gender stereotype threat considering that students reported higher stigma consciousness for this social category and that upper elementary years seem to represent a sensitive period for gender identification development. At the same time, rural and low SES stereotype threat vulnerability should not be dismissed despite reported lower values on stigma consciousness in the current study. After all, as shown by Picho and Brown (2011), high group identification makes one more susceptible to stereotype threat, and rural gifted students reported high identification with both rural and low SES groups. With age, as rural students' experiences may expand to include exposure to stigmatizing messages about being rural and poor, they may become increasingly at risk of stereotype threat effects.

Stereotype Threat and Academic Engagement

One important finding in the current study is that rural stereotype threat vulnerability for gifted rural students contributes positively to academic engagement. This effect can be compared to stereotype lift. According to stereotype threat theory, stereotype lift occurs for non-stigmatized groups with high group identification (Schmader, 2002). Averages on rural stereotype vulnerability subscales in the current sample match this very pattern – students, on average, have scored high on rural group identification and low on rural stigma consciousness. Further, SEM analysis brings to the forefront a more nuanced understanding of the relationship between the two latent variables of group

identification and stigma consciousness with academic engagement. In particular, it was the rural group

identification measure, and not the stigma consciousness variable, that had a significant relationship

with behavioral and academic engagement. In essence, what mattered was how strongly students

identified with being rural.

Although this "lifting" experience, whereby students' engagement is higher for those with

higher levels of rural identification, is similar to stereotype lift in terms of its effect, it also differs from

stereotype lift in an important way. Stereotype lift is based on social comparison mechanisms and, as

such, occurs when individuals are aware of existing stereotyping towards an outgroup (Walton & Cohen,

2003). This is hardly the case for the present study – there was no outgroup present and it is unlikely

students were engaged in making any comparative inferences whatsoever. Rather, in the absence of

high rural stigma consciousness, rural group identification had a protective function similar to that

observed in relation to ethnic identity as, for example, in studies showing that minoritized students'

ethnic identity can contribute positively to maintaining psychological resiliency (Wong et al., 2003) and

self-esteem (Umaña-Taylor & Updegraff, 2007).

Most likely, high rural identification facilitates a sense of relatedness and feelings of belonging,

which are, in contrast, undermined in stereotype threat situations (Walton & Carr, 2012). Students with

high rural identification must be feeling more emotionally safe and "at home" in their classrooms as

compared to students with lower identification. Notably, academic engagement literature points to

belonging as a prominent factor in fostering students' academic engagement (Appleton et al., 2008),

and, especially, when it comes to emotional engagement (Mahatmya et al, 2012). The results of the

current study fall in line with this literature – rural identification had a stronger contribution to

emotional engagement as compared to behavioral engagement.

Above I discussed the primacy of emotional engagement and suggested teachers should be

focusing on emotional engagement not only as a means of increasing emotional engagement per se, but

also because emotional engagement translates into behavioral engagement. In this regard, it can be further suggested that to foster emotional (and, consequently, behavioral) engagement of gifted rural students, educators should create an educational environment conducive to developing strong rural group identification. This can be accomplished through place-conscious pedagogy that focuses on rural place as a critical platform for understanding one's identity in relation to local community and the rest of the world (Gruenewald, 2003a) and, thus, teaches students to appreciate their self and withstand stigmatization from dominant narratives such as that "to be rural is to be sub-par" (Theobald & Wood, 2010, p. 17). Strong rural identification can serve as a source of resiliency and a buffer against stereotype threat situations that may arise in the future when gifted rural students find themselves in learning contexts that either involve direct interactions with the nonstigmatized dominant outgroup or promote more subtle threatening situational cues supporting the oppressor narrative.

Further, as hypothesized, gender stereotype threat vulnerability contributed negatively to emotional engagement. However, there was no significant effect on behavioral engagement. Again, based on the primacy of emotional engagement, this absence of significant relationship between gender stereotype threat and behavioral engagement may well be complemented with "yet." With time, under persistent gender stereotype threat, the decline in emotional engagement is likely to turn into noticeable decline in behavioral engagement. Due to relative invisibility of emotional engagement, this decline will be observed much later, yet the study shows that the origin of disengagement for rural gifted students may be placed in elementary school years.

Interestingly, counter to the hypothesis that only boys' engagement will be affected by gender stereotype threat, there was no such gendered difference in the relationship between gender stereotype threat vulnerability and academic engagement. One possible explanation for this finding is that gifted students of both genders could experience gender-based stigmatization based on different types of existing stereotypes. While boys may have been affected by a specific stereotype about girls'

superiority in the language arts (Martinot et al., 2012), girls may have been influenced by stereotyping

about general intellectual dominance of boys. The latter is supported by literature on the prevalence of

masculinity culture in high-poverty rural contexts where girls are invariably brought up with the implicit

message about boys' superior intellectual abilities and the expectation to de-emphasize their own

intelligence (Morris, 2012). Perhaps in such contexts, gender identity for girls is more likely to develop

around self-deprecation of intelligence rather than self-aggrandizing associations with the language arts

domain. Finally, it should also be noted that the language in the WIAHIL gender stigma consciousness

subscale was not explicitly connected to stereotypes associated with either the language arts or general

intelligence. We know that children at this age are conscious about both stereotypes. Thus, when

responding to the survey, students were free to interpret gender-biased treatment in school through

either lens.

Previously, researchers brought up similar explanations for the absence of stereotype threat

effects in the language arts domain with older male students (Bedynska et al., 2020). In particular, it was

proposed that with age, boys may learn to capitalize on the intelligence dominance stereotype and, in

doing so, overcome stereotype threat favoring girls in the language arts. However, it may be that unlike

older students, elementary school boys have not yet learned to associate their gender identity with an

advantageous for them stereotype. Girls, on the other hand, may not have learned to capitalize on their

advantage in the language arts because, as mentioned above, the rural context overshadows this

advantage with a competing stereotype about intelligence. Therefore, students of both genders cannot

rely on their relative stereotyped gender advantage as a defense mechanism against threatening

situational cues and automatically "choose" to focus on what is negative. In other words, with older

students, the effect of stereotype threat in the language arts disappears because both genders hold on

to an advantageous association with their gender identity while with younger students gender-based

stereotype threat in the language arts domain may in fact develop for both genders as they struggle to

capitalize on their gender-based advantage. In general, these observations raise a concern for research

conducted within stereotype threat theory. It is rarely the case that researchers explore the content of

stigmatized identity. Instead, the focus is typically on the degree to which study participants identify

with their group. Yet, a particular identity may be "filled up" with different associations depending on

factors contributing to participants' experiences within the framework of that identity.

Counter to my hypothesis, based on the OLS modeling results, there was no significant

association between stereotype threat vulnerability based on low SES and academic engagement.

Further, SEM modeling yielded unexpected results with low SES stigma consciousness factor

contributing positively to emotional engagement. One possible explanation for this association is that

students who self-reported high values on the low SES stigma consciousness subscale did not associate

this stigmatization with their immediate school environment. First of all, in each particular school, the

majority of students come from low SES background. Second, teachers are also likely to relate to these

students. Azano and Callahan (2021) reported that 81% of teachers in Cohort 3 of the study resided in

their respective school district[8]. In addition, students had the lowest stigma consciousness on item one

of the low SES subscale "How much money my family has affects how *teachers* act toward me." As we

know, teacher-student relationships are vital for healthy emotional engagement (Skinner & Pitzer,

2012). Thus, it is likely that the relatedness mechanism for students with high self-reported low SES

stigma consciousness could contribute to their emotional engagement.

Multiple Identity Threats and Engagement

In the present study, a greater number of stereotype threats experienced by students did not

contribute to increased disengagement. This finding deviates from the results of two previous

experimental laboratory studies (Gonzales et al., 2002; Tine & Gotlieb, 2013) that found a significant

contribution of the number of threats to decreased working memory and math test performance among

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[8] These data were not collected for Cohort 1 and 2.

college students. This difference in results is due to low SES stereotype threat vulnerability not contributing to decreased engagement in the current study. Thus, there is no additional downward weight on academic engagement for students who self-report both gender and low SES stereotype threat vulnerability. All in all, what mattered for academic engagement was not the number of stereotype threats, but the type of stereotype threat: gender stereotype threat vulnerability was associated with decreased engagement while rural stereotype threat vulnerability contributed to higher levels of academic engagement for gifted rural learners.

Limitations

This study has certain methodological and conceptual limits that should be noted. Methodologically, the biggest challenge was a rather small sample size for conducting SEM. While the sample was sufficient for the model described in the study, the sample size did not allow to construct more sophisticated models that would have been sensible in the context of the study. For instance, with the available sample, it was not feasible to explore a higher order SEM model with each pair of group identification and stigma consciousness latent variables contributing to a single latent stereotype threat variable. Such a model would have reflected better how Picho and Brown (2011) conceptualized the measurement and scoring of stereotype threat. Further, the sample size precluded from testing SEM models by groups such as gender, treatment and control conditions, and high and low domain identification. For these by-group analyses, I relied solely on OLS modeling.

Yet another concern about the sample in relation to the current study is the possibility of a pre-selection bias whereby students who were most vulnerable to stereotype threat were not selected for the gifted program in the first place because their performance on identification measures had been affected by stereotype threat. On the one hand, project Place method of student identification for the gifted program relied on multiple measures of identification and local norms and, as such, was much more likely to allow the identification of vulnerable students from diverse backgrounds who are typically

missed by traditional methods of identification. On the other hand, it should be admitted that even with this alternative method of identification, the possibility of the pre-selection bias still exists.

Yet another limitation of the study is the absence of demographic variables such as students' socioeconomic status and ethnicity. The first was not collected as part of project PLACE data because the focus was on high-poverty districts. There were also inconsistencies between districts in how they reported students' ethnicity making it impossible to include these data. Namely, some districts responded only to the second (i.e., race) part of a two-part question on race and ethnicity, thus blending Hispanic with the White category. Having students' ethnicity would have allowed to give a fuller consideration to intersectionality as, for instance, in exploring whether observed differentiation in rural identification was associated with students' ethnic-racial identity and whether the relationship between stereotype threat and academic engagement differed for rural students from various ethnic-racial backgrounds. Having students' socioeconomic status would have added to the understanding of somewhat lower levels of low SES group identification, i.e., did students choose lower group identification due to negative stigmatization associated with this group or was it simply a reflection of students' true socioeconomic status?

Further, the study would have been more complete if I had considered academic engagement as a three-dimensional construct comprised of behavioral, emotional, and cognitive factors. It should be noted that in scholarly literature there is no consensus on the specific dimensions and the number of those dimensions within the concept of engagement (Reschly & Christenson, 2012). Reeve (2012), for example, proposes a four-part classification of engagement adding agentic engagement to the three dimensions mentioned above, and Reschly and Christenson (2006) partition engagement into academic, behavioral, cognitive, and psychological components. At the same time, a three-component taxonomy has recently become the most prevalent and well-established model. Thus, Skinner and colleagues (1998), whose Engagement vs. Disaffection instrument was adapted for the current study, had originally

adhered to a bifactor model consisting of emotional and behavioral engagement, but more recently added the cognitive engagement component to their taxonomy (e.g., Skinner & Pitzer, 2012).

Cognitive engagement may be especially relevant in the context of gifted education because it focuses on self-regulation (Wolters & Taylor, 2012), thought processes and metacognitive strategies necessary to comprehend complex ideas (Fredricks et al., 2004) and go beyond what is minimally required (Finn & Zimmer, 2012). As such, cognitive engagement is associated with mastering challenging material. Cognitively, gifted students are described as learners who prefer complexity and challenge (Chichekian & Shore, 2014). Thus, high cognitive engagement can perhaps be considered a defining characteristic of gifted students and, at the same time, an indicator of a healthy learning environment for such learners.

There is certainly strong theoretical grounding for the relationship between stereotype threat vulnerability and cognitive engagement. For instance, under Schmader et al.'s (2008) cognitive model of stereotype threat, individuals in stereotype threat situations re-direct their cognitive resources (e.g., the central executive component of working memory) from the task at hand to resolving the cognitive imbalance created by dissonant propositions about self and one's group. This is especially true when individuals engage in challenging tasks (Spencer & Castano, 2007).

Finally, considering that the results of the study point to the primacy of emotional engagement, which is largely dependent on teacher-student interactions and relationships, the study would have benefitted from including teacher-related variables into modeling the association between stereotype threat and engagement. Previous empirical studies of academic engagement have examined how teachers shape engagement by fostering caring and respectful relationships with students (Brewster & Bowen, 2004), providing emotional support (Ruzek et al., 2016), structure and autonomy (Skinner & Belmont, 1993). Including such variables would have allowed to look into additional explanatory mechanisms in the relationship between stereotype threat and engagement.

Further Research

The nature of the current study had to be exploratory as necessitated by the scarcity of previous research into academic engagement and stereotype threat among gifted rural learners. In some respects, it is the first study of the relationship between the two phenomena and, being fist, this study leaves a lot of uncovered ground for further investigation.

The next logical step in research should perhaps be the move from exploration to explanation. What are some of the mechanisms that tie stereotype threat and academic engagement? Researchers could consider potential moderators and mediators of the relationship based on propositions from stereotype threat theory and previous empirical studies of academic engagement. As discussed above, students' feelings of belonging and relatedness could be tested as such explanatory variables. In this regard, researchers could consider teachers' group identification in relation to students' identification. For example, it can be that the positive association between students' high rural identification and academic engagement, as found in this study, is more pronounced for students taught by teachers with matching high levels of rural identification. Similarly, it is possible that the unexpected positive relationship between low SES stigma consciousness and engagement can be attributed to students' feeling emotionally connected to their teachers. Yet another promising candidate for explaining the relationship between stereotype threat and engagement would be the learned helplessness construct that was found to mediate the relationship between stereotype threat and disidentification from the domain (Bedyńska et al., 2020).

Another research implication based on the results of this study would be to investigate whether academic engagement could serve as a mediator in the relationship between stereotype threat vulnerability and student achievement. El-Abd et al. (2019) did not find any direct association between gender-based stereotype threat vulnerability and student achievement in a subsample of students from the current study. At the same time, this study points to a significant inverse relationship between this

type of stereotype threat and emotional engagement. Considering that academic engagement has consistently been linked to academic performance (Finn & Zimmer, 2012), it is possible to hypothesize that there is an indirect association, via engagement, between gender stereotype threat and student achievement.

Finally, further research could be expanded to longitudinal studies of stereotype threat vulnerability factors. Beyond ethnicity and gender identity, there is still little understanding of how students develop group identification and stigma consciousness in middle childhood. In particular, more data points over longer periods of time are needed to make definitive conclusions about developmental patterns of rural and low SES group identification during elementary school years. Researchers should perhaps conceptualize and plan out these studies within the theoretical framework of intersectionality. As mentioned above, many rural districts are becoming increasingly more diverse. Descriptive statistics in the current study implicate that the observed differences in rural, low SES, and gender group identification may well be due to students' ethnic-racial identities and the overall racial composition of a particular rural community. A first-generation immigrant child attending a racially diverse rural school, a White student whose family has lived in the same community for many generations and who attends a predominantly White school in rural Appalachia, and a Black student in a Black-majority school are likely to have varying degrees and perspectives on rural identification. Thus, future research questions may need to focus specifically on the intersection of students' multiple types of group identification, including their ethnic-racial identity.

Similarly, future research into academic engagement of gifted learners will benefit from longitudinal designs. Such studies would allow to see more complete patterns of developmental trends in how gifted learners engage in the classroom. For example, in the current study there was no statistically significant change in behavioral engagement and, at the same time, I have suggested that the decline in emotional engagement may lead to future declines in behavioral engagement in

subsequent grades. One possible study could be designed to investigate whether this primacy of

emotional engagement indeed holds for gifted learners, i.e., if they will experience a downward trend in

behavioral engagement in middle school following a decline in emotional engagement in elementary

school. Also, it would be worthwhile to explore developmental trends in gifted learners' emotional

engagement. In this regard, researchers could perhaps consider whether certain characteristics of gifted

learners can contribute to reversing the downward trend in emotional engagement, even in the

presence of stereotype threat. One such characteristic we could consider is the academic self-concept of

gifted learners (Matthews, 2014). Notably, in their meta-analytic study of self-concepts in students

identified as gifted and not, Litster and Roberts (2011) found that gifted learners reported higher

academic self- concept. Moreover, the difference between these groups of students increased with

grade level. Perhaps, as gifted learners become older, they can tap into their increased academic

perceived competence and become more resilient to long-term effects of stereotype threat.

Developmental trends in academic engagement obtained through longitudinal research would

allow for consideration of changes in academic engagement in relation to other trends noted in

educational research. One such trend, the fourth-grade slump, has received considerable attention in

educational psychology literature. Torrance (1968) first registered this phenomenon in relation to a

decline in divergent thinking (i.e., fluency, flexibility, originality, and elaboration) that occurred between

third and fourth grade students . During this grade transition, a similar slump has also been reported in

students' reading (Sanacore & Palumbo, 2008) and mathematics (Grayson & Betancourt, 2008)

achievement. Notably, at least as it relates to reading, in some studies (e.g., Chall & Jacobs, 2003) this

decline was observed only in children experiencing poverty. Considering this, the findings in the current

study may perhaps be viewed as pertaining to a more general phenomenon of how low-income children

experience school as they transition from the third to the fourth grade. However, to make more

definitive conclusions about the existence of the fourth-grade slump in relation to academic

engagement, researchers need to determine and understand developmental patterns of gifted rural students' engagement across multiple grades. For instance, it may well be that the slump begins earlier or that there are multiple slumps (and/or recoveries) experienced by students during their school experience.

Finally, it should be mentioned that across studies there are still inconsistences concerning the existence of the fourth-grade slump. Thus, in a recent meta-analysis of the development of divergent thinking, Said-Metwaly et al. (2021) found no evidence of a fourth-grade slump. At the same time, the authors observed the existence of the slump under certain conditions. For example, this was the case when the relationship between grade transition and fluency, which is one of the indicators of divergent thinking, was moderated by intellectual giftedness. Only students who were not identified as gifted experienced a significant decrease in fluency from the third to the fourth grade. These results differ from the pattern observed in the present study where gifted students did experience a decrease in emotional engagement. Perhaps other factors such as rurality and low income contribute to this decrease or perhaps, differently from the creativity slump, the fourth-grade engagement slump, if it exists, is not moderated by giftedness. In other words, not all slumps are the same and more studies are needed to understand the exact nature of the engagement slump for gifted students, if it indeed exists.

Conclusion

In this study, I explored two important affective factors associated with student academic achievement: academic engagement and stereotype threat. Previously, both factors had received little research attention in relation to gifted elementary school students.

The results of the study call for a stronger focus on academic engagement on the part of educators of gifted learners. Parents and teachers of gifted students should not assume that gifted learners are always engaged due to their giftedness. In other words, engagement is not an innate characteristic that accompanies giftedness no matter what. Similar to their not gifted-identified peers,

gifted rural students of both genders tend to disengage emotionally over the years. This finding points to the urgency and necessity for meaningful strategies to incite and sustain gifted students' academic engagement. Considering the primacy of emotional engagement, such strategies should first and foremost focus on raising learners' emotional engagement. As indicated by the results of the study, for rural students residing in rural areas, engagement levels may be increased through curricular and instructional approaches catering to students' rural group identification. Finally, educators and parents should be extra vigilant when it comes to academic engagement of rural girls gifted in the language arts. For girls, the decline in engagement can be doubly masked by two commonly held stereotypes: the assumed advantage of girls in the language arts domain and the assumed higher engagement of girls as compared to boys.

The volume of accumulated theoretical knowledge and empirical findings on stereotype threat is such that researchers should consider moving beyond experimental lab studies examining performance on cognitive tests with college student population. With this study, I have done exactly that. First, this investigation showed that stereotype threat was relevant to a classroom setting beyond carefully crafted lab experiments. Second, it demonstrated that stereotype threat could have a damaging effect not only on students' performance during test-taking, but also on other long-term aspects of students' educational experiences such as academic engagement. Finally, for vulnerable groups of students, stereotype threat situations can occur as early as elementary school years.

What are the implications for gifted education? First and foremost, it is important to consider that stereotype threat experiences can potentially be a factor in underrepresentation of minoritized students in gifted education programs. Students are typically identified for gifted services in second and third grades of elementary school. However, even at this age, some gifted learners may not engage to their fullest potential because, among other reasons, they may be more vulnerable to stereotype threat. By definition of stereotype threat, this can occur even without direct presence of discrimination.

Fortunately, there are examples of successful interventions aimed at mitigating stereotype threat (Borman et al., 2016; Cohen et al., 2012; Spencer et al., 2016). Cohen and colleagues (2012) describe effective social identity threat interventions as those that focus on "setting explicitly high standards, encouraging optimistic interpretations of adversity, and validating students' sense of belonging and self-integrity" (p. 290). The authors provide evidence for the effectiveness of one such educational intervention with middle school Black students. The intervention consisted in a series of expressive writing exercises where students were asked to write about their most important values. Cohen et al. theorized that the focus on values contributed to students' increased sense of self-integrity with the "view of oneself as virtuous, efficacious, and socially connected" (p. 289). The positive effect of the intervention was tangible even two years later, with students in the treatment group significantly improving their grades.

Similarly, the project Place intervention to reduce stereotype threat among gifted rural students included opportunities for students to express their rural identity and values through writing activities (Azano et al., 2021). While there were no immediate effects of the intervention, through such activities students worked towards better self-affirmation. The hope is that if in the future students are exposed to stereotype threatening situations, they will be prepared to cope better with the threat and, consequently, sustain their engagement and academic performance.

References

Abayomi, K., Gelman, A., & Levy, M. (2008). Diagnostics for multivariate imputations. *Journal of the*
*Royal Statistical Society: Series C (*Applied Statistics), *57*(3), 273 – 291.
https://doi.org/10.1111/j.1467-9876.2007.00613.x

Alexander, K. L., Entwisle, D. R., & Dauber, S. L. (1993). First-grade classroom behavior: Its short-and
long-term consequences for school performance. *Child development, 64*(3), 801-814.
https://doi.org/10.1111/j.1467-8624.1993.tb02944.x

Allport, G. W. (1954). *The nature of prejudice.* Addison-Wesley.

Alter, A. L., Aronson, J., Darley, J. M., Rodriguez, C., Ruble, D. N. (2010). Rising to the threat: Reducing
stereotype threat by reframing the threat as a challenge. *Journal of Experimental Social*
Psychology, 46(1)*,* 166 – 171. https://doi.org/10.1016/j.jesp.2009.09.014

Ambady, N., Shih, M., Kim, A., & Pittinsky, T. L. (2001). Stereotype susceptibility in children: Effects of
identity activation on quantitative performance. *Psychological Science, 12*(5), 385–390.
https://doi.org/10.1111/1467-9280.00371

Anderman, E.M., & Patrick, H. (2012). Achievement goal theory, conceptualization of ability/intelligence,
and classroom climate. In Christenson, S. L., Reschly, A. L., & Wylie, C. (Eds.), *Handbook of*
research on student engagement (pp. 173-192). Springer.

Anderson, B. N., Martin, J. A. (2018). What K-12 teachers need to know about teaching gifted Black girls
battling perfectionism and stereotype threat. *Gifted Child Today, 41*(3), 117 – 124.
https://doi.org/10.1177/1076217518768339

Anger, S. (2012). Intergenerational transmission of cognitive and noncognitive skills. In J. Ermisch, M.
Jäntti, & T. M. Smeeding (Eds.), *From parents to children: The intergenerational transmission of*
advantage (pp. 393 – 421). Russell Sage Foundation.

Anthony-Stevens, V., & Langford, S. (2020). "What do you need a course like that for?" Conceptualizing

diverse ruralities in rural teacher education. *Journal of Teacher Education*, *71*(3), 332-344.

https://doi.org/10.1177/0022487119861582

Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: Critical

conceptual and methodological issues of the construct. *Psychology in the Schools, 45*(5), 369-

386. https://doi.org/10.1002/pits.20303

Aronson, J. (2002). Stereotype threat: Contending and coping with unnerving expectations. In J. Aronson

(Ed.), *Improving academic achievement: Impact of psychological factors on education* (279 –

301). Academic Press.

Aronson, J., & Inzlicht, M. (2004). The ups and downs of attributional ambiguity: Stereotype vulnerability

and the academic self-knowledge of African American college students. *Psychological*

science, 15(12), 829-836. https://doi.org/10.1111/j.0956-7976.2004.00763.x

Aronson, J., Lustina, M. J., Good, C., Keough, K., Steele, C. M., & Brown, J. (1999). When white men can't

do math: Necessary and sufficient factors in stereotype threat. *Journal of Experimental Social*

Psychology, 35(1), 29-46. https://doi.org/10.1006/jesp.1998.1371

Aronson, J., Quinn, D. M., & Spencer, S. J. (1998). Stereotype threat and the academic

underperformance of minorities and women. In J. K. Swim & C. Stangor (Eds.), *Prejudice: The*

target's perspective (pp. 83–103). Academic Press.

Aronson, J., & Steele, C. M. (2005). Stereotypes and the fragility of academic competence, motivation,

and self-concept. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation*

(pp. 436 – 456). The Guilford Press.

Assor, A. (2012). Allowing choice and nurturing an inner compass: Educational practices supporting

students' need for autonomy. In Christenson, S. L., Reschly, A. L., & Wylie, C. (Eds.), *Handbook of*

research on student engagement (pp. 421-440). Springer

Azano, A. P., Bass, E. L., & Wright H. (2021). Stereotype threat for rural students. In A. P. Azano & C. M. Callahan (Eds.) *Gifted education in rural schools: Developing place-based interventions* (p. 21 – 27). Routledge.

Azano, A. P. & Callahan, C. M. (2021). Place as context and content: Project design. In A. P. Azano & C. M. Callahan (Eds.) *Gifted education in rural schools: Developing place-based interventions* (p. 28 – 38). Routledge.

Azano, A. P., Callahan, C. M., Missett, T. C., & Brunner, M. (2014). Understanding the experiences of gifted education teachers and fidelity of implementation in rural schools. *Journal of Advanced Academics, 25*(2), 88-100. https://doi.org/10.1177/1932202X14524405

Azur, M. J., Stuart, E. A., Frangakis, C., Leaf, J. (2011). Multiple imputation by chained equations: What is it and how does it work? *International Journal of Methods in Psychiatric Research, 20*(1), 40 – 49. https://doi.org/10.1002/mpr.329

Baldeón-Padilla, D. S., Valencia-Serrano, M., & Alvarado, J. I. (2020). Amenaza de estereotipo, género y desempeño académico en matemáticas [Stereotype threat, gender and academic performance in mathematics]. *Magis, Revista Internacional de Investigación en Educación, 13*, 1-22. https://doi.org/ 10.11144/Javeriana.m13.aegd

Baldus, B., & Tribe, V. (1978). The development of perceptions and evaluations of social inequality among public school children. *Canadian Review of Sociology/Revue Canadienne de Sociologie, 15*(1), 50-60. https://doi.org/10.1111/j.1755-618X.1978.tb00570.x

Bandura, A. (1997). *Self-efficacy: The exercise of control.* W.H. Freeman and Company.

Batruch, A., Autin, F., & Butera, F. (2017). Re-establishing the social-class order: Restorative reactions against high-achieving, low-SES pupils. *Journal of Social Issues, 73*(1), 42 – 60. https://doi.org/10.1111/josi.12203

Baumeister, R., & Leary, M. (1995). The need to belong: Desire for interpersonal attachments as a

fundamental human motivation. *Psychological Bulletin, 117,* 497 – 529.

Beasley, M. A., & Fischer, M. J. (2012). Why they leave: The impact of stereotype threat on the attrition

of women and minorities from science, math and engineering majors. *Social Psychology of

Education, 15*(4), 427-448. https://doi.org/10.1007/s11218-012-9185-3

Bedyńska, S., Krejtz, I., Rycielski, P., & Sedek, G. (2020). Stereotype threat as an antecedent to domain

identification and achievement in language arts in boys: a cross-sectional study. *Social

Psychology of Education, 23,* 755 – 771. https://doi.org/10.1007/s11218-020-09557-z

Bell, A. E., Spencer, S. J., Iserman, E., & Logel, C. E. (2003). Stereotype threat and women's performance

in engineering. *Journal of Engineering Education, 92*(4), 307-312.

https://doi.org/10.1002/j.2168-9830.2003.tb00774.x

Ben-Zeev, T., Fein, S., & Inzlicht, M. (2005). Arousal and stereotype threat. *Journal of Experimental Social

Psychology, 41*(2), 174-181. https://doi.org/10.1016/j.jesp.2003.11.007

Biek, D. M. (2006). *Stereotype threat and domain identification.* [Doctoral Dissertation. Cornell

University]. ProQuest Dissertations. https://search-proquest-

com.proxy01.its.virginia.edu/docview/305323210/6E5978E39FA943CAPQ/2?accountid=14678

Bingham, G. E., & Okagaki, L. (2012). Ethnicity and student engagement. In S.L. Christenson, A.L. Reschly,

& C. Wylie, C. (Eds.), *Handbook of research on student engagement* (pp. 65 – 96). Springer.

Borman, G. D., Grigg, J., Hanselman, P. (2016). An effort to close achievement gaps at scale through self-

affirmation. *Educational Evaluation and Policy Analysis, 38*(1), 21 – 42.

https://doi.org/10.3102/0162373715581709

Blascovich, J., Spencer, S. J., Quinn, D., & Steele, C. (2001). African Americans and high blood pressure:

The role of stereotype threat. *Psychological Science, 12*, 225–229.

Bodenhausen, G. V., & Macrae, C. N. (1998). Stereotype activation and inhibition. In R. S. Wyer (Ed.), *Advances in social cognition* (Vol. 11, pp. 1-52). Erlbaum.

Brantlinger, E. (2003). *Dividing classes: How the middle class negotiates and rationalizes school advantage.* RoutledgeFalmer.

Brewer, M. B. (1996). When contact is not enough: Social identity and intergroup cooperation. *International Journal of Intercultural Relations, 20*(3/4), 291 – 303. https://doi.org/10.1016/0147-1767(96)00020-X

Brewster, A. B., & Bowen, G. L. (2004). Teacher support and the school engagement of Latino middle and high school students at risk of school failure. *Child and Adolescent Social Work Journal*, *21*(1), 47-67.

Brodersen, A. V., Brunner, M. M., & Missett, T. C. (2018). Traditional identification instruments. In C. M. Callahan & H. L. Hertberg-Davis (Eds.), *Fundamentals of gifted education: Considering multiple perspectives* (2nd ed., pp. 103 – 115). Routledge.

Brown, C. S. (2017). School context influences the ethnic identity development of immigrant children in middle childhood. *Social Development, 26*, 797 – 812. http://doi.org/10.1111/sode.12240

Brown, R. P., & Lee, M. N. (2005). Stigma consciousness and the race gap in college academic achievement. *Self and identity, 4*(2), 149 – 157. https://doi.org/10.1080/13576500444000227

Brown, R. P., & Pinel, E. C. (2003). Stigma on my mind: Individual differences in the experience of stereotype threat. *Journal of experimental social psychology, 39(*6), 626-633. https://doi.org/10.1016/S0022-1031(03)00039-8

Budge, K. (2006). Rural leaders, rural places: Problem, privilege, and possibility. *Journal of Research in Rural Education, 21*(13), 1 – 10.

Burn, S. M., Aboud, R., & Moyles, C. (2000). The relationship between gender social identity and support for feminism. *Sex Roles, 42*(11-12), 1081-1089. https://doi.org/10.1023/A:1007044802798

Callahan, C. M. (2018). Identification of gifted and talented students. In C. M. Callahan & H. L. Hertberg-Davis (Eds.), *Fundamentals of gifted education: Considering multiple perspectives* (2nd ed., pp. 94 – 102). Routledge.

Callahan, C. M., Azano, A. P., Park, S., Brodersen, A. V., Caughey, M., Bass, E. L., & Amspaugh, C. M. (2020). Validation of Instruments for Measuring Affective Outcomes in Gifted Education. *Journal of Advanced Academics, 31*(4), 470-505. https://doi.org/10.1177/1932202X20929963

Callahan, C. M., & Missett, T. C. (2021). Place-based CLEAR curriculum. In A. P. Azano & C. M. Callahan (Eds.) *Gifted education in rural schools: Developing place-based interventions* (p. 108 – 118). Routledge.

Callahan, C. M., Moon, T. R. (2007). Sorting the wheat from the chaff: What makes for good evidence of effectiveness in the literature in gifted education. *Gifted Child Quarterly, 51*(4), 305 – 319. https://doi.org/10.1177/0016986207306317

Carter, M., McGee, R., Taylor, B., & Williams, S. (2007). Health outcomes in adolescence: Associations with family, friends and school engagement. *Journal of Adolescence, 30*, 51-62. https://doi.org/10.1016/j.adolescence.2005.04.002

Carver, P. R., Yunger, J. L., & Perry, D. G. (2003). Gender identity and adjustment in middle childhood. *Sex Roles, 49*(3/4), 95 – 109. https://doi.org/10.1023/A:1024423012063

Chaffee, K. E., Lou, N. M., & Noels, K. A. (2020). Does stereotype threat affect men in language domains? *Frontiers in Psychology, 11*, Article 1302. https://doi.org/10.3389/fpsyg.2020.01302

Chall, J. S., & Jacobs, V. A. (2003). The classic study on poor children's fourth-grade slump. *American Educator, 27*(1), 14 – 44.

Chandra Handa, M. (2020). Examining Students' and Teachers' Perceptions of Differentiated Practices, Student Engagement, and Teacher Qualities. *Journal of Advanced Academics, 31*(4), 530 – 568. https://doi.org/10.1177/1932202X20931457

Chichekyan, T., & Shore, B. M. (2014). Cognitive characteristics of the gifted. In C. M. Callahan & J. A.

    Plucker. *Critical issues and practices in gifted education: What the research says* (2nd ed., pp. 119

    – 132). Prufrock Press.

Christenson, S. L., Reschly, A. L., & Wylie, C. (Eds.). (2012). *Handbook of research on student*

    engagement. Springer.

Clark, J. K., Eno, C. A., & Guadagno, R. E. (2011). Southern discomfort: The effects of stereotype threat

    on the intellectual performance of US southerners. *Self and Identity, 10*(2), 248-262.

    https://doi.org/10.1080/15298861003771080

Cohen, G. L., Purdie-Vaughns, V., & Garcia, J. (2012). An identity threat perspective on intervention. In

    M. Inzlicht & T. Schmader (Eds.), *Stereotype threat: Theory, process, and application* (p. 280 –

    296). Oxford University Press.

Collins, K. H., Joseph, N. M., & Ford, D. Y (2019). Missing in action: Gifted Black girls in science,

    technology, engineering, and mathematics. *Gifted Child Today, 43*(1), 55 – 63.

    https://doi.org/10.1177/1076217519880593

Connell, J. P., Spencer, M. B., & Aber, J. L. (1994). Educational risk and resilience in African-American

    youth: Context, self, action, and outcomes in school. *Child development, 65*(2), 493 – 506.

    https://doi.org/10.1111/j.1467-8624.1994.tb00765.x

Cozzarelli, C., Wilkinson, A. V., & Tagler, M. J. (2001). Attitudes toward the poor and attributions for

    poverty. *Journal of Social Issues, 57*(2), 207 – 227. https://doi.org/10.1111/0022-4537.00209

Crawford, B. F., Snyder, K. E., & Adelson, J. L. (2020). Exploring obstacles faced by gifted minority

    students through Bronfenbrenner's bioecological systems theory. *High Ability Studies, 31*(1), 43-

    74. https://doi.org/10.1080/13598139.2019.1568231

Creshnaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against

    women of color. *Stanford Law Review, 43*(6), 1241 – 1300.

Croizet, J. C., & Claire, T. (1998). Extending the concept of stereotype threat to social class: The

    intellectual underperformance of students from low socioeconomic backgrounds. *Personality*

    and Social Psychology Bulletin, 24(6), 588-594. https:// doi.org/10.1177/0146167298246003

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297-334.

Cross, T. L., & Dixon, F. A. (1998). On gifted students in rural schools. *NASSP Bulletin, 82*(595), 119-124.

Cross, W. E., Jr., Strauss, L., Fhagen-Smith, P. (1999). African American identity development across the

    life span: Educational implications. In R. S. Hernandez & E. R. Etta (Eds.), *Racial and ethnic*

    identity in school practices: Aspects of human development. Lawrence Erlbaum Associates.

Cullen, M. J., Hardison, C. M., & Sackett, P. R. (2004). Using SAT–grade and ability–job performance

    relationships to test predictions derived from stereotype threat theory. *Journal of Applied*

    Psychology, 89(2), 220–230. https://doi.org/10.1037/0021-9010.89.2.220

Darley, J. M., & Gross, P. H. (1983). A hypothesis-confirming bias in labeling effects. Journal of

    Personality and Social Psychology, 44(1), 20 – 33. https://doi.org/10.1037/0022-3514.44.1.20

Davies, P. G., Spencer, S. J., & Steele, C. M. (2005). Clearing the air: Identity safety moderates the effects

    of stereotype threat on women's leadership aspirations. *Journal of Personality and Social*

    Psychology, 88(2), 276 – 287. https://doi.org/10.1037/0022-3514.88.2.276

Delacre, M., Lakens, D., & Leys, C. (2017). Why psychologists should by default use Welch's t-test instead

    of Student's t-test. *International Review of Social Psychology, 30*(1), 92 – 101.

    https://doi.org/10.5334/irsp.82

Delgado, R., & Stefancic, J. (2017). *Critical race theory: An introduction.* New York University Press.

Désert, M., Préaux, M. & Jund, R. (2009). So young and already victims of stereotype threat:

    Socioeconomic status and performance of 6 to 9 years old children on Raven's progressive

    matrices. *European Journal of Psychology of Education 24*, 207 – 218.

    https://doi.org/10.1007/BF03173012

Dixon, J., & Durrheim, K., (2000). Displacing place-identity: A discursive approach to locating self and

other. *British Journal of Social Psychology, 39*(1)*,* 27 – 44.

https://doi.org/10.1348/014466600164318

Durante, F., & Fiske, S. T. (2017). How social-class stereotypes maintain inequality. *Current Opinion in*

Psychology, 18, 43 – 48. https://doi.org/10.1016/j.copsyc.2017.07.033

Eccles, J. S. (2011). Gendered educational and occupational choices: Applying the Eccles et al.

model of achievement-related choices. *International Journal of Behavioral Development 35*(3),

195–201. https://doi.org/10.1177/0165025411398185

El-Abd, M., Callahan, C., & Azano, A. (2019). Predictive factors of literacy achievement in young gifted

children in rural schools. *Journal of Advanced Academics, 30*(3), 298-325.

https://doi.org/10.1177/1932202X19843238

Ellemers, N., Spears, R., & Doosje, B. (2002). Self and social identity*. Annual review of psychology, 53*(1),

161-186. https://doi.org/10.1146/annurev.psych.53.100901.135228

Enders, C. K. (2011). The impact of nonnormality on full information maximum-likelihood estimation for

structural equation models with missing data. *Psychological Methods, 6*(4), 352 – 370.

https://doi.org/10.1037/1082-989X.6.4.352

Erikson, E.H. (1994). *Identity: Youth and crisis*. W.W. Norton & Company. (Original work published 1968).

Finn, J. D. (1989). Withdrawing from school. *Review of educational research*, *59*(2), 117-142.

https://doi.org/10.3102/00346543059002117

Finn, J. D. (1993). *School engagement & students at risk.* National Center for Education Statistics.

https://files.eric.ed.gov/fulltext/ED362322.pdf

Finn, J. D., & Cox, D. (1992). Participation and withdrawal among fourth-grade pupils. *American*

Education Research Journal, 29(1), 141 – 162. https://doi.org/10.3102/00028312029001141

Finn, J. D., & Zimmer, K. S. (2012). Student engagement: What is it? Why does it matter? In

      S.L. Christenson, A.L. Reschly, & C. Wylie, C. (Eds.), *Handbook of research on student*

      engagement (pp. 97 – 132). Springer

Fisher, O., O'Donnell, S. C., & Oyserman, D. (2017). Social class and identity-based motivation. *Current*

      Opinion in Psychology, 18, 61-66. https://doi.org/10.1016/j.copsyc.2017.07.035

Fogliati, V. J., & Bussey, K. (2013). Stereotype threat reduces motivation to improve: Effects of

      stereotype threat and feedback on women's intensions to improve mathematical ability.

      Psychology of Women Quarterly, 37(3), 310 – 324. https://doi.org/10.1177/0361684313480045

Frank, A. J., & McBee, M. T. (2003). The use of Harry Potter and the Sorcerer's Stone to discuss identity

      development with gifted adolescents. *Journal of Secondary Gifted Education,* 15(1), 33-38.

      https://doi.org/10.4219/jsge-2003-438

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept,

      state of the evidence. *Review of educational research, 74*(1), 59-109.

      https://doi.org/10.3102/00346543074001059

Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and

      performance. *Journal of Educational Psychology, 95*(1), 148 – 162.

      https://doi.org/10.1037/0022-0663.95.1.148

Gana, K., & Broc, G. (2019). *Structural equation modeling with lavaan.* John Wiley & Sons.

Gettinger, M., & Walter, M. J. (2012). Classroom strategies to enhance academic engaged time. In

      S.L. Christenson, A.L. Reschly, & C. Wylie, C. (Eds.), *Handbook of research on student*

      engagement (pp. 653–673). Springer.

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity.* Simon & Schuster Inc.

Gonzales, P. M., Blanton, H., & Williams, K. J. (2002). The effects of stereotype threat and double-minority status on the test performance of Latino women. *Personality and social psychology bulletin, 28*(5), 659-670. https://doi.org/10.1177/0146167202288010

Good, C., Aronson, J., & Harder, J. A. (2008). Problems in the pipeline: Stereotype threat and women's achievement in high-level math courses. *Journal of Applied Developmental Psychology, 29*(1), 17-28. https://doi.org/10.1016/j.appdev.2007.10.004

Goodenow, C. (1992). *School motivation, engagement, and sense of belonging among urban adolescent students.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA. (ERIC Document Reproduction Service No. ED349364).

Gorski, P. C. (2012). Perceiving the problem of poverty and schooling: Deconstructing the class stereotypes that misshape education practice and policy. *Equity & Excellence in Education, 45*(2), 302 – 319. https://doi.org/10.1080/10665684.2012.666934

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology, 60*, 549 – 576. 10.1146/annurev.psych.58.110405.085530

Grand, J. A. (2017). Brain drain? An examination of stereotype threat effects during training on knowledge acquisition and organizational effectiveness. *Journal of Applied Psychology, 102*(2), 115 – 150. https://doi.org/10.1037/apl0000171

Grayson, K., & Betancourt, V. (2008). The "fourth-grade slump" and math achievement: Addressing the challenge with student engagement. *Intercultural Development Research Association Newsletter, 35*(7).

Green, B. R. (2013). *Choice, challenge, and collaboration: Giving teachers of gifted students what they need in professional development*. [Doctoral dissertation, Mercer University]. ProQuest Dissertations. https://www-proquest-com.proxy01.its.virginia.edu/docview/1443792894

Gross, M. U. M. (1998). The 'me' behind the mask: Intellectually gifted students and the search for

identity. *Roeper Review, 20*(3), 167 – 174. https://doi.org/10.1080/02783199809553885

Groth, N. J. (1973). Achievement of autonomy and other developmental tasks in bright and average

adolescents. *Gifted Child Quarterly, 17*(1), 64-67. https://doi.org/10.1177/001698627301700110

Gruenewald, D. A. (2003a). Foundations of place: A multidisciplinary framework for place-conscious

education. *American educational research journal*, *40*(3), 619-654.

https://doi.org/10.3102/00028312040003619

Gruenewald, D. A. (2003b). The best of both worlds: A critical pedagogy of place. *Educational

researcher*, *32*(4), 3-12. https://doi.org/10.3102/0013189X032004003

Guthrie, J. T., Wigfield, A., & You, W. (2012). Instructional contexts for engagement and achievement in

reading. In S. L. Christenson, A.L. Reschly, & C. Wylie (Eds.), *Handbook of research on student

engagement* (pp. 601-634). Springer.

Halim, M. L., & Ruble, D. (2010). Gender identity and stereotyping in early and middle childhood. In J. C.

Chrisler & D. R. McCreary (Eds.) *Handbook of gender research in psychology* (pp. 495-525).

Springer, New York, NY.

Harrison, L. A., Stevens, C. M., Monty, A. N., & Coakley, C. A. (2006). The consequences of stereotype

threat on the academic performance of White and non-White lower income college

students. *Social Psychology of Education, 9*(3), 341-357. https://doi.org/10.1007/s11218-005-

5456-6

Hidalgo, M. C., & Hernandez, B. (2001). Place attachment: Conceptual and empirical questions. *Journal

of Environmental Psychology, 21*(3), 273-281. https://doi.org/10.1006/jevp.2001.0221

Hoh, P.-S. (2008). Cognitive characteristics of the gifted. In C. M. Callahan & J. A. Plucker. *Critical issues

and practices in gifted education: What the research says* (pp. 57 – 84). Prufrock Press.

Howard-Hamilton, M., & Franks, B. A. (1995). Gifted adolescents: Psychological behaviors, values, and developmental implications. *Roeper Review, 17*, 186-191. https://doi.org/10.1080/02783199509553656

Howley, C., & Howley, A. (2010). Poverty and school achievement in rural communities: A social-class interpretation. In K. A. Schafft & A. Y. Jackson (Eds.). *Rural education for the twenty-first century: Identity, place, and community in a globalizing world* (pp. 34-50). The Pennsylvania State University Press.

Howley, A., Rhodes, M., & Beall, J. (2009). Challenges facing rural schools: Implications for gifted students. *Journal for the Education of the Gifted, 32*(4), 515-536. https://doi.org/10.1177/016235320903200404

Huguet, P., & Régner, I. (2007). Stereotype threat among schoolgirls in quasi-ordinary classroom circumstances. *Journal of Educational Psychology, 99*(3), 545 – 560. https://doi.org/10.1037/0022-0663.99.3.545

Hummon, D. M. (1992). Community attachment: local sentiment and sense of place. In I. Altman and S.M. Low (Eds.), *Place attachment* (pp. 253 – 277). Plenum Press.

Hutchison, K. A., Smith, J. L., Ferris, A. (2013). Goals can be threatened to extinction: Using the Stroop task to clarify working memory depletion under stereotype threat. *Social Psychological and Personality Science, 4*(1), 74 – 81. https://doi.org/10.1177/1948550612440734

Inzlicht, M., & Kang, S. K. (2010). Stereotype threat spillover: how coping with threats to social identity affects aggression, eating, decision making, and attention. *Journal of personality and social psychology, 99*(3), 467 – 481. https://doi.org/10.1037/a0018951

Inzlicht, M., & Ben-Zeev, T. (2000). A threatening intellectual environment: Why females are susceptible to experiencing problem-solving deficits in the presence of males. *Psychological Science, 11*(5)*, 365 – 371. https://doi.org/10.1111/1467-9280.00272

James, W. (1982). *The principles of psychology*. Harvard University Press. (Original work published 1892).

Jaramillo, J., Mello, Z. R., & Worrell, F. C. (2016). Ethnic identity, stereotype threat, and perceived discrimination among Native American adolescents. *Journal of Research on Adolescence, 26*(4), 769-775. https://doi.org/10.1111/jora.12228

Johns, M. J., Inzlicht, M., & Schmader, T. (2008). Stereotype threat and executive resource depletion: Examining the influence of emotion regulation. *Journal of Experimental Psychology, 137*(4)*,* 691 – 705. https://doi.org/10.1037/a0013834

Johns, M. J., Schmader, T., & Martens, A. (2005). Knowing is half the battle: Teaching stereotype threat as a means of improving women's math performance. *Psychological Science, 16*(3), 175-179. https://doi.org/10.1111/j.0956-7976.2005.00799.x

Jost, J. T. (2019). A quarter century of system justification theory: Questions, answers, criticisms, and societal applications. *British Journal of Social Psychology, 58*(2)*,* 263 – 314. https://doi.org/10.1111/bjso.12297

Keller, J. (2007). Stereotype threat in classroom settings: The interactive effect of domain identification, task difficulty and stereotype threat on female students' maths performance. *British Journal* of *Educational Psychology, 77*(2), 323 – 338. https://doi.org/10.1348/000709906X113662

Kessels, U., Heyder, A., Latsch, M., & Hannover, B. (2014). How gender differences in academic engagement relate to students' gender identity. *Educational Research, 56*(2), 220 – 229. https://doi.org/10.1080/00131881.2014.898916

Kline, R.B. (2016). *Principles and practice of structural equation modeling* (4th edition). The Guilford Press.

King D. K. (1988). Multiple jeopardy, multiple consciousness: the context of a black feminist ideology. *Signs, 14,* 42–72. https://doi.org/10.1086/494491

Lam, S. F., Jimerson, S., Kikas, E., Cefai, C., Veiga, F. H., Nelson, B., Hatzichristou, C., Polychroni, F.,

    Basnett, J., Duck, R., Farrell, P., Liu, Y., Negovan, V., Shin, H., Stanculescu, E., Wong, B. P. H.,

    Yang, H., & Zollneritsch, J. (2012). Do girls and boys perceive themselves as equally engaged in

    school? The results of an international study from 12 countries. *Journal of School*

    Psychology, 50(1), 77-94. https://doi.org/10.1016/j.jsp.2011.07.004

Landis, R. N., & Reschly, A. L. (2013). Reexamining gifted underachievement and dropout through the

    lens of student engagement. *Journal for the Education of the Gifted, 36*(2), 220 – 249.

    https://doi.org/10.1177/0162353213480864

Lara-Cooper, K., & Cooper, S. (2016). "My culture is not a costume": The influence of stereotypes on

    children in middle childhood. *Wicazo Sa Review, 31*(2), 56 – 68.

    https://doi.org/10.5749/wicazosareview.31.2.0056

Lareau, A (2003). *Unequal childhoods: Class, race, and family life.* University of California Press.

Lavalley, M. (2018). Out of the loop. *Center for Public Education*.

Lee, V. E., & Smith, J. B. (1993). Effects of school restructuring on the achievement and engagement of

    middle-grade students. *Sociology of Education, 66*(3), 164 – 187.

    https://doi.org/10.2307/2112735

Lee, V. E., & Smith, J. B. (1995). Effects of high school restructuring on gains in achievement and

    engagement for early secondary school students. *Sociology of Education, 68*(4), 241 – 270.

    https://doi.org/10.2307/2112741

Lewicka, M. (2011). Place attachment: How far have we come in the last 40 years? *Journal of*

    Environmental Psychology, 31(3), 207-230. https://doi.org/10.1016/j.jenvp.2010.10.001

Leyens, J.-P., Désert, M., Croizet, J.-C., & Darcis, C. (2000). Stereotype threat: Are lower status and

    history of stigmatization preconditions of stereotype threat? *Personality and Social Psychology*

    Bulletin, 26(10), 1189 – 1199. https://doi.org/10.1177/0146167200262002

Litster, K., & Roberts, J. (2011). The self-concepts and perceived competencies of gifted and non-gifted

      students: A meta-analysis. *Journal of Research in Special Educational Needs, 11*(2), 130 – 140.

      https://doi.org/10.1111/j.1471-3802.2010.01166.x

Logel, C., Walton, G. M., Spencer, S. J., Iserman, E. C., von Hippel, W., & Bell, A. E. (2009). Interacting

      with sexist men triggers social identity threat among female engineers. *Journal of Personality*

      and Social Psychology, 96(6), 1089 – 1103. https://doi.org/10.1037/a0015703

Lohman, D. F. (2012). *Cognitive Abilities Test Form 7: Research and development guide.* The Riverside

      Publishing Company.

Mahatmya, D., Lohman, B. J., Matjasko, J. L., & Farb, A. F. (2012). Engagement across developmental

      periods. In S.L. Christenson, A.L. Reschly, & C. Wylie, C. (Eds.), *Handbook of research on student*

      engagement (pp. 45 – 64). Springer.

Marks H. M (2000). Student engagement in instructional activity: Patterns in the elementary, middle and

      high school years. *American Educational Research Journal, 37*(1), 153 – 184.

      https://doi.org/10.3102/00028312037001153

Martinot, D., Bagès, C., & Désert, M. (2012). French children's awareness of gender stereotypes about

      mathematics and reading: When girls improve their reputation in math. *Sex Roles, 66*(3-4), 210-

      219. https://doi.org/10.1007/s11199-011-0032-3

Marx, D. M., & Stapel, D. A. (2006). Understanding stereotype lift: On the role of the social self. *Social*

      Cognition, 24(6), 776 – 791. https://doi.org/10.1521/soco.2006.24.6.776

Massey, C. (2017). The rhetoric of the real: Stereotypes of rural youth in American reality television and

      stock photography. *Discourse: Studies in the Cultural Politics of Education, 38*(3), 365-376.

      https://doi.org/10.1080/01596306.2017.1306982

Matthews, M.S. (2014). Self-concept and the gifted. In C. M. Callahan & J. A. Plucker. *Critical issues and*

      practices in gifted education: What the research says (2nd ed., pp. 143 – 158). Prufrock Press.

Matthews, M. S. (2018). Utilizing non-test assessments in identifying gifted and talented learners. In C.

    M. Callahan & H. L. Hertberg-Davis (Eds.), *Fundamentals of gifted education: Considering*

    multiple perspectives (2nd ed., pp. 135 – 145). Routledge.

May, A. L., & Stone, C. (2014). An Initial Investigation into the Role of Stereotype Threat in the Test

    Performance of College Students with Learning Disabilities. *Journal of Postsecondary Education*

    and Disability, 27(1), 89-106. https://files.eric.ed.gov/fulltext/EJ1029630.pdf

McAndrew, F. T. (1998). The measurement of 'rootedness' and the prediction of attachment to

    hometowns in college students. *Journal of Environmental Psychology, 18*(4), 409 – 417.

    https://doi.org/10.1006/jevp.1998.0078

McBee, M. T., Peters, S. J., & Waterman, C. (2014). Combining scores in multiple-criteria assessment

    systems: The impact of combination rule. *Gifted Child Quarterly, 58*(1), 68 – 89.

    https://doi.org/10.1177/0016986213513794

McCall, L. (2015). The complexity of intersectionality. *Signs, 30*(3), 1771 – 1800.

    https://doi.org/10.1086/426800

McCormick, K. (2012). *Drawing on giftedness: Understanding what it means to be an engaged gifted*

    elementary student. [Doctoral dissertation, Indiana University]. ProQuest Dissertations.

    https://search-proquest-

    com.proxy01.its.virginia.edu/docview/1037812182/D6DA836FDB374669PQ/1?accountid=14678

McGee, E. O. (2018). "Black genius, Asian fail": The detriment of stereotype lift and stereotype threat in

    high-achieving Asian and Black STEM students. *AERA Open, 4*(4), 1 – 16.

    https://doi.org/10.1177/2332858418816658

McGee, E. O., & Martin, D. B. (2011). "You would not believe what I have to go through to prove my

    intellectual value!": Stereotype management among academically successful Black mathematics

and engineering students. *American Educational Research Journal, 48*(6), 1347-1389.

    https://doi.org/10.3102/0002831211423972

McGlone, M. S., & Aronson, J. (2006). Stereotype threat, identity salience, and spatial reasoning. *Journal*

    of Applied Developmental Psychology, 27(5), 486-493.

    https://doi.org/10.1016/j.appdev.2006.06.003

McGlone, M. S., Aronson, J., & Kobrynowicz, D. (2006). Stereotype threat and the gender gap in political

    knowledge. *Psychology of Women Quarterly, 30*(4), 392-398. https://doi.org/10.1111/j.1471-

    6402.2006.00314.x

Mead, G. H. (2015). *Mind, self & society*: *The definitive edition* (C.W. Morris, Ed.). The University of

    Chicago Press. (Original work published in 1934).

Missett, T. & McCormick, K. (2014). Conceptions of giftedness. In C. M. Callahan & J. A. Plucker. *Critical*

    issues and practices in gifted education: What the research says (2nd ed., pp. 143 – 158). Prufrock

    Press.

Mohatt, N. V., & Mohatt, D. (2020). Rural Prejudice-Urban Bias: The Stories and Structures That Oppress

    Rural Communities. In L. Benuto, M. Duckworkth, A. Masuda, & W. O'Donohue (Eds.). *Prejudice,*

    Stigma, Privilege, and Oppression (pp. 413-425). Springer, Cham. https://doi.org/10.1007/978-3-

    030-35517-3_23

Morris, E. W. (2012). *Learning the hard way: Masculinity, place, and the gender gap in education.*

    Rutgers University Press.

Morris, T. P., White I. R., Royston, P. (2014). Tuning multiple imputation by predictive mean matching

    and local residual draws. *BMC Medical Research Methodology, 14*(75).

    https://doi.org/10.1186/1471-2288-14-75

Murphy, M. C., Steele, C. M., & Gross, J. J. (2007). Signaling threat: How situational cues affect women in

math, science, and engineering settings. *Psychological science, 18*(10), 879-885.

https://doi.org/10.1111/j.1467-9280.2007.01995.x

Myers, S. P., Dasari, M., Brown, J. B., Lumpkin, S. T., Neal, M. D., Abebe, K. Z., Chaumont, N., Downs-

Canner, S. M., Flanagan, M. R., Lee, K. K., & Rosengart, M. R. (2020). Effects of gender bias and

stereotypes in surgical training: A randomized clinical trial. *JAMA Surgery, 155*(7), 552 – 560.

https://doi.org/10.1001/jamasurg.2020.1127

National Association for Gifted Children (2019). *A definition of giftedness that guides best practice*

[Position paper].

https://www.nagc.org/sites/default/files/Position%20Statement/Definition%20of%20Giftednes

s%20%282019%29.pdf

Natriello, G. (1984). Problems in the evaluation of students and student disengagement from secondary

schools. *Journal of Research and Development in Education*, *17*(4), 14-24.

Neuville, E., & Croizet, J.-C. (2007). Can salience of gender identity impair math performance among 7-8-

year-old girls? The moderating role of task difficulty. *European Journal of Psychology of*

Education, 22(3), 307 – 316. https://doi.org/10.1007/BF03173428

Newman, E. M., Wehlage, G. G., & Lamborn, S. D. (1992). *Taking students seriously. Student engagement*

and achievement in American secondary schools. Teachers College, Columbia university.

Nguyen, H., & Ryan, A. M. (2008). Does stereotype threat affect test performance of minorities and

women? A meta-analysis of experimental evidence. *Journal of Applied Psychology, 93*(6).

https://doi.org/10.1037/a0012702

Nystrand, M., & Gamoran, A. (1991). Instructional discourse, student engagement, and literature

achievement. *Research in the Teaching of English, 25*(3)*,* 261-290.

https://www.jstor.org/stable/40171413

O'Brien, L. T., & Crandall, C. S. (2003). Stereotype threat and arousal: Effects on women's math performance. *Personality and Social Psychology Bulletin, 29*(6), 782-789. https://doi.org/10.1177/0146167203029006010

Olszewski-Kubilius, P., & Lee, S. Y. (2011). Gender and other group differences in performance on off-level tests: Changes in the 21st century. *Gifted Child Quarterly, 55*(1), 54-73, https://doi.org/10.1177/0016986210382574

Opdenakker, M. C., & Minnaert, A. (2011). Relationship between learning environment characteristics and academic engagement. *Psychological Reports, 109*(1), 259-284. https://doi.org/10.2466/09.10.11.PR0.109.4.259-284

Osborne, J. W. (1997). Race and academic disidentification. *Journal of Educational Psychology, 89*(4), 728 – 735. https://doi.org/10.1037/0022-0663.89.4.728

Osborne, J. W. (1999). Unraveling underachievement among African American boys from an identification with academics perspective. *Journal of Negro Education, 68*(4), 555 – 565. https://doi.org/10.2307/2668154

Osborne, J. W. (2007). Linking stereotype threat and anxiety. *Educational Psychology, 27*(1), 135-154. https://doi.org/10.1080/01443410601069929

Osborne, J. W., Kellow, J. T. & Jones, B. D. (2007). Identification with academics, stereotype threat, and motivation to achieve in school. In D. M. McInerney, S. Van Etten, & M. Dowson (Eds.), *Standards in Education* (pp. 119 – 146)*.* Information Age Publishing.

Oyserman, D. (2015). Identity-based motivation. In R. Scott & S. Kosslyn (Eds.), *Emerging Trends in the Social and Behavioral Sciences.* John Wiley & Sons.

Pansu, P., Régner, I., Max, S., Colé, P., Nezlek, J. B., & Huguet, P. (2016). A burden for the boys: Evidence of stereotype threat in boys' reading performance. *Journal of Experimental Social Psychology, 65,* 26 – 30. http://dx.doi.org/10.1016/j.jesp.2016.02.008

Parsons, J. E., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., & Midgley, C. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.). *Achievement and achievement motives: Psychological and sociological approaches* (pp. 75-146). W. H. Freeman.

Partridge, M. D., & Rickman, D. S. (2008). Distance from urban agglomeration economies and rural poverty. *Journal of Regional Science, 48*(2), 285 – 310. https://doi.org/10.1111/j.1467-9787.2008.00552.x

Peng, J., Strijker, D., & Wu, Q. (2020). Place identity: How far have we come in exploring its meanings? *Frontiers in Psychology, 11*, Article 294. https://doi.org/ 10.3389/fpsyg.2020.00294

Petersen, J. (2018). Gender difference in verbal performance: A meta-analysis of United States State performance assessments. *Educational Psychological Review, 30*, 1269 – 1281. https://doi.org/10.1007/s10648-018-9450-x

Phinney, J. S. (1992). The multigroup ethnic identity measure: A new scale for use with diverse groups. Journal of adolescent research, 7(2), 156-176. https://doi.org/10.1177/074355489272003

Phinney, J. S., DuPont, S., Espinosa, C., Revill, J., & Sanders, K. (1994). Ethnic identity and American identification among ethnic minority youths. In A. Bouvy, F. J. R. van de Vijer, P. Boski, & P. Schmitz (Eds.), *Journeys into cross-cultural psychology* (pp. 167 – 183). Swets & Zeitlinger.

Picho, K. (2011). *Stereotype threat in context: The psychosocial experience of stereotype threat susceptible urban, high school girls in honors mathematics classes.* [Doctoral Dissertation. University of Connecticut]. ProQuest Dissertations. https://search-proquest-com.proxy01.its.virginia.edu/docview/915016934/9E3723014525473DPQ/3?accountid=14678

Picho, K., & Brown, S. W. (2011). Can stereotype threat be measured? A validation of the Social Identities and Attitudes Scale (SIAS). *Journal of Advanced Academics, 22*(3), 374-411. https://doi.org/ 10.1177/1932202X1102200302

Pinel, E. C. (2004). You're just saying that because I'm a woman: Stigma consciousness and attributions
to discrimination. *Self and Identity, 3*(1), 39-51. https://doi.org/10.1080/13576500342000031

Plante, I., de la Sablonnière, R., Aronson, J. M., Théret, M. (2013). Gender stereotype endorsement and
achievement-related outcomes: The role of competence beliefs and task values. *Contemporary
Educational Psychology, 38,* 225 – 235. http://dx.doi.org/10.1016/j.cedpsych.2013.03.004

Plumpton, C. O., Morris, T., Hughes, D. A., & White, I. R. (2016). Multiple imputation of multiple multi-
item scales when a full imputation model is infeasible. *BMC research notes, 9*(1), 1-15.
https://doi.org/10.1186/s13104-016-1853-5

Promoting PLACE in Rural Schools (2018). 2017-2018 annual report. Charlottesville, VA: C. M. Callahan &
A. P. Azano.

Proshansky, H. M. (1978). The city and self-identity. *Environment and behavior, 10*(2), 147-169.
https://doi.org/10.1177/0013916578102002

Pyne, J (2019). *Contingent socialization and the process of engagement in school.* [Doctoral dissertation,
University of Wisconsin - Madison]. ProQuest Dissertations. https://search-proquest-
com.proxy01.its.virginia.edu/docview/2240049738/9A5CA85E84B54CAEPQ/1?accountid=14678

Pyne, J. (2020). Gender test score gaps under equal behavioral engagement. *Educational
Researcher*, *49*(6), 459-464. https://doi.org/10.3102/0013189X20930203

Ramsey, P. G. (1991). Young children's awareness and understanding of social class differences. *The
Journal of Genetic Psychology, 152*(1), 71-82. https://doi.org/10.1080/00221325.1991.9914679

Rasch, D., Teuscher, F., & Guiard, V. (2007). How robust are tests for two independent samples? *Journal
of Statistical Planning and Inference, 137*(8), 2706 – 2720.
https://doi.org/10.1016/j.jspi.2006.04.011

Reardon, S. F., Fahle, E. M., Kalogrides, D., Podolsky, A., & Zárate, R. C. (2019). Gender achievement gaps in US school districts. *American Educational Research Journal, 56*(6), 2474-2508. https://doi.org/10.3102/0002831219843824

Reeve, J. (2012). A self-determination theory perspective on student engagement. In Christenson, S. L., Reschly, A. L., & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 149-172). Springer.

Reilly, D., Neumann, D. L., & Andrews, G. (2019). Gender differences in reading and writing achievement: Evidence from the National Assessment of Educational Progress (NAEP). *American Psychologist, 74*(4), 445 – 458. https://doi.org/10.1037/amp0000356

Reis, S. M. & Housand, A. M. (2008). Characteristics of gifted and talented learners: Similarities and differences across domains. In F.A. Karnes & K. R. Stephens (Eds.), *Achieving Excellence: Educating the Gifted and Talented* (pp. 62 – 81). Merrill/Prentice Hall.

Renzulli, J. S. (1978). What makes giftedness? Reexamining a definition. *Phi Delta Kappan, 60*(3), 180 – 184, 261.

Renzulli, J. S. (2016). The three-ring conception of giftedness: A developmental model for promoting creative productivity. In S. M. Reis (Ed.), *Reflections on gifted education: Critical works by Joseph S. Renzulli and colleagues* (p. 55–90). Prufrock Press.

Renzulli, J. S., & Park, S. (2000). Gifted dropouts: The who and the why. *Gifted Child Quarterly, 44*(4), 261-271. https://doi.org/10.1177/001698620004400407

Renzulli, J. S., Reis, S. M., & Smith, L. H. (1981). *The revolving door identification model.* Creative Learning Press, Inc.

Renzulli, J. S., Smith, L. H., White, A. J., Callahan, C. M., Hartman, R. K., Westberg, M. K., Gavin, M. K., Reis, S. M., Siegle, D., & Sytsma, R. E. (2002). *Scales for Rating the Behavioral Characteristics of Superior Students.* Creative Learning Press.

Reschly, A., & Christenson, S. L. (2006). Promoting successful school completion. In G. Bear & K. Minke

(Eds.), *Children's needs—III: Development, prevention, and intervention* (pp. 103 – 113).

National Association of School Psychologists.

Reschly, A. L., & Christenson, S. L. (2012). Jingle, jangle, and conceptual haziness: Evolution and future

directions of the engagement construct. In S.L. Christenson, A. L. Reschly, & C. Wylie (Eds.),

Handbook of research on student engagement (pp. 3-19). Springer.

Retelsdorf, J., Schwartz, K., & Asbrock, F. (2015). "Michael can't read!" Teachers' gender stereotypes and

boys' reading self-concept. *Journal of Educational Psychology, 107*(1), 186 – 194.

http://dx.doi.org/10.1037/a0037107

Richards, Z. J., Stambaugh, T. (2015). National context of rural schools. In T. Stambaugh & S. M. Wood

(Eds.), *Serving gifted students in rural settings* (pp. 97 – 110)*.* Prufrock Press.

Rimm-Kaufman, S. E., Baroody, A. E., Larsen, R. A., Curby, T. W., & Abry, T. (2015). To what extent do

teacher–student interaction quality and student gender contribute to fifth graders' engagement

in mathematics learning? *Journal of Educational Psychology, 107*(1), 170 – 185.

https://doi.org/10.1037/a0037252

Rogers, L. O. (2020). "I'm kind of a feminist": Using master narratives to analyze gender identity in

middle childhood. *Child Development, 91*(1), 179 – 196. https://doi.org/10.1111/cdev.13142

Rogers, W. H. (1993). Regression standard errors in clustered samples. *Stata Technical Bulletin Reprints,*

3, 88–94.

Rose, G. (1996). Place and identity: A sense of place. In D. Massey & P. Jess (Eds.), *A Place in the world?*

(pp. 87 – 132). Oxford University Place.

Rowley, S. J., Kurtz-Costes, B., Mistry, R., Feagans, L. (2007). Social status as a predictor of race and

gender stereotypes in late childhood and early adolescence*. Social Development, 16*(1).

https://doi.org/10.1111/j.1467-9507.2007.00376.x

Royston, P., & White, I. R. (2011). Multiple imputation by chained equations (MICE): Implementation in

Stata. *Journal of Statistical Software, 45*(4), 1 – 20.

Rumberger, R. W., & Lim, S. A. (2008). *Why students drop out of school: A review of 25 years of*

research. Gevirtz Graduate School of Education.

Ruble, D. N., Alvarez, J., Bachman, M., Cameron, J., Fuligni A., Coll C. G., & Rhee, E. (2004). The

development of a sense of "we": The emergence and implications of children's collective

identity. In M. Bennett & A. Sani (Eds.), *The development of the social self.* (pp. 29 – 76). Taylor

& Francis Group.

Ruzek, E. A., Hafen, C. A., Allen, J. P., Gregory, A., Mikami, A. Y., & Pianta, R. C. (2016). How teacher

emotional support motivates students: The mediating roles of perceived peer relatedness,

autonomy support, and competence. *Learning and instruction*, *42*, 95-103.

https://doi.org/10.1016/j.learninstruc.2016.01.004

Ryan, R.M. & Deci, E.L. (2018). *Self-determination theory: Basic psychological needs in motivation,*

development, and wellness. Guilford.

Rydell, R. J., McConnell, A. R., & Beilock, S. L. (2009). Multiple social identities and stereotype threat:

Imbalance, accessibility, and working memory. *Journal of Personality and Social Psychology,*

96(5), 949 – 966. https://doi.org/10.1037/a0014846

Said-Metwaly, S., Fernández-Castilla, B., Kyndt, E., Van den Noortgate, W., & Barot, B. (2021). Does the

fourth-grade slump in creativity actually exist? A meta-analysis of the development of divergent

thinking in school-age children and adolescents. *Educational Psychology Review, 33*, 275 – 298.

https://doi.org/10.1007/s10648-020-09547-9

Sanacore J., & Palumbo, A. (2008). Understanding the fourth-grade slump: Our point of view. *The*

Educational Forum, 73(1), 67 – 74. https:/doi.org/10.1080/00131720802539648

Schmader, T. (2002). Gender identification moderates stereotype threat effects on women's math

performance. *Journal of Experimental Social Psychology, 38*(2), 194 – 201.

https://doi.org/10.1006/jesp.2001.1500

Schmader, T. & Beilock, S. (2012). An integration of processes that underlie stereotype threat. In M.

Inzlicht & T. Schmader (Eds.). *Stereotype threat: Theory, process, and application* (pp. 34 – 50).

Oxford University Press.

Schmader, T., & Johns, M. J. (2003). Converging evidence that stereotype threat reduces working

memory capacity. *Journal of Personality and Social Psychology, 85*(3), 440–

452. https://doi.org/10.1037/0022-3514.85.3.440

Schmader, T. Johns, M. J., & Forbes, C. (2008). An integrated process model of stereotype threat effects

on performance. *Psychological Review, 115*(2), 336 – 356. https://doi.org/10.1037/0033-

295X.115.2.336

Schumacker, R. E., & Lomax, R. G. (2016). *A beginner's guide to structural equation modeling* (4th ed.).

Routledge.

Scourfield, J., Dicks, B., Drakeford, M., & Davies, A. (2006). *Children, place, and identity: Nation and

locality in middle childhood*. Routledge.

Sears, K. P. (2005). *Extending disidentification theory: The effects of stereotype threat on the self-

concept, academic engagement, and school performance of African American and Latino high

school students.* [Doctoral Dissertation. University of Connecticut]. ProQuest Dissertations.

https://search-proquest-

com.proxy01.its.virginia.edu/docview/305012128/EB5176F4739D4B34PQ/1?accountid=14678

Seaton, E. E. (2007). "If teachers are good to you": Caring for rural girls in the classroom. *Journal of

Research in Rural Education, 22*(6), 1 – 16.

Sedek, G., & Kofta, M. (1990). When cognitive exertion does not yield cognitive gain: Toward an

    informational explanation of learned helplessness. *Journal of Personality and Social Psychology,*

    58(4), 729 – 743. https://doi.org/10.1037/0022-3514.58.4.729

Sellers, R. M., Smith, M. A., Shelton, J. N., Rowley, S. A. J., & Chavous, T. M. (1998) Multidimensional

    model of racial identity: A reconceptualization of African American Racial Identity. *Personality*

    and Social Psychology Review, 2(1), 18 – 39. https://doi.org/10.1207/s15327957pspr0201_2

Settles, I. H. (2004). When multiple identities interfere: The role of identity centrality. *Personality and*

    Social Psychology Bulletin, 30(4), 487 – 500. https://doi.org/10.1177/0146167203261885

Shapiro, J. R., & Neuberg, S. L. (2007). From stereotype threat to stereotype threats: Implications of a

    multi-threat framework for causes, moderators, mediators, consequences, and

    interventions. *Personality and Social Psychology Review, 11*(2), 107-130.

    https://doi.org/10.1177/1088868306294790

Sherman, D. K., Hartson, K. A., Binning, K. R., Purdie-Vaughns, V., Garcia, J., Taborsky-Barba, S.,

    Tomassetti, S., Nussbaum, A.D., & Cohen, G. L. (2013). Deflecting the trajectory and changing

    the narrative: how self-affirmation affects academic performance and motivation under identity

    threat. *Journal of Personality and Social Psychology, 104*(4), 591.

    https://doi.org/10.1037/a0031495

Shih, M., Pittinsky, T. L., & Ambady, N. (1999). Stereotype susceptibility: Identity salience and shifts in

    quantitative performance. *Psychological science, 10*(1), 80-83. https://doi.org/10.1111/1467-

    9280.00111

Showalter, D., Hartman, S. L., Johnson, J., & Klein, B. (2019). Why rural matters 2018-2019: The time Is

    now. A report of the Rural School and Community Trust. Rural School and Community Trust.

Shultz, K. S., Whitney, D. J., & Zickar, M. J. (2014). *Measurement theory in action: Case studies and*

    exercises (2nd ed.). Routledge.

Siegle, D., Rubenstein, L. D., & Mitchell, M. S. (2014). Honors students' perceptions of their high school

      experiences: The influence of teachers on student motivation. *Gifted child quarterly, 58*(1), 35-

      50. https://doi.org/10.1177/0016986213513496

Sigelman, C. K. (2012). Rich man, poor man: Developmental differences in attributions and perceptions.

      Journal of Experimental Child Psychology, 113, 415 – 429.

      http://dx.doi.org/10.1016/j.jecp.2012.06.011

Sijtsma, K. (2009). On the use, misuse, and the very limited usefulness of Cronbach's alpha.

      Psychometrika, 74(1), 107 – 120.

Simons, C. L., Rivero-Arias, O., Yu, L. M., & Simon, J. (2015). Multiple imputation to deal with missing EQ-

      5D-3L data: Should we impute individual domains or the actual index? *Quality of life*

      research, 24(4), 805-815. https://doi.org/10.1007/s11136-014-0837-y

Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher

      behavior and student engagement across the school year. *Journal of educational*

      psychology, *85*(4), 571. https://doi.org/10.1037/0022-0663.85.4.571

Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and

      disaffection: Conceptualization and assessment of children's behavioral and emotional

      participation in academic activities in the classroom. *Educational and psychological*

      measurement, 69(3), 493-525. https://doi.org/10.1177/0013164408323233

Skinner, E. A., Marchand, G., Furrer, C., & Kindermann, T. (2008). Engagement and disaffection in the

      classroom: Part of a larger motivational dynamic. *Journal of Educational Psychology, 100*(4),

      765–781. doi:10.1037/a0012840.

Skinner, E. A., & Pitzer, J. R. (2012). Developmental dynamics of student engagement, coping, and

      everyday resilience. In S. L. Christenson, A. L., Reschly, & C. Wylie (Eds.). *Handbook of research*

      on student engagement (pp. 21-44). Springer.

Skinner, E. A., Zimmer-Gembeck, M. J., Connell, J. P., Eccles, J. S., & Wellborn, J. G. (1998). Individual

differences and the development of perceived control. *Monographs of the society for Research*

in Child Development, 63(2/3), i-231.

Smith, J. L., Sansone, C., & White, P. H. (2007). The stereotyped task engagement process: The role of

interest and achievement motivation. *Journal of Educational Psychology, 99*, 99–114.

https://doi.org/10.1037/0022-0663.99.1.99

Smith, L. V., & Cokley, K. (2016). Stereotype threat vulnerability: A psychometric investigation of the

social identities and attitudes scale. *Measurement and Evaluation in Counseling and*

Development, 49(2), 145-162. https://doi.org/10.1177/0748175615625752

Speirs Neumeister, K. L., Adams, C. M., Pierce, R. L., Cassady, J. C., & Dixon, F. A. (2007). Fourth-grade

teachers' perceptions of giftedness: Implications for identifying and serving diverse gifted

students. *Journal for the Education of the Gifted, 30*(4), 479 – 499. https://doi.org/10.4219/jeg-

2007-503

Spencer, B., & Castano, E. (2007). Social class is dead. Long live social class! Stereotype threat among

low socioeconomic status individuals. *Social Justice Research, 20*(4), 418–432.

https://doi.org/10.1007/s11211-007-0047-7

Spencer, S. J., Logel, C., Davies, P. G. (2016). Stereotype threat. *Annual Review of Psychology, 67,* 415 –

437. https://doi.org/10.1146/annurev-psych-073115-103235

Spencer, S. J., Steele, C. M., & Quinn, D. (1999). Stereotype threat and women's math performance.

Journal of Experimental Social Psychology, 35(1), 4–28. https://doi.org/10.1006/jesp.1998.1373

Stambaugh, T. (2015). Celebrating talent: Identification of rural gifted students. In T. Stambaugh & S. M.

Wood (Eds.), *Serving gifted students in rural settings* (pp. 97 – 110)*.* Prufrock Press.

Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance.

American Psychologist, 52(6), 613–629. https://doi.org/10.1037/0003-066X.52.6.613

Steele, C. M. (2010). *Whistling Vivaldi: How stereotypes affect us and what we can do.* W. W. Norton & Company.

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African-Americans. *Journal of Personality and Social Psychology, 69*(5), 797 – 811. https://doi.org/10.1037/0022-3514.69.5.797

Stewart, A. J., & McDermott, C. (2004) Gender in psychology. *Annual Review of Psychology, 55,* 519 – 544. https://doi.org/10.1146/annurev.psych.55.090902.141537

Stoet, G., & Geary, D. C. (2013). Sex differences in mathematics and reading achievement are inversely related: Within-and across-nation assessment of 10 years of PISA data. *PLOS ONE, 8*(3). Article e57988. https://doi.org/10.1371/journal.pone.0057988

Stokols, D., & Schumaker, S. A. (1981). People in places: A transactional view of settings. In J. Harvey (Ed.), *Cognition, social behavior and the environment* (pp. 441 – 488). Erlbaum.

Stone, J. (2002). Battling doubt by avoiding practice: The effects of stereotype threat on self-handicapping in White athletes. *Personality and Social Psychology Bulletin, 28*(12), 1667-1678. https://doi.org/10.1177/014616702237648

Stryker, S. (1980). *Symbolic Interactionism: A social structural version.* Benjamin Cummings.

Stryker, S., & Burke, P. J. (2000). The past, present, and future of an identity theory. *Social Psychology Quarterly, 63*(4), 284 – 297. https://doi.org/10.2307/2695840

Subotnik, R. F., Olszewski-Kubilius, P., & Worrell, F. C. (2011). Rethinking giftedness and gifted education: A proposed direction forward based on psychological science. *Psychological science in the public interest, 12*(1), 3-54. https://doi.org/10.1177/1529100611418056

Tajfel, H. (1981). *Human groups and social categories*. Cambridge University Press.

Theobald, P., & Wood, K. (2010). Learning to be rural: Identity lessons from history, schooling, and the US corporate media. In K. A. Schafft & A. Y. Jackson (Eds.). *Rural education for the twenty-first*

century: Identity, place, and community in a globalizing world (pp. 17-33). The Pennsylvania

State University Press.

Thoman, D. B., Smith, J. L., Brown, E. R., Chase, J., & Lee, J. Y. K. (2013). Beyond performance: A

motivational experiences model of stereotype threat. *Educational psychology review, 25*(2),

211-243. https://doi.org/10.1007/s10648-013-9219-1

Tieken, M. C. (2014). *Why rural school matter.* University of North Carolina Press.

Tillman, D. R. (2012). *Domain identification, stereotype threat, and mathematics test performance:*

Analysis of TIMSS 2007 by gender and race. [Doctoral Dissertation. North Carolina State

University]. ProQuest Dissertations. https://search-proquest-

com.proxy01.its.virginia.edu/docview/1346194501/6E5978E39FA943CAPQ/1?accountid=14678

Tine, M., & Gotlieb, R. (2013). Gender-, race-, and income-based stereotype threat: The effects of

multiple stigmatized aspects of identity on math performance and working memory function.

Social Psychology of Education, 16, 353 – 376. http://doi.org/ 10.1007/s11218-013-9224-8

Torrance, E. P. (1968). A longitudinal examination of the fourth-grade slump in creativity. *Gifted Child*

Quarterly, 12(4). https://doi.org/10.1177/001698626801200401

Tucker, C. M., Zayco, R. A., Herman, K. C., Reinke, W. M., Trujillo, M., Carraway, K., Wallack, C. & Ivery, P.

D. (2002). Teacher and child variables as predictors of academic engagement among low-income

African American children. *Psychology in the Schools, 39*(4), 477-488.

https://doi.org/10.1002/pits.10038

Turner, K. L., & Brown, C. S. (2007). The centrality of gender and ethnic identities across individuals and

contexts. *Social Development, 16*(4)*,* 700 – 719. https:// doi: 10.1111/j.1467-9507.2007.00403.x

Umaña-Taylor, A. J., Quintana, S. M., Lee, R. M., Cross, W. E., Rivas-Drake, D., & Schwartz, S., Syed, M.,

Yip, T., Seaton, E., & the members of Ethnic and Racial Identity in the 21st Century Study Group.

(2014). Ethnic and racial identity during adolescence and into young adulthood: An integrated

conceptualization. *Child Development, 85*, 21– 39. https://doi.org/10.1111/cdev.12196

Umaña-Taylor, A. J., & Updegraff, K. A. (2007). Latino adolescents' mental health: Exploring the

interrelations among discrimination, ethnic identity, cultural orientation, self-esteem, and

depressive symptoms. *Journal of adolescence*, *30*(4), 549-567.

https://doi.org/10.1016/j.adolescence.2006.08.002

Valeski, T. N., & Stipek, D. J. (2001). Young children's feelings about school. *Child development, 72*(4),

1198-1213. https://doi.org/10.1111/1467-8624.00342

Von Hippel, P. T. (2020). How many imputations do you need? A two-stage calculation using a quadratic

rule. *Sociological Methods & Research, 49*(3), 699-718.

https://doi.org/10.1177/0049124117747303

Walton, G. M., & Carr, P. B. (2012). Social belonging and the motivation and intellectual achievement of

negatively stereotyped students. In M. Inzlicht & T. Schmader (Eds.), *Stereotype threat: Theory,

process, and application* (p. 89–106). Oxford University Press.

Walton, G. M., & Cohen, G. L. (2003). Stereotype lift. *Journal of Experimental Social Psychology, 39*(5),

456 – 467. https://doi.org/10.1016/S0022-1031(03)00019-2

Wang, M. T., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement:

A longitudinal study of school engagement using a multidimensional perspective. *Learning and

Instruction, 28*, 12-23. https://doi.org/10.1016/j.learninstruc.2013.04.002

Wasserberg, M. J. (2014). Stereotype threat effects on African American children in an urban elementary

school. *Journal of Experimental Education, 82*(4), 502–517.

Williams, R. L. (2000). A note on robust variance estimation for cluster-correlated

data. *Biometrics, 56*(2), 645-646. https://doi.org/10.1111/j.0006-341X.2000.00645.x

Woodcock, A., Hernandez, P. R., Estrada, M., & Schultz, P. W. (2012). The consequences of chronic

    stereotype threat: Domain disidentification and abandonment. *Journal of Personality and Social*

    Psychology, 103(4), 635 – 646. https://doi.org/10.1037/a0029120

Wolters, C. A., & Taylor, D. J. (2012). A self-regulated learning perspective on student engagement. In S.

    L. Christenson, A. L., Reschly, & C. Wylie (Eds.). *Handbook of research on student*

    engagement (pp. 635-652). Springer.

Wong, C. A., Eccles, J. S., Sameroff, A. (2003). The influence of ethnic discrimination and ethnic

    identification on African American adolescents' school and socioemotional adjustment. *Journal*

    of Personality, 71(6), 1197 – 1232. https://doi.org/10.1111/1467-6494.7106012

Woods, T. A., Kurtz-Costes, B., & Rowley, S. J. (2005). The development of stereotypes about the rich

    and poor: Age, race, and family income differences in beliefs. *Journal of Youth and*

    Adolescence, 34(5), 437-445. https://doi.org/10.1007/s10964-005-7261-0

Worrell, F. C. (2007). Ethnic identity, academic achievement, and global self-concept in four groups of

    academically talented adolescents. *Gifted Child Quarterly, 51*(1), 23 – 38.

    https://doi.org/10.1177/0016986206296655

Wray, M., & Newitz, A. (Eds.). (1997). White trash: Race and class in America. Routledge.

Yang, Y., Green, S. B. (2011). Coefficient alpha: A reliability coefficient for the 21st century? *Journal of*

    Psychoeducational Assessment, 29(4), 377 – 392.

Yazzi-Mintz, E., McCormick, K. (2012). Finding the humanity in the data: Understanding, measuring, and

    strengthening student engagement. In S.L. Christenson, A. L. Reschly, &

    C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 743-763). Springer.

Zhao, F., Li, S., Li, T., & Yu, G. (2019). Does stereotype threat deteriorate academic performance of high

    school students with learning disabilities? The buffering role of psychological

disengagement. *Journal of Learning Disabilities, 52*(4), 312-323.

https://doi.org/10.1177/0022219419849107

Appendix A

Table A1

Percent Missing by District for Pre-treatment and Post-treatment Variables

District	A	B	C	D	E	F	G	H	I	J	K	L
				Pre-treatment measures								
Emotional engagement	11.3	0.0	5.0	3.7	4.4	10.0	0.0	7.4	15.4	4.8	29.8	14.3
Behavioral engagement	11.3	0.0	5.0	3.7	4.4	10.0	0.0	7.4	15.4	4.8	29.8	14.3
Gender ST	11.3	0.0	5.0	14.8	4.4	10.0	0.0	7.4	15.4	4.8	31.6	14.3
Rural ST	11.3	0.0	5.0	18.5	4.4	10.0	0.0	7.4	15.4	4.8	29.8	14.3
Low SES ST	11.3	0.0	5.0	18.5	4.4	11.1	0.0	7.4	15.4	4.8	29.8	14.3
Gender SC	11.3	0.0	5.0	14.8	4.4	10.0	0.0	7.4	15.4	4.8	29.8	14.3
Rural SC	11.3	0.0	7.5	18.5	4.4	11.1	0.0	7.4	15.4	4.8	29.8	14.3
Low SES SC	11.3	0.0	7.5	18.5	4.4	11.1	0.0	7.4	15.4	4.8	29.8	14.3
				Post-treatment measures								
Emotional engagement	17.0	11.5	67.5	18.5	17.4	12.2	0.00	22.1	7.7	21.4	35.1	23.8
Behavioral engagement	17.0	11.5	67.5	18.5	17.4	12.2	0.00	22.1	7.7	21.4	35.1	23.8
Gender ST	17.0	11.5	70.0	18.5	21.7	12.2	0.00	22.1	7.7	26.2	35.1	23.8
Rural ST	17.0	11.5	70.0	18.5	21.7	12.2	0.00	22.1	7.7	26.2	35.1	23.8
Low SES ST	17.0	11.5	70.0	18.5	21.7	12.2	0.00	22.1	7.7	26.2	35.1	23.8
Gender SC	17.0	11.5	70.0	18.5	21.7	12.2	0.00	22.1	7.7	26.2	35.1	23.8
Rural SC	17.0	11.5	70.0	18.5	21.7	12.2	0.00	22.1	7.7	26.2	35.1	23.8
Low SES SC	17.0	11.5	70.0	18.5	21.7	12.2	0.00	22.1	7.7	26.2	35.1	23.8

Table A2

Descriptive Statistics and Percent Missing for Factor Variables

Variable name	Obs	Mean	SD	Range	Skew	Kurtosis	Percent missing
			Academic Engagement				
Emotional 3rd grade	427	3.31	0.73	1-4	-1.26	4.06	18.8%
Behavioral 3rd grade	427	3.74	0.43	1-4	-2.55	11.32	18.8%
Emotional 4th grade	366	3.17	0.68	1-4	-1.05	3.94	30.4%
Behavioral 4h grade	366	3.71	0.37	2.25-4	-1.44	4.66	30.4%
			Rural stereotype vulnerability				

Rural id 3rd grade	423	3.95	0.84	1-5	-0.88	3.90	19.6%
Rural stigma 3rd grade	421	1.94	0.89	1-5	1.00	4.02	20.0%
Rural id 4th grade	362	3.84	0.76	1-5	-0.63	3.26	31.2%
Rural stigma 4th grade	362	1.87	0.80	1-5	0.69	2.88	31.2%
Gender stereotype vulnerability							
Gender id 3rd grade	423	3.10	0.89	1-5	-0.02	2.79	19.6%
Gender stigma 3rd grade	424	2.50	0.89	1-5	0.38	2.67	19.4%
Gender id 4th grade	362	2.64	0.88	1-5	0.25	2.86	31.2%
Gender stigma 4th grade	362	2.44	0.89	1-5	0.35	2.60	31.2%
Low SES stereotype vulnerability							
Low SES id 3rd grade	422	3.37	1.02	1-5	-0.37	2.67	19.8%
Low SES stigma 3rd grade	420	1.77	0.81	1-5	1.14	3.97	20.2%
Low SES id 4th grade	362	3.41	1.00	1-5	-0.42	2.70	31.2%
Low SES stigma 4th grade	362	1.67	0.75	1-5	1.23	4.20	31.2%

Table A3

Comparison on Pre-Treatment Measures Between Non-Attrited and Attrited Cases

Pre-Treatment Measures	M (SD) for Non-Attrited Cases	M (SD) for Attrited Cases	95% CI for Mean Diff	t	Df	Cohen's d
Emotional Engagement	3.30 (0.75)	3.34 (0.67)	-0.19, 0.13	-0.39	425	-0.04
Behavioral Engagement	3.75 (0.39)	3.71 (0.54)	-0.05, 0.14	0.99	425	0.11
Gender Identification	3.13 (0.92)	3.00 (0.81)	-0.06, 0.33	1.38	421	0.15
Gender Stigma Consciousness	2.52 (0.95)	2.45 (0.95)	-0.14, 0.27	0.65	422	0.07
Rural Identification	4.01 (0.80)	3.77 (0.92)	0.06, 0.42	2.58**	421	0.28
Rural Stigma Consciousness	1.94 (0.86)	1.95 (0.95)	-0.20, 0.18	-0.12	419	-0.01
Low SES Identification	3.40 (0.99)	3.29 (1.10)	-0.11, 0.34	1.03	420	0.11

|						
Low SES Stigma Consciousness	1.75 (0.79)	1.81 (0.87)	-0.24, 0.12	-0.68	418	-0.08
Domain Identification	4.29 (0.73)	4.09 (0.88)	0.03, 0.36	2.29*	419	0.25

**p < .05. **p < .01. ***p < .001.

Table A4

Comparison on Post-Treatment Measures Between Observations with Complete and Incomplete Pre-

Treatment Measures

Post-Treatment Measures	M (SD) for Cases with Complete Pre-Treatment	M (SD) for Cases with Incomplete Pre-Treatment	95% CI for Mean Diff	t	Df	Cohen's d
Emotional Engagement	3.15 (0.04)	3.27 (0.08)	-0.32, 0.07	-1.23	364	-0.18
Behavioral Engagement	3.71 (0.02)	3.75 (0.05)	-0.14, 0.07	-0.66	364	0.19
Gender Identification	2.61 (0.05)	2.79 (0.13)	-0.43, 0.08	-1.37	360	-0.20
Gender Stigma Consciousness	2.44 (0.05)	2.42 (0.12)	-0.25, 0.27	0.10	360	0.01
Rural Identification	3.86 (0.04)	3.73 (0.11)	-0.09, 0.35	1.15	360	0.17
Rural Stigma Consciousness	1.88 (0.05)	1.83 (0.11)	-0.18, 0.29	0.43	360	0.06
Low SES Identification	3.39 (0.06)	3.50 (0.12)	-0.40, 0.18	-0.74	360	-0.11
Low SES Stigma Consciousness	1.65 (0.04)	1.78 (0.10)	-0.35, 0.09	-1.14	360	-0.17
Domain Identification	4.30 (0.04)	4.35 (0.09)	-0.25, 0.14	-0.54	360	-0.08

Appendix B

Research Question 1

Figure B1

Distributions of Emotional and Behavioral Engagement
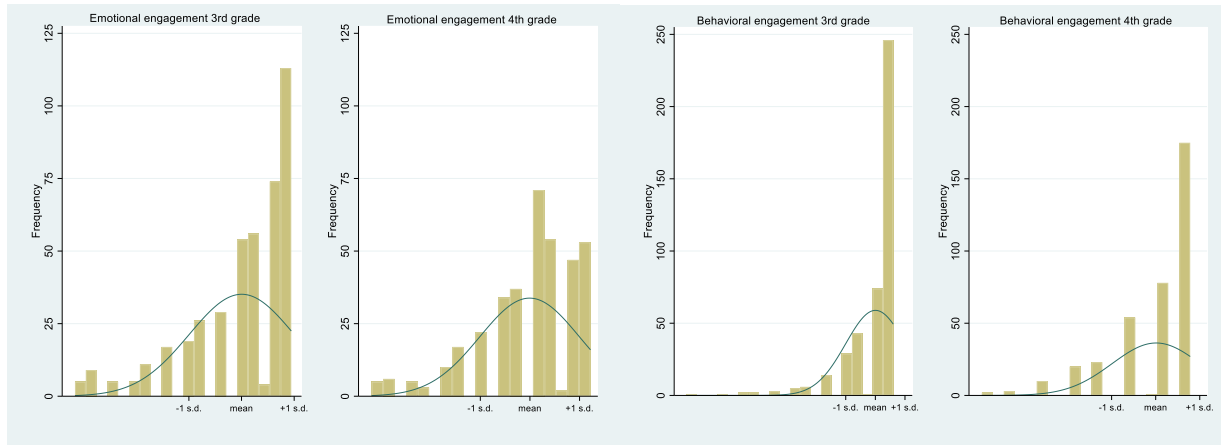
Table B1

Descriptive Statistics for Emotional and Behavioral Engagement Variables by Grade

Variable	3rd grade				4th grade			
	M	SD	Skew	Kurtosis	M	SD	Skew	Kurtosis
Emotional	3.31	0.73	-1.26	4.06	3.17	0.68	-1.04	3.92
Behavioral	3.74	0.43	-2.55	11.32	3.71	0.37	-1.44	4.66

Table B2

Results of independent-samples t-tests comparing gifted rural students and students in Furrer and

Skinner's (2003) study sample.

Variable	Samples						95% CI for Mean Difference	t	Welch's df	Cohen's d
	Gifted Rural in Current Study			Furrer and Skinner (2003)						
	M	SD	n	M	SD	n				
Emotional 3rd grade	3.31	0.73	427	3.11	0.55	93	0.07, 0.33	2.98**	172.33	0.29
Behavioral 3rd grade	3.74	0.43	427	3.14	0.49	93	0.49, 0.71	10.93***	125.39	1.36
Emotional 4th grade	3.17	0.68	366	3.19	0.51	223	-0.12, 0.08	-0.41	564.44	-0.03

| Behavioral 4th grade | 3.71 | 0.37 | 366 | 3.30 | 0.45 | 223 | 0.34, 0.48 | 11.45*** | 402.64 | 1.02 |

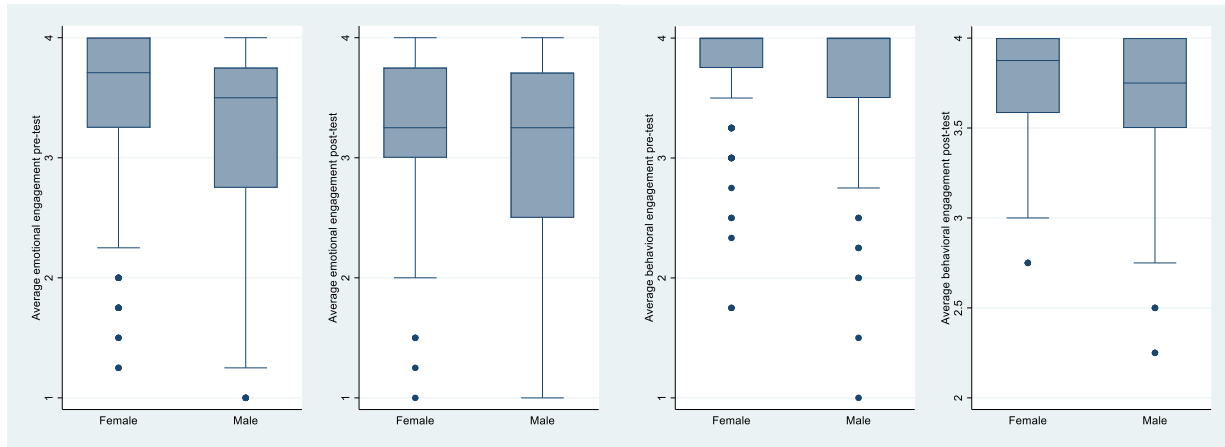| Behavioral 4th grade | 3.71 | 0.37 | 366 | 3.30 | 0.45 | 223 | 0.34, 0.48 | 11.45*** | 402.64 | 1.02 |

**p < .01. ***p < .001.

Appendix C

Research Question 2

Figure C1

Emotional and Behavioral Engagement by Gender in 3rd (pre-test) and 4th(post-test) Grades

Table C1

Descriptive Statistics for Engagement by Gender and Grade

Type of Engagement	3rd Grade						4th Grade					
	Boys			Girls			Boys			Girls		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Emotional	3.20	0.79	207	3.42	0.64	216	3.04	0.77	172	3.27	0.58	188
Behavioral	3.69	0.48	207	3.79	0.37	216	3.64	0.43	172	3.77	0.29	188

Table C2

Regression Coefficients for Engagement across Grades

| Variable	Behavioral Engagement			Emotional Engagement		
	B	β	SE	B	β	SE
Constant	3.0***			2.56***		
Year	-0.03	-.04	0.02	-0.15***	-.11	0.04
Condition	0.81***	.97	0.09	0.98***	.67	0.12
Gender	-0.11**	-.14	0.03	-0.23***	-.16	0.06
Adjusted R^2	.09			.14		

**p < .05. **p < .01. ***p < .001.

Appendix D

Table D1

Descriptive Statistics for Group Identification by Gender and Grade

Type of Group Identification	3rd Grade						4th Grade					
	Boys			Girls			Boys			Girls		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Gender	3.11	.88	205	3.08	.90	214	2.65	.86	170	2.64	.89	186
Rural	3.99	.85	204	3.91	.83	215	3.82	.80	170	3.86	.74	186
Low SES	3.34	1.01	204	3.38	1.04	214	3.45	.97	170	3.37	1.02	186

Figure D1

Group Identification by Gender in 3rd (pre-test) and 4th (post-test) Grades
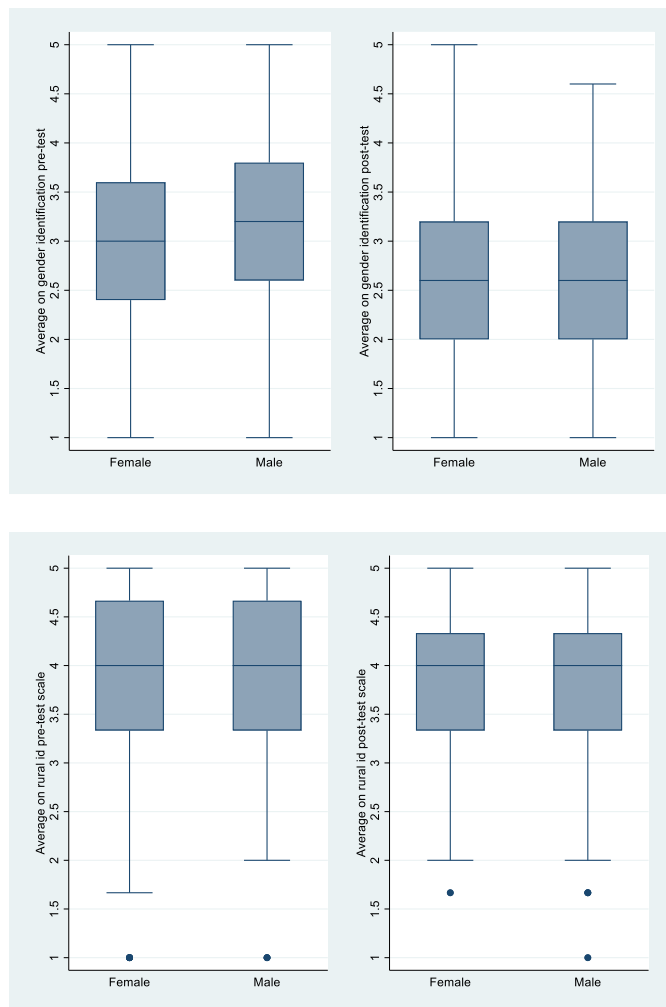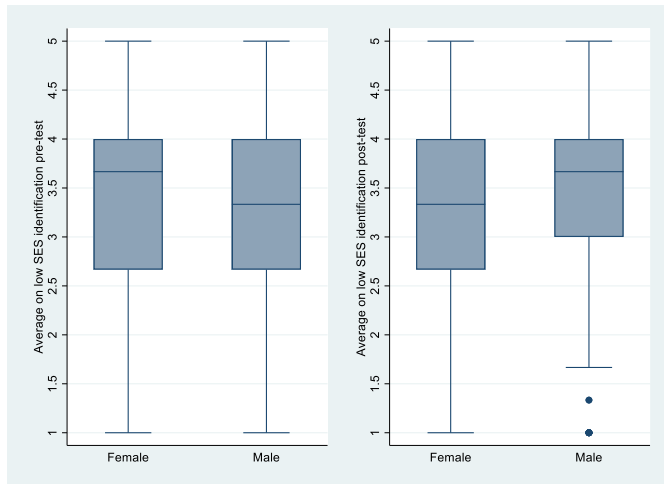
Table D2

Regression Coefficients for Group Identification across Grades

Variable	Gender Identification			Rural Identification			Low SES Identification		
	B	β	SE	B	B	SE	B	β	SE
Constant	3.33***		.07	3.89***		.07	3.15***		.08
Year	-0.44***	-.24	.06	-0.11*	-.07	.05	0.04	.02	0.07
Condition	-0.67***	-.36	.15	0.16	.10	.18	0.25	.12	0.23
Gender	-0.01	.00	0.07	0.01	.00	0.07	-0.01	.00	0.08
Adj. R²	.11			.03			.04		

**p < .05. **p < .01. ***p < .001.

Table D3

Descriptive Statistics for Stigma Consciousness by Gender and Grade

Type of Stigma Consciousness	3rd Grade						4th Grade					
	Boys			Girls			Boys			Girls		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Gender	2.56	.94	205	2.45	.95	215	2.65	.86	170	2.64	.89	186
Rural	1.97	.91	203	1.91	.86	214	1.85	.88	170	1.90	.73	186
Low SES	1.82	.85	202	1.73	.78	214	1.70	.80	170	1.64	.71	186

Figure D1

Stigma Consciousness by Gender in 3rd (pre-test) and 4th (post-test) Grades
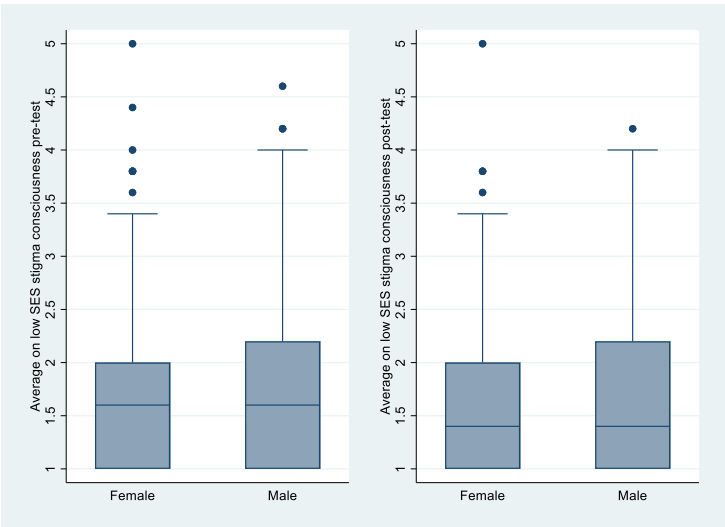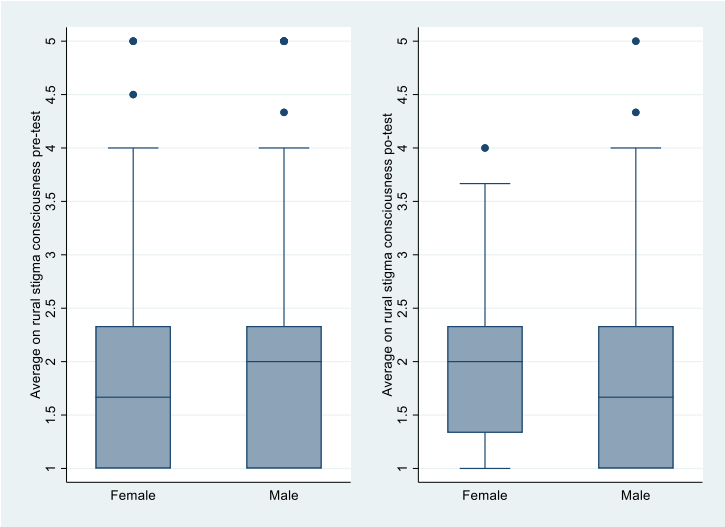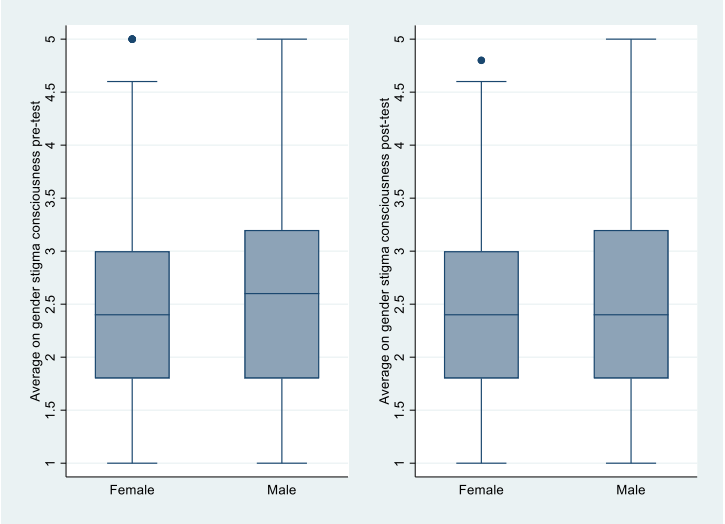
Table D4

Regression Coefficients for Stigma Consciousness across Grades

Variable	Gender Stigma			Rural Stigma			Low SES Stigma		
	B	β	SE	B	B	SE	B	β	SE
Constant	2.01***		0.08	1.48***		0.07	1.15***		0.07
Year	-0.04	-.02	0.06	-0.06	-0.03	0.05	-0.09	-.06	0.05
Condition	0.22	.12	0.20	0.28	.16	.24	0.53**	.33	0.17
Gender	0.11	.06	0.07	0.05	.03	0.07	0.09	.06	0.06
Adj. R²	.06			0.03			.04		

**p < .05. **p < .01. ***p < .001.

Appendix E

Table E1

Correlations between Variables in Regression Analysis for Behavioral Engagement Modelling

Variable	1	2	3	4	5	6	7	8
1. Behavioral Engagement	-	.32***	-.06	.13	-.08	.21***	-.07	-.18***
2. Prior Engagement		-	-.03	.14	-.02	.11	-.10	-.11
3. Gender ST			-	.29***	.52***	.07	-.11	.03
4. Rural ST				-	.34***	.13	-.06	.04
5. Low SES ST					-	.02	.07	.06
6. Domain Identification						-	-0.05	-.07
7. Condition							-	-.04
8. Gender								-

***$p < .001$.

Table E2

Correlations between Variables in Regression Analysis for Emotional Engagement Modelling

Variable	1	2	3	4	5	6	7	8
1. Emotional Engagement	-	.35***	-.13***	.21***	-.06***	.26***	-.01	-.16***
2. Prior Engagement		-	-.04***	.14***	.04***	.12***	-.02	-.15***
3. Gender ST			-	.28***	.50***	.07***	-.10***	.04***
4. Rural ST				-	.32***	.12***	-.05***	-.04***
5. Low SES ST					-	.02	.06***	.06***
6. Domain Identification						-	-.05***	-.07***
7. Condition							-	-.03***
8. Gender								-

***$p < .001$.

Table E3

Variable	Behavioral Engagement			Emotional Engagement		
	B	β	SE	B	β	SE
Constant	2.81***		0.24	1.99***		0.30
Prior Engagement	0.24***	.28	0.06	.28***	.30	0.07
Gender Stereotype	-0.01	-.04	0.01	-0.06	-.14	0.03
Rural Stereotype	0.04*	.12	0.02	0.14***	.23	0.04
Low SES Stereotype	-0.02	-.08	0.01	-0.04	-.07	0.03
Gender	-0.09*	-.12	0.04	-0.12	-.09	0.07
Condition	-0.03	-.03	0.04	-0.01	-.01	0.07
Adj. R^2	.13			.18		
P-value	.000			.000		

*p < .05. **p < .01. ***p < .001.

Table E4

Behavioral Engagement Models with Interactive Terms between Stereotype Threat and Gender

Variable	M$_1$			M$_2$			M$_3$		
	B	B	SE	B	B	SE	B	β	SE
Constant	2.82***		0.23	2.78***		0.24	2.77***		0.24
Prior Engagement	0.24***	.28	0.06	0.24***	.28	0.06	0.24***	.28	0.06
Gender Stereotype	-0.01	-.06	0.01	-0.01	-.04	0.01	-0.01	-.04	0.01
Rural Stereotype	0.04*	.12	0.02	0.05*	.14	0.02	0.04*	.12	0.02
Low SES Stereotype	-0.02	-.08	0.01	-0.02	-.08	0.01	-0.02	-.06	0.02
Gender	-0.13	-.18	0.13	-0.03	-.04	0.17	-0.02	-.03	.13
Condition	-0.03	-.03	0.04	-0.03	-.04	0.04	-0.03	-.04	0.04
Gender St x Gender	0.01	.06	0.02						
Rural St x Gender				-0.01	-.09	0.03			
Low SES St x Gender							-0.01	-.11	0.03
Adj. R^2	.12			.13			.13		
p-value	.000			.000			.000		

*p < .05. **p < .01. ***p < .001.

Table E5

Emotional Engagement Models with Interactive Terms between Stereotype Threat and Gender

Variable	M$_1$			M$_2$			M$_3$		
	B	B	SE	B	B	SE	B	β	SE
Constant	1.95***		0.31	2.03***		0.35	1.96***		0.31
Prior Engagement	0.28***	.30	0.07	0.28***	.30	0.07	0.28***	.30	0.07
Gender Stereotype	-0.06	-.13	0.04	-0.06	-.14	0.03	-0.06	-.14	0.03
Rural Stereotype	0.14***	.23	0.04	0.14*	.22	0.05	0.14***	.23	0.04
Low SES Stereotype	-0.04	-.07	0.03	-0.04	-.07	0.03	-0.03	-.06	0.04
Gender	-0.04	-.03	0.21	-0.04	-.06	0.21	-0.07	-.05	0.25
Condition	-0.01	-.01	0.08	-0.01	-.01	0.08	-0.01	-.01	0.08
Gender St x Gender	-0.02	-.07	0.04						
Rural St x Gender				0.01		0.07			
Low SES St x Gender							-0.01	-.04	0.05
Adj. R^2	.18			.18			.18		
p-value	.000			.000			.000		

*p < .05. **p < .01. ***p < .001.

Table E6

Regression Results for Models with an additional Language Arts Identification variable

Variable	Behavioral Engagement			Emotional Engagement		
	B	β	SE	B	β	SE
Constant	2.78***		0.23	1.87***		0.30
Prior Engagement	0.23***	.27	0.06	0.26***	.28	0.06
Gender Stereotype	-0.01	-.05	0.01	-0.07*	-.16	0.03
Rural Stereotype	0.03	.10	0.02	0.12***	.21	0.04
Low SES Stereotype	-0.02	-.07	0.01	-0.03	-.06	-0.03
Gender	-0.08*	-.11	0.04	-0.11	-.08	0.06
Condition	-0.02	-.03	0.04	0.00	.00	0.08
Domain Identification	0.13*	.15	0.05	0.33***	.21	0.08
Adj. R^2	0.15			.22		
P-value	.000			.000		

*p < .05. **p < .01. ***p < .001.

Table E7

Behavioral Engagement Models with Interactive Terms between Stereotype Threat and Domain

Identification

Variable	M_1			M_2			M_3		
	B	β	SE	B	B	SE	B	β	SE
Constant	2.80***		0.27	2.59***		0.27	2.67***		0.30
Prior Engagement	0.23***	.27	0.06	0.23***	.27	0.06	0.23***	.27	0.06
Gender Stereotype	-0.02	-.07	0.03	-0.01	-.05	0.01	-0.01	-.05	0.01
Rural Stereotype	0.04	.10	0.02	0.07*	.21	0.03	0.03	.10	0.02
Low SES Stereotype	-0.02	-.08	0.01	-0.02	-.07	0.01	0.00	-.01	0.04
Gender	-0.08*	0.11	0.04	-0.08*	0.11	0.04	-0.09*	0.11	0.04
Condition	-0.02	-.03	0.04	-0.02	-.03	0.04	-0.02	-.03	0.04
Domain ID	0.10	.12	0.15	0.40*	.47	0.19	0.28	.33	0.21
Gender St x Domain	0.00	.03	0.03						
Rural St x Domain				-0.05	-.36	0.03			
Low SES St x Domain							-0.03	-.20	0.04
Adj. R^2	.15			.15			.15		
p-value	.000			.000			.000		

*p < .05. **p < .01. ***p < .001.

Table E8

Emotional Engagement Models with Interactive Terms between Stereotype Threat and Domain

Identification

Variable	M_1			M_2			M_3		
	B	β	SE	B	B	SE	B	β	SE
Constant	1.89***		.41	1.67***		.43	1.83***		.43
Prior Engagement	0.26***	.28	0.06	0.26***	.28	0.06	0.26***	.28	0.06
Gender Stereotype	-0.08	-.17	0.05	-0.07*	-.16	0.03	-0.07*	-.16	0.03

Rural Stereotype	0.13***	.21	0.04	0.17*	.27	0.06	0.13***	.21	0.04
Low SES Stereotype	-0.03	-.06	0.03	-0.03	-.06	0.03	-0.02	-.04	0.06
Gender	-0.11	-.08	0.06	-0.11	-.08	0.06	-0.11	-.08	0.06
Condition	0.00	0.00	0.09	0.00	0.00	0.08	0.00	0.00	0.08
Domain ID	0.30	.19	0.26	0.30	.40	0.26	0.30	.25	0.26
Gender St x Domain	0.01	.02	0.05						
Rural St x Domain				-0.05	-.21	0.07			
Low SES St x Domain							-0.01	-.04	0.07
Adj. R^2	.23			.23			.23		
p-value	.000			.000			.000		

*p < .05. **p < .01. ***p < .001.

Appendix F

Stereotype Threat Vulnerability Scales

Rural Identification

1. I know many things about my community.

2. I would rather live here than anywhere else.

3. My community is very important to me.

Rural Stigma Consciousness

1. People think I act certain way because of the community where I live.

2. My teachers think I act certain ways because of the community where I live.

3. Other people judge me because of the community where I live.

Gender Identification

1. Being a boy/girl influences how I feel about myself.

2. Being a boy/girl makes me a better reader.

3. Being a boy/girl helps people know who I am.

4. Being a boy/girl is important to me in knowing who I am and how I should act.

5. Being a boy/girl makes me a better writer.

Gender Stigma Consciousness

1. My teacher thinks I act the way I do because I am a boy/girl.

2. Being a boy/girl affects how other people think about my behavior.

3. My teacher treats me differently because I am a boy/girl.

4. Girls/Boys think I act certain ways because I am a boy/girl.

5. Other people treat me differently because I am a boy/girl.

Low SES

1. The things my family has influence how I feel about myself.

2. The things my family has influence how confident I am in myself.

3. Where my family lives and the things my family has influence what I can become in my future.

Low SES Stigma Consciousness

1. How much money my family has affects how teachers act toward me.

2. How much money my family has affects how people my age act toward me.

3. Other people judge me because of how much money my family has.

4. How much money my family has is a reason I act the way I do around other people.

5. People think I act certain ways because of how much money my family has.

Engagement Scales

Behavioral Engagement

1. I try hard to do well in school.

2. In class, I work as hard as I can.

3. When I'm in class, I participate in class discussions.

4. I pay attention in class.

5. When I am in class, I listen very carefully.

Emotional Engagement

1. When I am in class, I feel good.

2. When we work on something in class, I feel interested.

3. Class is fun.

4. I enjoy learning new things in class.

Figure F1

Final SEM Model Used for the Analysis
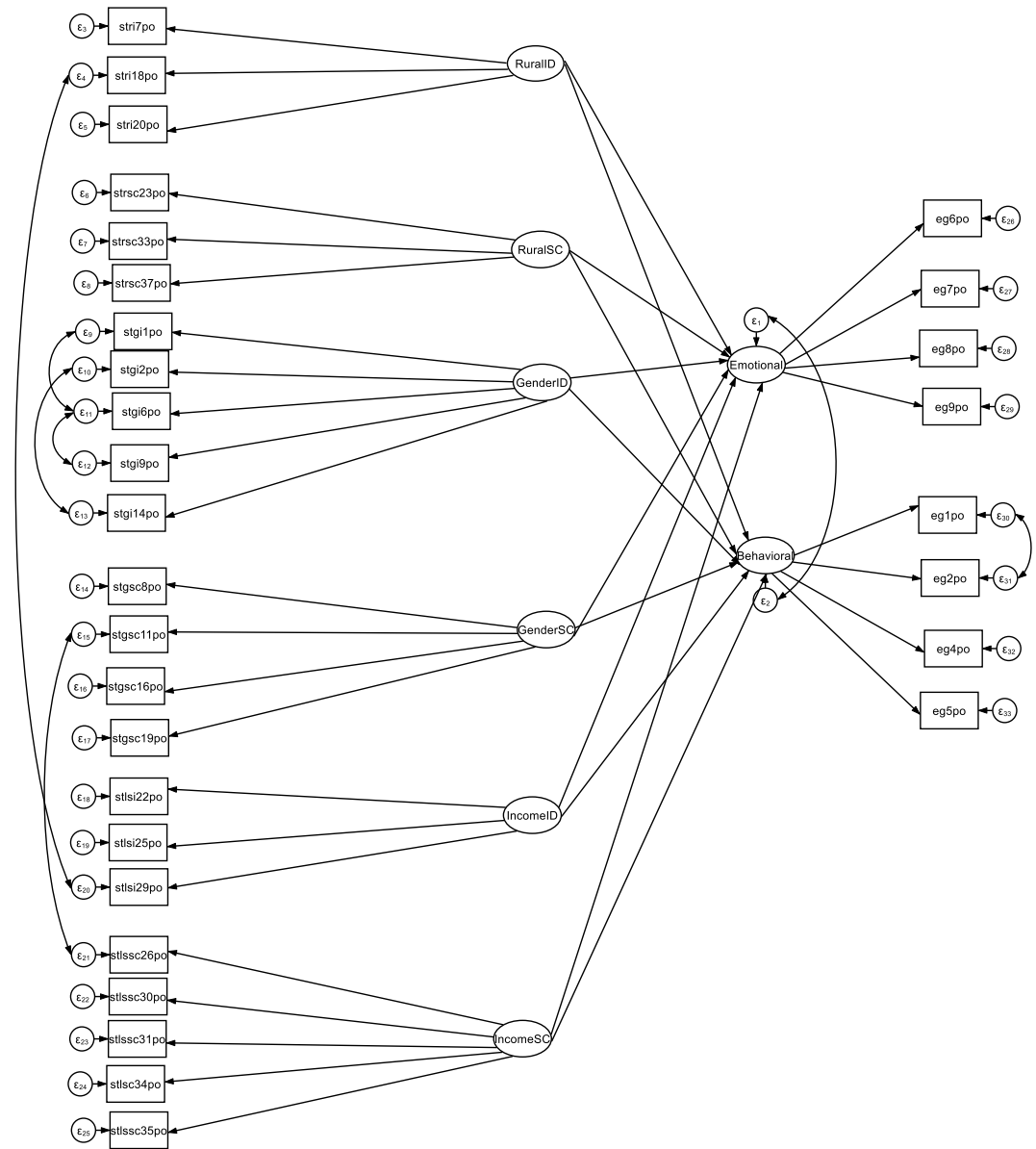
Table F1

Coefficients from SEM

Path	B	SE	β
Gender identification → Behavioral Engagement	0.021	0.029	.11
Gender Stigma Consciousness →Behavioral Engagement	-0.035	0.034	-.16
Low SES Identification → Behavioral Engagement	-0.004	0.021	-.02
Low SES Stigma Consciousness →Behavioral Engagement	-0.041	0.045	-.13
Rural Identification →Behavioral Engagement	0.197*	.092	.35
Rural Stigma Consciousness → Behavioral Engagement	0.025	0.034	.11
Gender identification → Emotional Engagement	0.255*	0.124	.34
Gender Stigma Consciousness →Emotional Engagement	-0.428**	0.141	-.50
Low SES Identification → Emotional Engagement	-0.138	0.078	-.21
Low SES Stigma Consciousness →Emotional Engagement	0.347*	0.161	.28
Rural Identification →Emotional Engagement	1.250**	0.420	.56
Rural Stigma Consciousness → Emotional Engagement	-0.014	0.125	-.02
Emotional Behavior ↔Emotional Behavior	0.037***	0.012	.50

Appendix G

Table G1

Variable	Behavioral Engagement			Emotional Engagement		
	B	β	SE	B	β	SE
Constant	2.78***		0.24	2.05***		0.29
Prior Engagement	0.24***	.28	0.06	0.29***	0.31	.06
N of Threats						
1 threat	0.01	.01	0.07	0.01	.01	0.12
2 threats	-0.01	-.01	0.06	-0.08	-.06	0.11
Gender	-0.09*	-.12	0.04	-0.13	-.09	0.06
Condition	-0.03	-.03	0.04	0.00	0.00	0.09
Domain Identification	0.13**	.16	0.05	0.35***	.22	0.08
Adj. R^2	.13			.18		
P-value	.000			.000		

*p < .05. **p < .01. ***p < .001.

Appendix H

Although scholarly literature on stereotype threat does not point to engagement as a possible

antecedent of stereotype threat, I tested models with engagement as a predictor variable and

stereotype threat as an outcome variable to exclude the scenario where stereotype threat is affected by

engagement. In particular, to address this question, I conducted a lagged analysis with a series of

regression models of the following type:

$$Stereotype\ threat_i = \beta_0 + \beta_1 emotional\ engagement_i + \beta_2 behavioral\ engagement_i +$$

$$\beta_3 prior\ stereotype\ threat_i + \beta_4 gender_i + \beta_5 condition_i + \epsilon_i$$

In the model, the stereotype threat variable represents students' vulnerability to stereotype

threat in the fourth grade while emotional and behavioral engagement variables represent students'

engagement in the third grade. The results of the modelling are presented in Table H1 below. Emotional

and behavioral engagement, the two predictors of interest, were not statistically significant across the

three models.

Table H1

Variable	Gender ST			Rural ST			Low SES ST		
	B	β	SE	B	β	SE	B	β	SE
Constant	4.59		0.86	4.33		0.72	3.97		0.75
Emotional Engagement	-0.24	-.01	0.12	0.16	.11	0.09	0.13		.12
Behavioral Engagement	-0.08	-.02	0.24	0.11	.04	0.19	-0.12		.20
Prior ST	0.19***	.20	0.05	0.09	.10	0.05	0.19***		0.05
Gender	0.07	.02	0.14	-0.06	-.03	0.12	0.17		0.13
Condition	-0.29	-.29	0.15	-0.09	-.04	0.11	0.15		0.16
Adj. R²	.05			.03			.05		
P-value	.003			.045			.009		

*p < .05. **p < .01. ***p < .001.

Similarly, I tested whether students' identification with language arts may have been influenced

by students' emotional and behavioral engagement. Again, the two predictors of engagement were not

statistically significant in these models.

Table H2

Variable	Domain Identification		
	B	β	SE
Constant	2.98		0.47
Emotional Engagement	0.02	.03	0.06
Behavioral Engagement	0.07	.04	0.13
Prior Domain Id	0.25***	.29	0.06
Gender	-0.06	-.05	0.07
Condition	-0.07	-.05	0.07
Adj. R²	.10		
P-value	.000		

Appendix I

Figure I.1

Kernel density plots for the 10th and 70th imputations: original, imputed, and combined data distributions

Behavioral Engagement pre-test
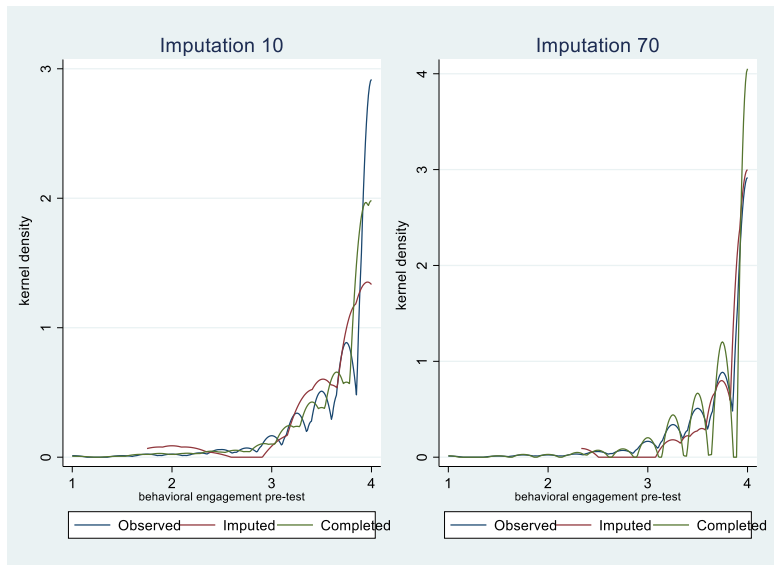
Behavioral Engagement post-test
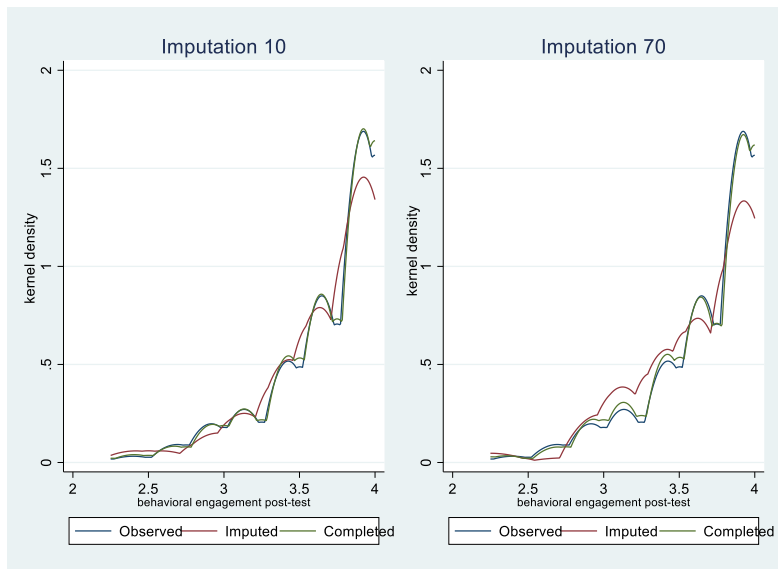
Emotional Engagement pre-test
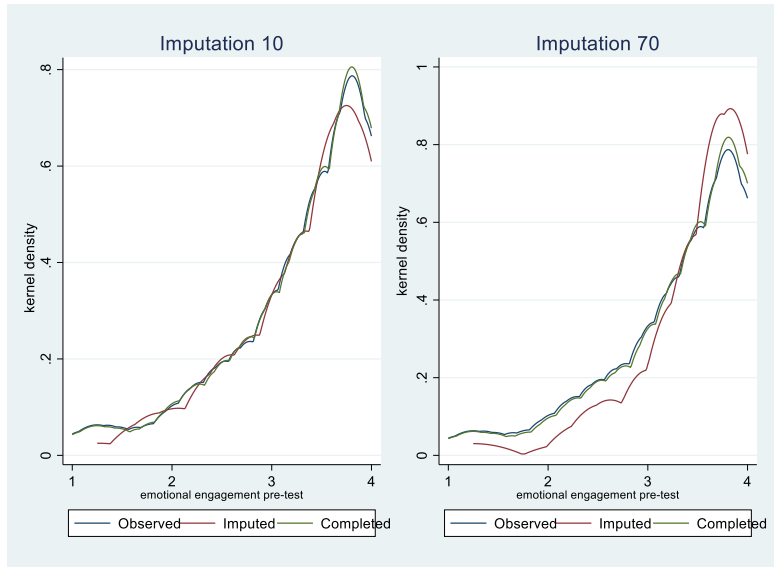
Emotional Engagement post-test
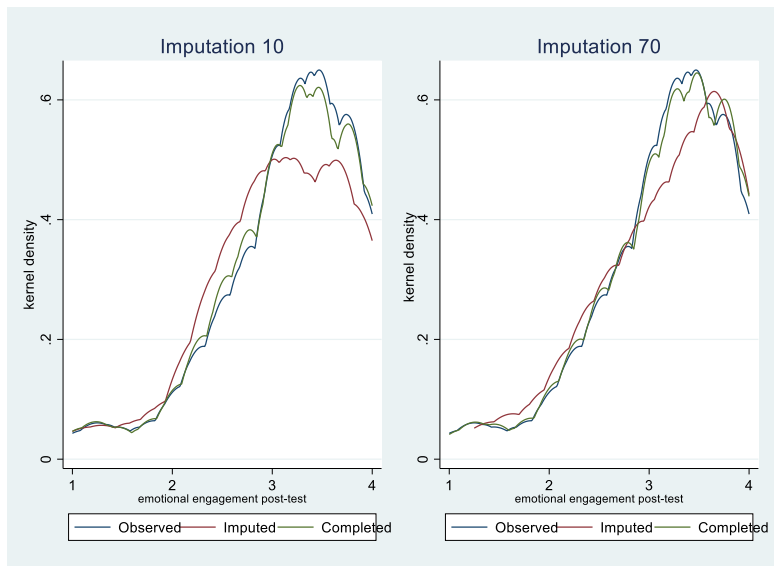
Gender Identification pre-test
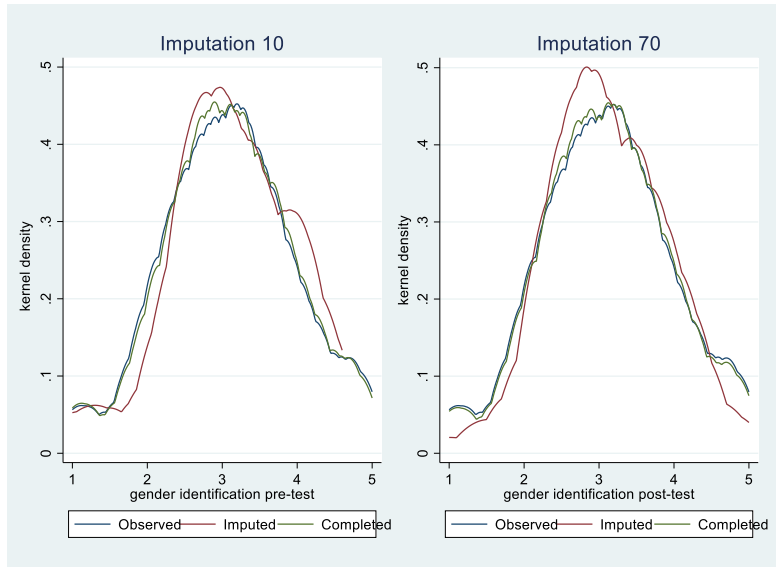
Gender Identification post-test
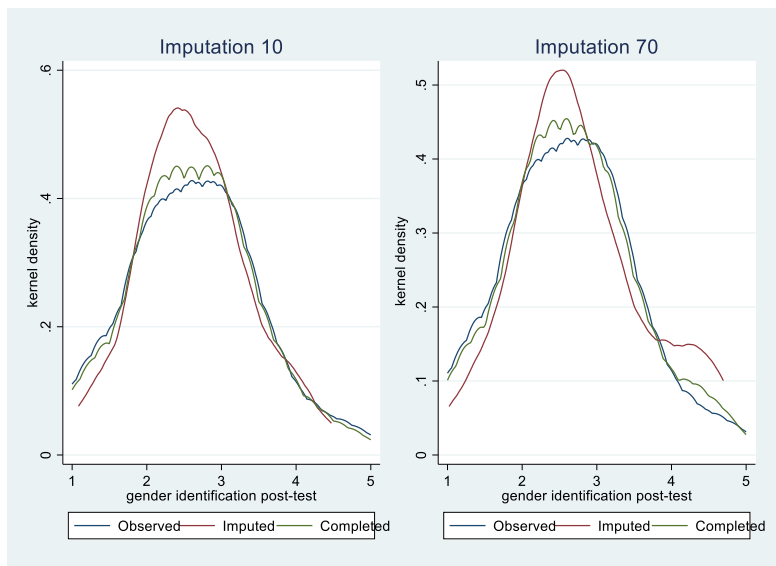
Gender Stigma Consciousness pre-test
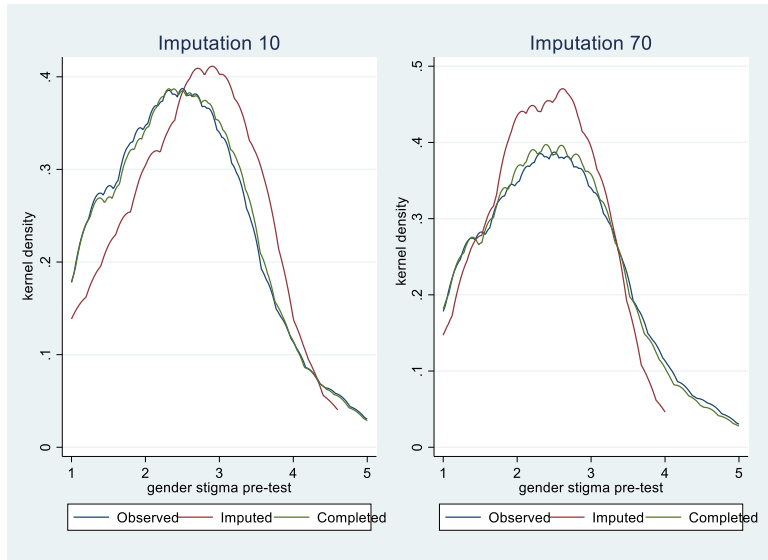
Gender Stigma Consciousness post-test
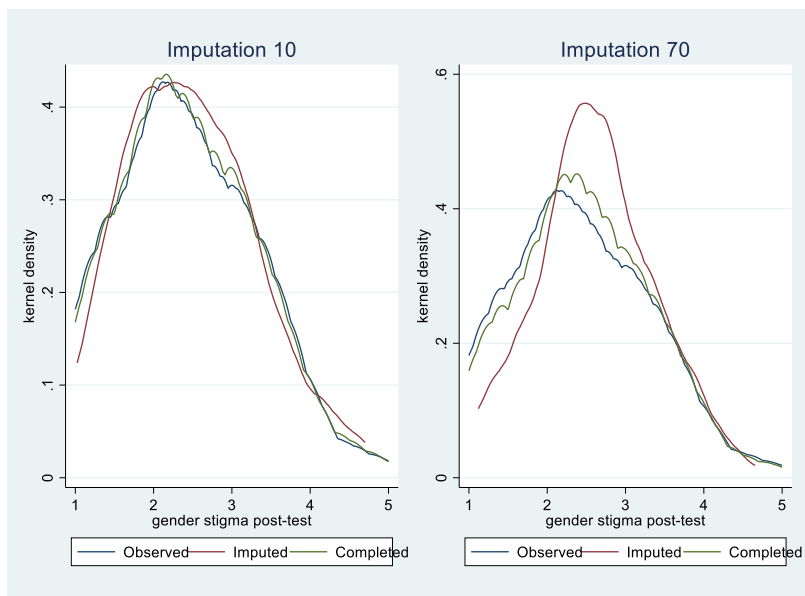
Rural Identification pre-test
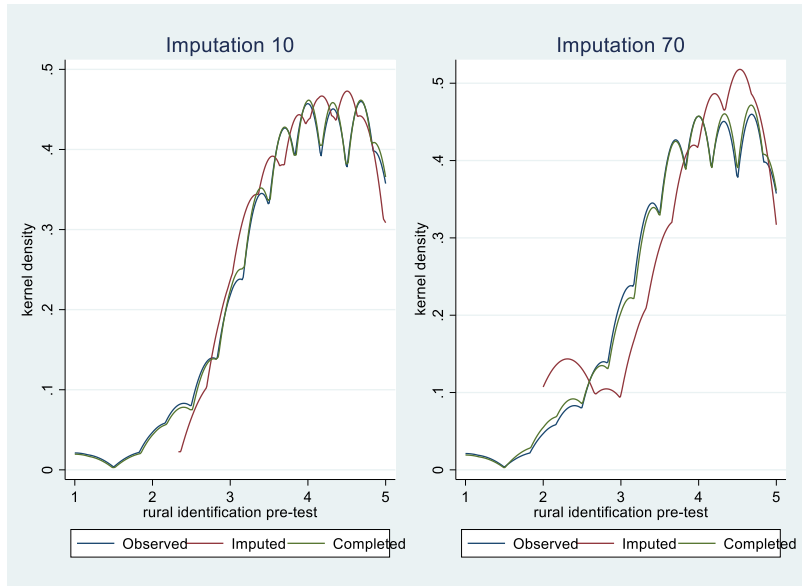
Rural Identification post-test
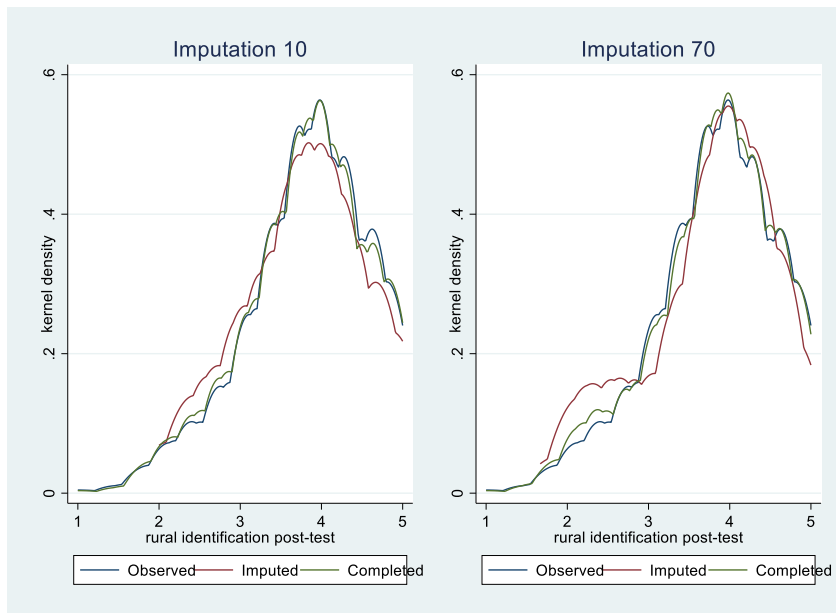
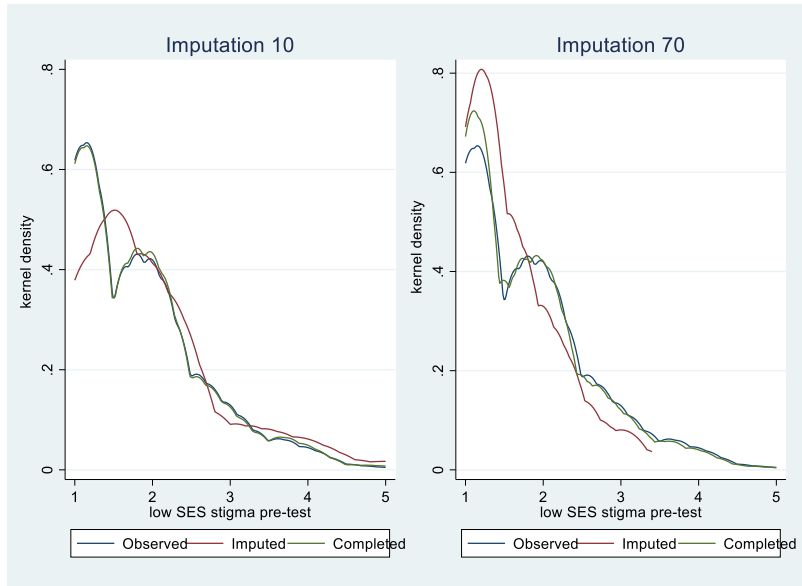Rural Stigma Consciousness pre-test
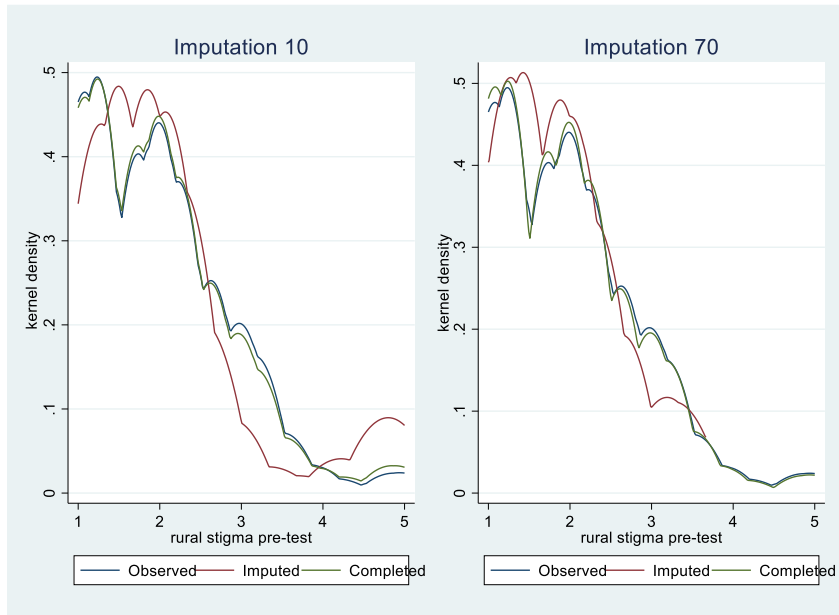
Rural Stigma Consciousness post-test
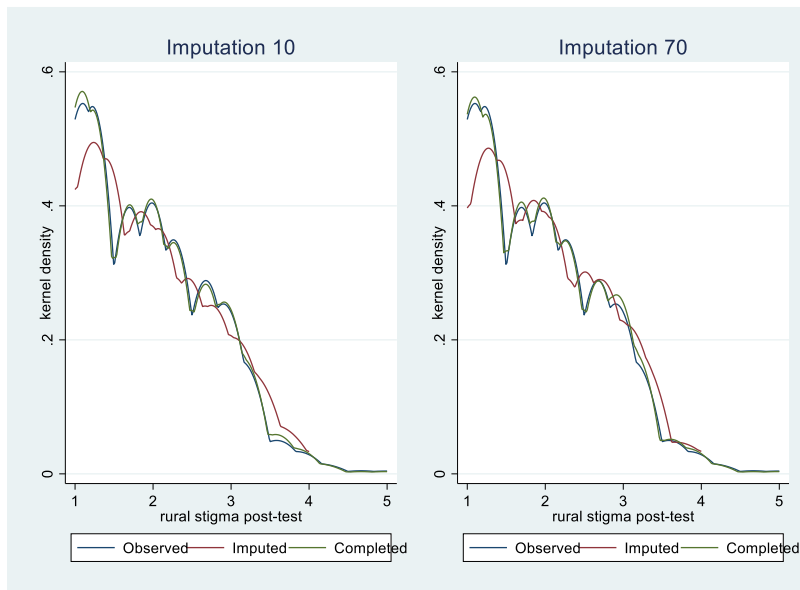
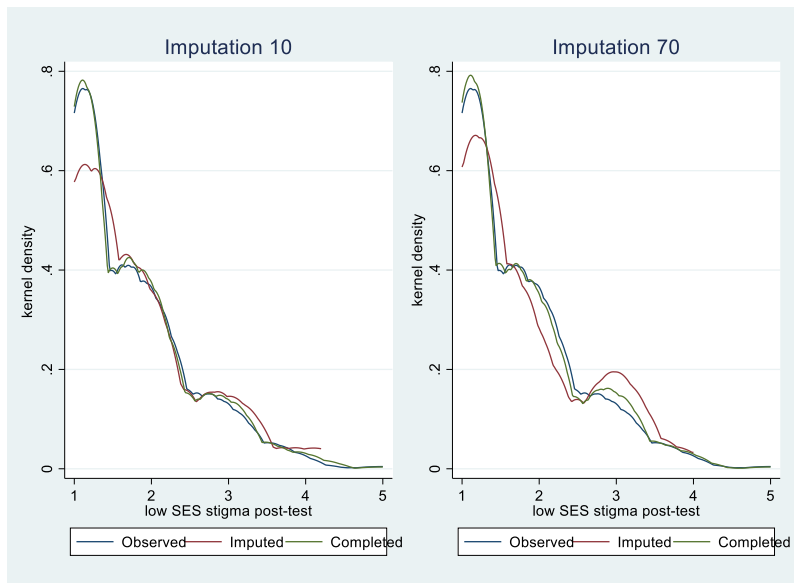## Low SES Identification pre-test
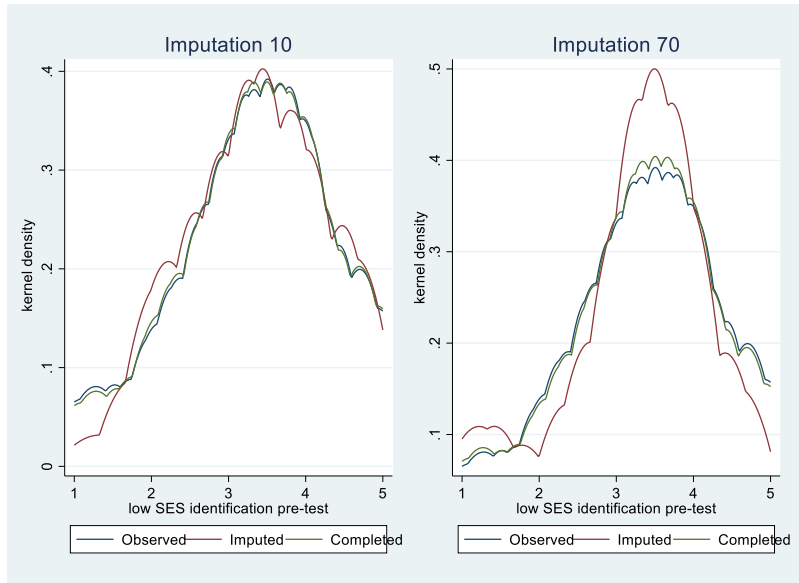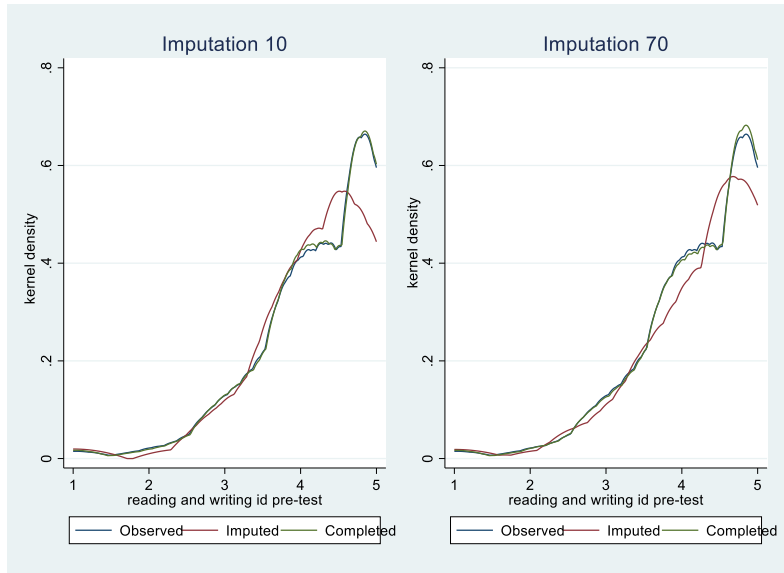

Low SES Identification post-test
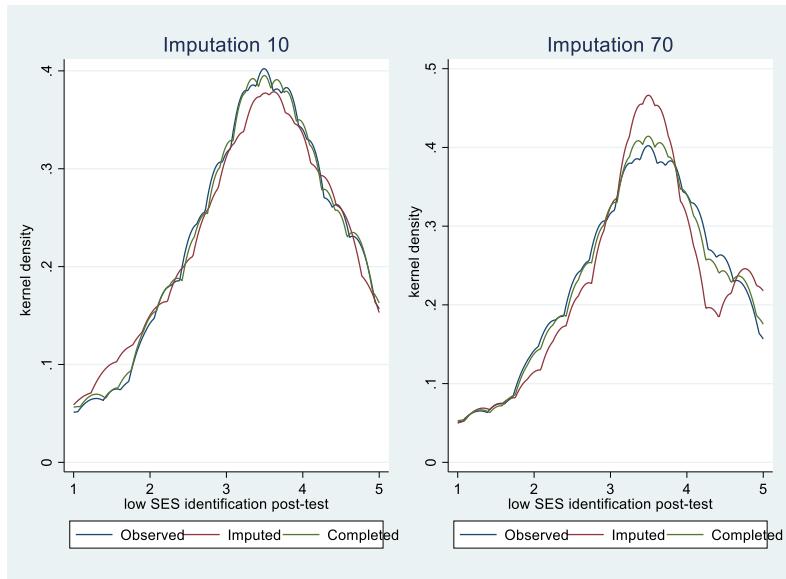
Low SES Stigma Consciousness pre-test

Low SES Stigma Consciousness post-test

Reading and Writing Identification pre-test

Reading and Writing Identification post-test