

A MIXED-METHODS EXPLORATION OF STEREOTYPE THREAT IN MIDDLE  
CHILDHOOD

Kate M. Wegmann

A dissertation submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the School of Social Work.

Chapel Hill  
2014

Approved by:

Natasha K. Bowen

Joelle D. Powers

Mimi V. Chapman

Michael C. Lambert

Mark R. Leary

© 2014  
Kate M. Wegmann  
ALL RIGHTS RESERVED

## **ABSTRACT**

Kate M. Wegmann: A Mixed-Methods Exploration of Stereotype Threat in Middle Childhood  
(Under the direction of Natasha K. Bowen)

The three studies presented in this dissertation were designed to develop a mixed-methods foundation for the extension of stereotype threat research to a middle childhood (ages 6-11; Centers for Disease Control and Prevention, 2012) population. The first paper systematically reviews existing research on stereotype threat among children to evaluate evidence that stereotype threat affects the learning and performance of children in middle childhood and to compare and contrast features of stereotype threat in children with features of the phenomenon identified in research involving older populations.

The second paper focuses on two constructs identified in the systematic review as potential buffers of stereotype threat in middle childhood: social support and school belonging. Because the study of stereotype threat inherently involves comparison of students belonging to different social groups, measures of constructs related to stereotype threat must support accurate cross-group comparisons. The purpose of the second paper is to determine whether an existing measurement tool assessing school belonging and social support (the Elementary School Success Profile for Children) performs equally for both Black/African American and White children, and can be used to make valid cross-group comparisons on levels of these constructs.

Although Paper 2 contributes to solving some of the measurement issues related to stereotype threat in middle childhood by validating a measure of constructs believed to buffer

stereotype threat, no direct measure of stereotype threat currently exists. Development of such a measure would require exploratory qualitative work to learn more about the nature of stereotype threat in middle childhood. The third paper of this dissertation uses vignette methodology to explore how children in the target age group perceive and experience stereotype threat. Children responded to six vignettes modeling Shapiro and Neuberg's Multithreat Framework (2007), discussing their thoughts on the ostensibly stereotype threatening situations as well as their perceptions of conditions contributing to threats and the consequences associated with threat experiences. Paper 3 presents children's perspectives on stereotype threat in their own words, while framing the responses in the contexts of existing stereotype threat research and knowledge of child development.

## **ACKNOWLEDGMENTS**

Natasha Bowen has been an incredible mentor and friend to me throughout my time in graduate school, recognizing the latent scholar (and latent cat lady) in me before I did. She has always challenged me and pushed me to achieve more than I thought possible. I would not be the person I am today without her, nor would this work exist. Joelle Powers has also been a wonderful mentor, providing me with support, opportunities, and wise advice throughout my doctoral studies and dissertation process. Mimi Chapman's guidance, particularly her expertise in qualitative research, was invaluable in completing this work. Michael Lambert's knowledgeable, considered feedback on measurement and content issues has enhanced my work and my thinking. Mark Leary's substantive knowledge, confidence in my work, and challenging questions have inspired new directions for my future research.

My parents, Michael and Mary, have always been confident in my ability to meet any academic challenge, and never let me settle for less than my best. My brother, Thomas, was an example to me in finding your niche and flourishing. Lindy Beyer and Jenny Nicholson Cude provided endless encouragement, much-needed perspective, occasional disaster management, and ridiculous laughter on a daily basis. I consider Krysti Webber not just a friend, but hopefully a collaborator for life. Cindy Fraga Rizo is simultaneously one of the kindest and smartest people I am lucky enough know. Sarah Dababnah didn't just talk me off the ledge many times; she sat on it next to me to keep me company. Last but not least, HP was the best animal friend a person could have throughout this process.

## TABLE OF CONTENTS

LIST OF TABLES .....	x
LIST OF FIGURES .....	xi
CHAPTER 1: A SYSTEMATIC REVIEW OF RESEARCH ON STEREOTYPE THREAT IN MIDDLE CHILDHOOD .....	1
Stereotype Threat Defined .....	2
Consequences of Stereotype Threat .....	3
Environmental Precursors to Stereotype Threat .....	4
Individual Characteristics Associated With Stereotype Threat .....	5
Stereotype Threat and Children .....	7
Methods .....	11
Research Questions .....	11
Literature Search Procedures .....	12
Results .....	13
Search Results .....	13
Findings .....	14
Research Question 1: What is the evidence that children between the ages of 6-11 experience stereotype threat? .....	15
Research Question 2: How do identified precursors of stereotype threat in adults relate to the phenomenon in middle childhood? .....	18
Characteristics Common to Adult and Child Stereotype Threat .....	18
Characteristics That Function Differently in Adult and Child Stereotype Threat .....	22
Discussion .....	24
Potential intervention strategies .....	27

Future Research .....	30
Conclusion .....	31
<b>CHAPTER 2: MEASURING SOCIAL SUPPORT AND SCHOOL BELONGING IN BLACK/AFRICAN AMERICAN AND WHITE CHILDREN: A MULTIPLE GROUP CONFIRMATORY FACTOR ANALYSIS .....</b>	<b>45</b>
The Nature of Children’s Social Support .....	46
Influence of Parent or Caregiver Support on Academic Success .....	47
Influence of Peer Support on Academic Success .....	48
Influence of Teacher Support on Academic Success .....	48
Social Support, School Belonging, and Academic Success .....	49
Social Support and School Belonging as Stereotype Threat Buffers .....	50
Purpose .....	51
Methods.....	53
Sample .....	53
Data Collection .....	54
Measures.....	54
Analysis .....	57
Results.....	62
Missing Data.....	62
Group-specific Models .....	62
Configural Invariance .....	63
Measurement Invariance .....	63
Comparison of Latent Means .....	64
Discussion .....	65
Study Limitations .....	66

Implications for Practice.....	67
Implications for Future Research .....	67
Conclusion .....	68

### CHAPTER 3: “HIS SKIN DOESN’T MATCH WHAT HE WANTS TO DO”: USING VIGNETTES TO EXPLORE SHAPIRO AND NEUBERG’S MULTITHREAT FRAMEWORK WITH CHILDREN .....

75

The Multi-threat Framework .....	76
Stereotype Threat in Middle Childhood .....	77
Vignette Methodology .....	78
Methods.....	80
Research questions .....	80
Vignettes .....	80
Sample .....	80
Data collection.....	81
Results.....	84
Self-Concept Threat.....	84
Group Concept Threat .....	86
Own Reputation Threat—Outgroup .....	87
Own Reputation Threat—Ingroup.....	89
Group Reputation Threat—Outgroup.....	91
Group Reputation Threat—Ingroup .....	93
Discussion .....	94
Relevance of Specific Threats .....	95
Emotional Responses to Threat .....	97
Consequences of Stereotype Threat .....	98



Study Limitations .....	102
Implications for Future Research .....	104
Implications for Intervention .....	104
Conclusion .....	105
CHAPTER 4: INTEGRATIVE SUMMARY .....	108
Implications for Stereotype Threat Theory .....	111
Implications for Practice.....	112
Implications for Future Research .....	113
APPENDIX A: VIGNETTES ILLUSTRATING SHAPIRO & NEUBERG’S MULTITHREAT FRAMEWORK.....	115
APPENDIX B: INTERVIEW GUIDE FOR VIGNETTE STUDY .....	119
APPENDIX C: CONCEPT FORMS FOR VIGNETTE STUDY .....	120
References .....	127

## LIST OF TABLES

Table 1.1 - Studies Included in Systematic Review .....	32
Table 1.2 - Comparison of Stereotype Threat Characteristics in Adults and Children .....	43
Table 2.1 - List of ESSP-C Items Used in Current Study.....	70
Table 2.2 - Model Fit Statistics.....	71
Table 2.3 - Latent Mean Differences Between White <sup>a</sup> and Black/African American Students.	72
Table 3.1 - Shapiro and Neuberg's (2007) Types of Stereotype Threat by Judge and Target ....	106

## LIST OF FIGURES

Figure 2.1 - Partial measurement invariance model and standardized parameter estimates for Black/African American students .....	73
Figure 2.2 - Partial measurement invariance model and standardized parameter estimates for White students .....	74

## **CHAPTER 1: A SYSTEMATIC REVIEW OF RESEARCH ON STEREOTYPE THREAT IN MIDDLE CHILDHOOD**

A plethora of recent research suggests that many of the persistent academic achievement disparities between social groups of students (such as gender or racial/ethnic groups) can be attributed to the phenomenon of *stereotype threat*. In a meta-analysis of stereotype threat effects, Nguyen and Ryan (2008) estimated that the average student of color's performance on the SAT is diminished by 50 points simply due to stereotype threat effects. In a large-scale study involving 4000 freshman college students of diverse ethnicities, feelings of vulnerability due to stereotyping accounted for 9-10% of the variation in grades between racial and ethnic groups (Massey & Fischer, 2005). Evidence of diminished performance effects has been found for other stereotypes and task domains, including gender stereotypes regarding math performance (Ambady et al., 2001), and social class stereotypes regarding verbal tasks (Croizet, Désert, Dutrévis, & Leyens, 2001). Because of the multiple aspects of identity all individuals possess, every student in the United States will likely experience stereotype threat at some point, limiting the academic performance and inhibiting learning of an estimated 51 million children (Steele, 1997).

The current base of stereotype threat knowledge is founded on research conducted with young adult and adolescent participants. Relatively little research has investigated the phenomenon at earlier ages, although existing evidence strongly suggests the merits of doing so. Because early differences in achievement often persist throughout a child's educational career (Crosnoe et al., 2010; Foster & Miller, 2007), targeting stereotype threat among elementary

school students may prevent some disparities from taking root. Also, age appears to moderate the effects of stereotype threat on children's task performance, with late elementary school students showing larger performance deficits than middle elementary students (McKown & Strambler, 2009). This systematic review synthesizes the existing literature on stereotype threat among children in middle childhood. One goal of the review is to examine the evidence that stereotype threat is a relevant concern in middle childhood. Another goal is to increase understanding of stereotype threat experiences in middle childhood, and how such experiences might differ from stereotype threat experienced by adults and adolescents. Addressing stereotype threat in the elementary school years is a strategy that may boost student achievement in the present, while preventing achievement differences from developing and their consequences from following students throughout their lives.

## **Background**

### **Stereotype Threat Defined**

Stereotype threat is defined as a social-psychological phenomenon in which people from stereotyped groups experience diminished performance on evaluative tasks because of anxiety that they will have their performances judged unfairly according to a stereotype, or that their performances will serve to confirm the negative stereotype to themselves and others (Steele & Aronson, 1995). Stereotype threat is believed to be triggered by situational characteristics (Steele, 1997), although individual differences may protect or render a person particularly vulnerable to the threat (Guyl, Madon, Prieto, & Scherr, 2010).

Because stereotype threat is generated by a combination of environmental and individual characteristics, it may not be experienced in the same way in all situations. Shapiro and Neuberg (2007) have proposed a typology describing six qualitatively distinct kinds of stereotype threat,

which vary according to the source of the threat (self or in-group other, out-group other) and the target of the threat (self or group). For example, a person may worry about confirming a stereotype to him- or herself, being a bad “ambassador” for his or her social group to others outside the group, or being viewed as a bad example for “living up to” the stereotype by others in the group. According to Shapiro and Neuberg, each of these examples, as well as the others described in the typology, result in inherently different stereotype threat experiences. Although the experiences may be qualitatively different, the outcomes are the same: performance suffers as a result of stereotype threat, no matter the type.

### **Consequences of Stereotype Threat**

Research has demonstrated that stereotype threat negatively affects academic performance in two ways: by inhibiting task performance and by impeding learning. The effects of stereotype threat on task performance are well-documented, beginning with Steele and Aronson’s (1995) set of four studies that demonstrated diminished performance for African American students on verbal standardized test problems. Recent research has shown that typical responses to stereotype threat, such as heightened vigilance and suppression of distressing thoughts, use cognitive resources that would otherwise be employed in the learning process. The limited number of cognitive resources in turn inhibits acquisition and retention of new knowledge (Taylor & Walton, 2011). In a misguided attempt to succeed despite the threat, students under stereotype threat often increase effortful processing, which may inhibit their ability to distinguish and attune to important features of learning tasks (Rydell, Shiffrin, Boucher, Van Loo, & Rydell, 2010). Stereotype threat, then, interferes with academic success in two ways: it causes performance deficits by undermining students’ ability to recall and express

knowledge, and also prevents students from adequately learning the material in the first place (Taylor & Walton, 2011).

Although the stereotype threat literature emphasizes the impact of threat on standardized tests or laboratory-based “intellectual tasks,” the negative effects of stereotype threat are not limited to the classroom. Experiences of stereotype threat may also weaken a person’s capacity to exercise self-control, leading to maladaptive choices and behaviors in other life domains, such as overeating, making risky decisions, and acting aggressively (Inzlicht & Kang, 2010). While stereotype threat is primarily recognized as a key contributor to poor academic achievement, its consequences may have a lifetime impact in and out of the classroom.

### **Environmental Precursors to Stereotype Threat**

**Existence of a stereotype.** Logically, in order for a person to be affected by stereotype threat, a negative stereotype relevant to the person’s identity must exist. Originally, theorists assumed that a stereotype must be broadly held and pervasive to trigger threat (Steele & Aronson, 1995), but later research showed that even simple comparison with positively stereotyped groups can cause stereotype threat in groups about which no relevant negative ability stereotypes exist (Aronson et al., 1999). Notably, a person does not need to believe or endorse a stereotype to be vulnerable to stereotype threat. The fact that the stereotype could be used to form and confirm hypotheses about a person’s abilities is enough to trigger threat, regardless of the stereotype’s perceived veracity (Steele, 1997).

**Evaluative context.** Knowing that one’s performance will be evaluated, and possibly even used to make a formal diagnosis, heightens the relevancy and potential threat associated with a stereotype. In Steele and Aronson’s (1995) seminal paper on stereotype threat, African American college students performed significantly worse on items from the verbal section of the

SAT when the items were described as diagnostic of verbal ability versus described as either non-diagnostic of ability or presented as a challenge. According to stereotype threat theory, the evaluative context of the task when described as diagnostic of ability triggered the relevance of stereotypes surrounding the intellectual ability of African Americans and undermined their task performance. The triggering effect of an evaluative context has also been observed on non-academic intellectual tasks (Brown & Day, 2006) and even athletic performance (Stone, Lynch, Sjomeling, & Darley, 1999).

**Stereotype priming effects.** Subtle reminders of stereotyped identities in a person's environment can also trigger stereotype threat. For example, the simple act of indicating racial/ethnic status prior to completing a series of questions from the SAT caused African American participants to score lower than African American participants who were not asked to indicate their racial/ethnic status prior to task completion or White participants in either condition (Steele & Aronson, 1995). Being a numeric minority, such as a female in a predominantly male math class, can serve as a reminder of negatively stereotyped identity in a similar way (Inzlicht & Ben-Zeev, 2000). Even vicarious exposure to reminders of stereotyped identity through media such as commercials can contribute to stereotype threat (Davies, Spencer, Quinn, & Gerhardstein, 2002).

### **Individual Characteristics Associated With Stereotype Threat**

**Domain identification.** Among adults and adolescents, a dismaying truth about stereotype threat is that people to whom a task is important are most likely to experience stereotype threat on that task. In school settings, students from negatively stereotyped social groups who strongly identify as “good students” and who value academic success are more likely than less academically-identified peers to experience stereotype threat on academic tasks (Steele,



1997). For the highly domain-identified individual, the negative stereotype triggers an identity conflict or “imbalance,” because the chosen identity (a successful student) appears incompatible with the ascribed characteristics (such as ethnicity or gender) that are stereotyped. Because ascribed characteristics are usually difficult (if not impossible) to change, the only option to resolve the conflict may be to disidentify with the formerly valued task domain—in academic settings, to no longer value academic achievement or see oneself as a capable, successful student (Steele, 1997). With the factor of domain identification in particular, subtle environmental interventions have been more effective at reducing threat effects than overt stereotype reduction strategies, especially with relation to stereotypes based on ethnic minority status (Nguyen & Ryan, 2008).

**Stigma consciousness.** The degree to which the person is aware of being a member of a stereotyped group and how likely the person thinks it is that the existing stereotype will influence others’ judgments may also influence a person’s susceptibility to stereotype threat (R. P. Brown & Pinel, 2003). In an academic setting, students who are highly aware of their stereotyped identities are more likely to perceive critical or neutral feedback as discrimination (Pinel, 2000) and may not take advantage of relationship-based resources such as help from teachers, guidance counselors, or tutors because of low levels of trust and the fear that they will be discriminated against (Guyl et al., 2010).

**The role of ethnic identity.** Social identity theory posits that at any given time, a person is negotiating multiple aspects of his or her identity, organizing them into a hierarchy with the most salient features at the top (Owens, 2003; Stets, 2006). From a stereotype threat perspective, stereotypes regarding the most accessible identity features are likely to be the most self-relevant and therefore become the most threatening. The construct of ethnic identity refers to the role that

ethnic group affiliation plays in a person's self-identity (Guyl et al., 2010). Like identity hierarchies themselves, ethnic identity is a dynamic and fluid construct, changing over time (Armenta, 2010; Zarate, Bhimji, & Reese, 2005). As could be expected given the relationship between the identity hierarchy and stereotype relevancy, at least one study has demonstrated that people who are highly ethnically identified are also more likely to be affected by stereotype threat than their less ethnically identified peers (Armenta, 2010), and a meta-analysis of stereotype threat studies found that stereotypes based on race/ethnicity caused the largest negative effects on academic performance (Nguyen & Ryan, 2008). However, multiple studies have demonstrated that a strong sense of ethnic identity can serve as a powerful protective factor for minority youth in other situations. For example, identification with one's ethnic group can provide a source of psychological support and connection (García Coll et al., 1996) and a link to achievement traditions (Hilliard, 2003).

### **Stereotype Threat and Children**

**Middle childhood.** Middle childhood, which is generally considered to be the period between ages 6-11 (Centers for Disease Control and Prevention, 2012a; Centers for Disease Control and Prevention, 2012b), is recognized as the developmental stage in which personal identities begin to form and emerge. Children in this age group may also be vulnerable to identity threats such as stereotype threat due to their nascent, developing identities. Stereotype threat research, however, has traditionally focused on adolescents and young adults, with many studies taking place in laboratory environments in universities (Aronson & Dee, 2012). Despite the traditional view that children may not have the developmental capacity to be affected by stereotype threat, much evidence suggests that middle childhood may be a critical period during which stereotype threat and issues related to identity can dramatically affect the course of future

achievement and success. Children between the ages of 6 and 11 experience a combination of cognitive, social, and environmental changes that makes issues of identity and accomplishment acutely relevant. Together, these developmental characteristics may create especially fertile ground for stereotype threat effects.

Erikson described the middle childhood period as a time of “Industry vs. Inferiority,” because children become aware of societal expectations for success and learn what they need to do to meet such expectations. Children who experience difficulty meeting societal standards for success may come to feel “inferior.” Erikson’s theory has been borne out with empirical findings. For example, feelings of incompetence in middle childhood are associated with higher rates of depression, anger, and aggressive behaviors (Eccles, 1999). Awareness of societal expectations and definitions of “success” and “failure” places children in an overall evaluative context, as they begin to ascertain how well they meet these expectations, and how their ability to do so relates to their emerging concepts of identity. Both evaluative context and identification with success in a particular domain are associated with a greater likelihood of stereotype threat in older populations.

According to Piagetian developmental theory (Piaget & Inhelder, 1969), middle childhood is associated with the concrete operations stage, which is characterized by the development of the cognitive ability necessary to create mental representations of one’s environment and to draw conclusions based on such representations. Because children at this age are just beginning to develop these abilities, they are not as skilled or advanced in their cognition as adults are (Bowen, Bowen, & Wooley, 2004). As a result, children’s perceptions are inherently different from adults’, meaning that the construct of stereotype threat for adults may be different than the construct of stereotype threat among children.

Because children typically are engaged in formal schooling during the middle childhood years (6-11; (Centers for Disease Control and Prevention, 2012a; Centers for Disease Control and Prevention, 2012b), experiences at school are critical for children in this period. Eccles's (1999) work examines how the social context of learning shapes children's identities. According to Eccles, children learn that they are evaluated at school and learn to evaluate themselves according to others' criteria. Children also come to realize that social status is conferred through accomplishment, with school as the usual arena for achievement. Because classrooms are usually age-segregated, children inevitably engage in social comparison as they look to peers to provide relevant examples of success and failure. The structure of school and other organized activities (for example, after-school sports) also aids in comparison by making children's success or failure relatively public (Eccles, 1999). Together, the emphases on evaluation, accomplishment, and social comparison provide fertile ground for stereotype threat. Although features of middle childhood may increase children's vulnerability to stereotype threat, middle childhood also holds great potential as a critical period for intervention. Fostering academic success at this time can prevent achievement disparities from taking root (Hamre & Pianta, 2005; Pianta, Belsky, Vandergrift, Houts, & Morison, 2008). Academic success during the middle childhood years also serves as a foundation for a successful developmental trajectory through adolescence (Eccles, Roeser, Wigfield, & Freedman-Doan, 1999).

During this period, children develop understanding of social identities, such as gender, race, and ethnicity (García Coll et al., 1996; Harter, 1998; Ruble & Martin, 1998). They also develop social perspective taking skills, which allow them to perceive and infer the thoughts of others (Selman, 1971). According to Quintana's (1998) Theory of Racial Perspective-Taking, the cognitive changes occurring during middle childhood allow children at this age to begin

understanding the meaning of racial/ethnic group membership in society, including inferring others' thoughts regarding racial/ethnic identity, such as prejudice and stereotyping. In middle childhood, children are able to infer meaning about relative social position, affective qualities, and behavior based on racial/ethnic group membership. The content of the meaning they create is similar to that expressed by adults and adolescents (Rogers et al., 2012). Children of color develop awareness of racial/ethnic identity, including meanings and stereotypes, earlier than their dominant-culture peers, with children belonging to negatively stereotyped groups demonstrating awareness as early as 6 years of age (McKown & Weinstein, 2003). Another study found that Black and White children were particularly focused on racial/ethnic social positioning relative to each other, perhaps unconsciously reflecting the history of institutionalized racism in the United States (Rogers et al., 2012).

Children also begin to differentiate between effort and ability during this period and learn that current failure may portend future failure (Eccles, 1999; Eccles et al., 1999). Because these abilities are emerging, children do not always correctly apply their new knowledge and may come to develop rigid and restrictive ideas about ability, effort, success, and failure. Viewing ability (and therefore success) as an unchangeable, static aspect of identity increases vulnerability to stereotype threat (Steele, 1997); whereas a perspective of ability as malleable has been demonstrated to lessen the deleterious effects of stereotype threat (Good, Aronson, & Inzlicht, 2003).

Early experiences of stereotype threat may place children at a double disadvantage: because stereotype threat results in diminished academic performance and also inhibits the learning process (Taylor & Walton, 2011), stereotype threatened students may fall behind their peers in both knowledge and achievement. Also, the fact that age is a moderator of stereotype

threat in children (McKown & Strambler, 2009) suggests that addressing stereotype threat as early as possible is a wise strategy to ensure the academic success and well-being of all students.

Based on evidence of how stereotype threat operates in older populations and the developmental processes that children undergo during middle childhood, children in middle childhood are very likely to be vulnerable to stereotype threat. The documented consequences of stereotype threat on academic learning and performance indicate that addressing the phenomenon as early as possible may be a key factor in reducing achievement disparities and fostering academic success for all students. Because of the developmental differences between children and adolescent or adult populations, researchers cannot assume that stereotype threat in children operates exactly as established with older samples, or that the same environmental and individual characteristics associated with stereotype threat in older populations are also associated with the phenomenon for a middle childhood population. Systematic review of the stereotype threat literature specific to middle childhood is necessary to better understand the relevancy, characteristics, and consequences of stereotype threat in this age group. The current paper synthesizes the body of knowledge pertaining to stereotype threat in middle childhood, establishes an argument for why stereotype threat is an important issue in middle childhood, and creates a foundation for future empirical and theoretical research.

## **Methods**

### **Research Questions**

The following research questions guided the systematic review:

- *Research question 1:* What is the evidence that children between the ages of 6-11 experience stereotype threat?

- *Research question 2:* How do identified precursors of stereotype threat in adults relate to the phenomenon in middle childhood?

## **Literature Search Procedures**

Searches of peer-reviewed literature were performed in the Google Scholar, Academic Search Premier, PsycARTICLES, PsycINFO, ERIC, Social Work Abstracts, and the Dissertations and Theses databases. The following search terms were used in various combinations to identify articles discussing stereotype threat in a middle childhood population: stereotype threat, stereotypes, stereotyping, race/ethnicity, gender, identity theory, ethnic identity, middle childhood, elementary school, child development, childhood, child\*, human development, preadolescent, latency, African American, Black, Hispanic, Latino. Relevant articles were also located through the reference lists of previously identified articles, as well as by visual inspection of journals containing articles identified through searches (such as in the case of special themed issues).

**Scope of review.** Because the purpose of the review was to explore stereotype threat and related concepts in middle childhood, eligible papers were limited to those that included participants in the target age group in the described study or discussed the development of a relevant capacity or concept over the course of childhood. In order to keep the reviewed literature focused on stereotype threat, either the term “stereotype threat” needed to appear in the abstract of an article, or the abstract needed to qualitatively describe the phenomenon of stereotype threat if the explicit term was not used. Articles pertaining to stereotype threat based on any kind of stereotype—gender, racial/ethnic, or social class—were included to provide the most complete understanding of the phenomenon in the target population. Both empirical and theoretical papers were included in the review. Quantitative, qualitative, and mixed methods

studies were eligible for inclusion. In order to keep the search thorough yet focused, eligibility was limited to articles published in English from 1995 (the year in which Steele and Aronson's seminal article articulating the phenomenon of stereotype threat was published) to the present (2013). In an effort to identify relevant unpublished literature and avoid publication bias, searches were performed in Google Scholar (which searches institutional and personal websites as well as academic databases) and in the Dissertations and Theses database.

**Data management.** Eligible articles were read and summarized using an abstraction form designed specifically for the review. The abstraction form recorded information such as research questions of the described study, goals of the study, sample characteristics, theories employed, methodology used, analysis performed, key findings, risk and protective factors for stereotype threat discussed, and implications for stereotype threat in a developmental context. A spreadsheet of sources through which each article was identified was also maintained.

## **Results**

### **Search Results**

Searches in the databases listed above yielded an initial pool of 3,110 articles. This number included duplicate listings. The majority of these articles were excluded because the studies focused on older populations, or they examined the nature of stereotyping itself (or related concepts such as prejudice or discrimination) rather than the phenomenon of stereotype threat. After screening with the previously stated inclusion criteria, 31 articles were retained for review. Twenty-six articles had been published in peer-reviewed journals and three were "online first" articles distributed in advance of publication in peer-reviewed journals. One master's thesis and one doctoral dissertation were included. Out of the original pool of 31 articles, two were found to be ineligible upon closer reading, one because it included only one participant from the



target age group, and the other because it was a theoretical paper about concepts related to stereotype threat but not stereotype threat itself. Table 1.1 lists the remaining 29 eligible articles that were reviewed.

## **Findings**

**Methods and analysis strategies.** The majority of the 29 eligible articles detailed empirical studies ( $n = 27$ ). Two theoretical papers were also deemed eligible. Of the empirical papers, a large majority ( $n = 24$ ) utilized quantitative methods, and three papers used a mixed methods approach. Many articles employed more than one analysis strategy. The most common quantitative analysis strategies were ANOVA and ANCOVA, which were used 23 times. Various forms of regression analysis were also common; they were used 10 times. More advanced statistical methods, such as SEM or HLM, were rarely employed, with each used twice. A variety of other approaches (difference testing, mediational analysis, etc.) were used one or two times each.

None of the studies in the review directly measured stereotype threat itself. Instead, 15 studies examined effects on cognitive performance under conditions believed to induce stereotype threat, concluding that any differences found could be attributed to stereotype threat. The tasks these studies used as measures of cognitive performance included naturally occurring academic tasks, such as standardized tests (five studies), other tests in school (two studies), and school grades (one study), as well as intellectual tasks not related to academics. The non-academic tasks employed included Raven's Progressive Matrices (one study), a geometric drawing task (one study), a backwards alphabet task (one study), picture-matching tasks (one study), and a digit span task (one study).

The remaining 14 studies did not attempt to measure cognitive effects believed to be associated with stereotype threat but did evaluate constructs related to stereotype threat. Some of the studies that measured cognitive performance effects also measured related constructs as well. Related constructs that were measured included stigma awareness (four studies), intrinsic motivation (one study), academic anxiety (one study), ethnic identity (three studies), gender identity (one study), child's stereotypic beliefs or endorsement of stereotypes (nine studies), parents' stereotypic beliefs or endorsement of stereotypes (three studies), racial socialization (one study), racial constancy (one study), discrimination or discriminatory attributions (five studies), and self-efficacy beliefs (three studies).

**Research Question 1: What is the evidence that children between the ages of 6-11 experience stereotype threat?**

Fifteen reviewed articles directly evaluated stereotype threat effects on children's intellectual task performance. Of these 15 studies, 12 found statistically significant effects of stereotype threat on children's performance, while three studies did not. Seven articles examined gender-based stereotype threat among elementary school children, making it the most commonly studied variety of stereotype threat. Five of these articles reported significant stereotype threat effects. Children as young as five years old demonstrated performance deficits in math after being reminded of stereotypic gender characteristics by coloring or drawing a picture of a girl engaged in traditionally feminine activities, such as playing with a doll (Ambady, Shih, Kim, & Pittinsky, 2001; Tomasetto, Alparone, & Cadinu, 2011). Evidence of gender-based stereotype threat effects on math performance was found at all ages of middle childhood (6-11 years) as well as in American, French, and Italian elementary schools (Ambady et al., 2001; Huguet &

Régner, 2007, 2009; Muzzatti & Agnoli, 2007; Neuville & Croizet, 2007; Tomasetto et al., 2011).

Two studies examining gender/math stereotypes did not report significant effects of stereotype threat. No evidence of gender-related stereotype threat effects was found on the math performance of 68 4<sup>th</sup> grade girls who completed math problems containing embedded gender stereotype primes, compared to girls who completed gender-neutral math problems. The authors questioned the extent to which publication bias might be affecting the stereotype threat literature, causing it to appear as a more widespread problem than in may be in reality (Ganley et al., 2013). A second non-significant gender stereotype threat study, conducted by Schell (2011), investigated stereotype endorsement and stereotype threat effects among 64 Canadian elementary school students (37 2<sup>nd</sup> graders; 27 5<sup>th</sup> graders). Schell tested threat effects and endorsement of two existing gender/academic stereotypes: that girls are poor at math and that boys are poor at reading. No evidence of stereotype threat effects were found on either girls' math performance or boys' reading performance; however, Schell did find possible evidence that boys had internalized the stereotype of their presumed lower ability in reading. Schell's small sample size presented notable power limitations, which limited the author's ability to detect stereotype threat effects if they were present.

Stereotype threat based on race/ethnicity was examined in six studies, five of which found significant effects of stereotype threat on intellectual task performance. Like gender-based stereotype threat, stereotype threat based on racial/ethnic stereotypes affected children at all ages of middle childhood (Ambady et al., 2001; McKown & Strambler, 2009; McKown & Weinstein, 2003). Belonging to racial/ethnic groups subject to negative academic stereotypes (Black/African American and Hispanic/Latino) caused children become conscious of broadly held stereotypes at

earlier ages than their non-stereotyped peers (McKown & Weinstein, 2003), which was associated with exhibition of performance deficits related to stereotype threat on a working memory task (McKown & Strambler, 2009). Asian American girls, who are subject to both a “positive” stereotype of math ability associated with their ethnicity as well as a negative math stereotype as a result of their sex, performed better on a math task when their ethnic identity was primed and worse when their gender identity was made salient (Ambady et al., 2001).

In the one study of racial/ethnic stereotype threat that did not have significant findings, Schweinle and Mims (2009) tested the relevance of the “numeric minority” condition first examined by Inzlicht and Ben-Zeev (2000) for 170 African American 5<sup>th</sup> grade students. In contrast to what might have been expected from the literature on older populations, the math performance of African American students in predominantly White classrooms was equal to the math performance of African American students in predominantly African American classrooms. The authors attributed students’ resilience in the face of potential stereotype threat to strong racial/ethnic identity, although racial/ethnic identity was not measured in the study.

Only one study explored stereotype threat related to socioeconomic class in middle childhood (Désert, Préaux, & Jund, 2009). French elementary school students from low-SES families demonstrated lower performance on Raven’s Progressive Matrices when the task was introduced as diagnostic of ability versus a series of games. Students from high-SES families did not have their performance affected by the nature of the task introduction. No difference in stereotype threat vulnerability or effects was associated with grade—both first and third grade students (total n = 153) demonstrated similar susceptibility and performance deficits when stereotype threat was triggered.

A study by Cimpian, Mu, and Erickson (2012) evaluated whether a stereotype must be broadly known in order to induce stereotype threat in children. A sample of 144 predominantly European American children ranging from four to seven years old was asked to complete an object-rotation task. When children were told that their gender group excelled at the task, children had worse performance on higher-difficulty tasks even though the stereotype valence was positive, a finding the authors attribute to making a primed stereotype (albeit one created for the experiment) salient. In contrast, children who did not have a group identity primed (instead, they were told that a particular individual was good at the task) did not demonstrate impaired performance even on high-difficulty tasks. The authors noted that these findings demonstrate how sensitive children may be to acquiring novel stereotypes, that ostensibly positive stereotypes can trigger threat effects, and that even lesser-known or unique stereotypes may be enough to trigger threat-based performance deficits among children.

**Research Question 2: How do identified precursors of stereotype threat in adults relate to the phenomenon in middle childhood?**

**Characteristics Common to Adult and Child Stereotype Threat**

**Evaluative context.** Four studies investigated the effects of an evaluative context on children's vulnerability to stereotype threat. As with older populations, the knowledge that the results of a task will be used for an evaluative or diagnostic purpose depressed the performance of children belonging to a negatively stereotyped group. A sample of 153 French elementary school students subject to negative socioeconomic class stereotyping performed significantly worse on Raven's Progressive Matrices when the task was described as diagnostic of one's strengths and weaknesses, versus when it was described as a game (Désert et al., 2009). The presence of an evaluative context in this study also made the low-SES students more likely to

endorse negative stereotypes about the intellectual ability of people with low-SES backgrounds, even though the students themselves were included in that category (Désert, et al.).

In two separate studies of gender-based stereotype threat effects involving a total of 653 French students in middle childhood and adolescence, girls between the ages of 11 and 13 underestimated their abilities in geometry and experienced diminished performance when the task was presented as an indicator of ability in geometry rather than a puzzle (Huguet & Régner, 2007, 2009). One study focused on the influence of an evaluative context to stereotype threat based on racial/ethnic stereotypes. African American 3<sup>rd</sup> through 5<sup>th</sup> grade students (n = 198) who indicated prior awareness of stereotypes demonstrated diminished performance on a reading task when it was framed as diagnostic of ability versus as a neutral task (Wasserberg, 2009). The stereotype-aware students also reported less anxiety and stronger feelings of self-efficacy when the reading task was presented as a non-diagnostic exercise (Wasserberg, 2009)

**Stereotype awareness.** Three studies evaluated whether children, like adults, must demonstrate stereotype awareness before being affected by stereotype threat (Ambady et al., 2001; McKown & Strambler, 2009; McKown & Weinstein, 2003). In two experiments involving 151 Asian-American children in middle childhood and early adolescence, all children demonstrated implicit knowledge of both gender- and ethnicity-based stereotypes (Ambady et al., 2001). For both the youngest and oldest children in the sample, math performance was affected in the ways predicted by the valence of the associated stereotype: girls performed better when their ethnic identity was primed (triggering the stereotype that Asian-Americans have high math ability) compared to when their gender identity was primed (triggering the stereotype that girls have low math ability; Ambady et al., 2001).

Another pair of experiments involving 202 children between the ages of 6-10 years demonstrated that higher age was associated with greater awareness of both individually held and broadly held stereotypes; however, only recognition of broadly held stereotypes was associated with stereotype threat performance deficits (McKown & Weinstein, 2003). A later study of 124 children between the ages of 6-11 years found that children whose parents reported engaging in more racial socialization behaviors became aware of broadly held stereotypes earlier than peers whose parents engaged in fewer racial socialization behaviors (McKown & Strambler, 2009).

To further investigate the characteristics of stereotypes needed to trigger stereotype threat effects in children, Cimpian, Mu, and Erickson (2012) primed 144 children between the ages of 4 and 7 with an unfamiliar stereotype that the children believed to be broadly held. Even though the content of the unfamiliar stereotype was invented for the study, children were able to connect the novel stereotype with aspects of their own identities in order to perceive these stereotypes as potentially self-relevant and demonstrate performance deficits associated with stereotype threat (Cimpian, Mu, & Erickson, 2012).

**Stereotype endorsement.** Like adults, children do not need to believe in the validity of a stereotype in order to be affected by stereotype threat. In a study of 199 French 11-13 year olds, girls underestimated their own ability in geometry and demonstrated stereotype threat effects on a geometry-based task, despite reporting personal beliefs refuting the traditional math/gender stereotype (Huguet & Régner, 2007). Two experiments involving 741 Italian 2<sup>nd</sup>-8<sup>th</sup> grade students noted that children's personal beliefs may evolve as children age to be more in agreement with common stereotypes, as older children expressed beliefs more similar in content to existing gender stereotypes (Muzzatti & Agnoli, 2007).

Children's stereotype endorsement may also be affected by the beliefs of influential adults. In a study of 302 American elementary and middle school students, children who were exposed to adults who endorsed gender stereotypes were more likely to also endorse the stereotypes, and their self-concepts were affected according to the valence of the stereotype (Kurtz-Costes, Rowley, Harris-Britt, & Woods, 2008). Negative female stereotypes endorsed by mothers seem to be especially powerful. Italian girls between the ages of 5 and 8 years ( $n = 124$ ) whose mothers endorsed traditional gender stereotypes experienced stereotype threat effects on math performance, whereas girls whose mothers did not express endorsement of such stereotypes were unaffected. Interestingly, fathers' stereotype endorsement had no notable effect (Tomasetto et al., 2011).

**Identity salience and stereotype relevance.** As with adults, the salience of particular aspects of identity contributes to children's vulnerability to associated stereotype threat. A study of 79 French 3<sup>rd</sup> graders found that girls who reported greater gender identity salience were more likely to demonstrate performance deficits associated with stereotype threat compared to peers for whom gender was less important (Neuville & Croizet, 2007). More salient stereotyped aspects of identity may render children vulnerable to stereotype threat by increasing the self-relevance of broadly held stereotypes through greater stereotype awareness and attributions based on stereotyped identities. Across two studies ( $n = 350$ —C. S. Brown et al., 2011;  $n = 451$ —Gillen-O'Neel, Ruble, & Fuligni, 2011), children belonging to minority racial/ethnic groups reported greater salience of their racial/ethnic identities, which has been demonstrated to be associated with earlier awareness of stereotypes (C. S. Brown, Alabi, Huynh, & Masten, 2011; McKown & Strambler, 2009). In addition, European American girls reported greater



awareness of gender bias and more salient gender identities (C. S. Brown et al., 2011; Ganley et al., 2013).

Another pair of studies (n = 89—Pauker, Ambady, & Apfelbaum, 2010; n = 73—Rowley, Burchinal, Roberts, & Zeisel, 2008) demonstrated that heightened salience of racial/ethnic identity in children was associated with a greater likelihood of making negative, racially-based attributions in response to daily situations, which are in turn associated with increased vulnerability to stereotype threat (Pauker, Ambady, & Apfelbaum, 2010; Rowley, Burchinal, Roberts, & Zeisel, 2008).

Another similarity to adult stereotype threat is that children may be at particular risk of stereotype threat when they experience conflict between their values and stereotypes associated with different aspects of their emerging identities. For example, one of the studies reviewed found that children in grades 1 through 5 demonstrated evidence of “cognitive imbalance” between their emergent identities and existing stereotypes, even before achievement differences attributable to stereotype threat effects had manifested (Cvencek, Meltzoff, & Greenwald, 2011).

### **Characteristics That Function Differently in Adult and Child Stereotype Threat**

**Domain identification.** Three of the studies reviewed explored the importance of domain identification to child stereotype threat experiences. A study of Italian elementary school students (n = 124) found that both girls with a history of high math achievement and those with a history of low math achievement demonstrated diminished math performance due to gender-based stereotype threat (Tomasetto et al., 2011). Another study of 494 French students between the ages of 11 and 13 also found that girls were subject to stereotype threat effects on a geometry task whether or not they expressed particular identification with math achievement (Huguet & Régner, 2007). However, Wasserman’s (2009) study of 198 African American 3<sup>rd</sup>-5<sup>th</sup> grade

students found that students who reported being domain identified were more likely to experience stereotype threat, provided they were also stereotype-aware and engaging in a task under an evaluative context. Several researchers have hypothesized that during the middle childhood years, children are generally motivated to please adults in their lives and to do well in school, so most children are to some degree “identified” with school success, even if they do not express a special emphasis on it. In combination, the findings of the reviewed studies suggest that domain identification does not appear to be a necessary prerequisite for stereotype threat in middle childhood.

**Stereotype priming effects.** Another three reviewed studies investigated the relationship of stereotype priming effects to children’s stereotype threat experiences. In two experiments involving a total of 151 Asian-American kindergarten through 8<sup>th</sup> grade students, Ambady and colleagues (2001) found that subtle primes, such as coloring a picture of a child engaged in an activity depicting a gender- or ethnically-stereotypical activity or answering a seemingly unrelated questionnaire about ethnicity or gender, prior to completing a math task triggered stereotype threat performance effects. Similarly, Alter and colleagues’ (2010) study of 49 African American children between the ages of 9 and 13 found that children answered fewer standardized math problems correctly when they were required to indicate race/ethnicity before answering the problems rather than indicating demographics after completing the task. Integrating a prime into the task itself did not have a similar effect. When a gender stereotype prime was incorporated into a mathematics word problem, performance deficits were not seen in a sample of 4<sup>th</sup> grade girls compared to an unprimed group of girls; however, consistent with the stereotype, boys outperformed girls regardless of condition assignment (Ganley et al., 2013). Numeric minority status, which has been demonstrated to operate as a stereotype-triggering

prime among young adults (Inzlicht & Ben-Zeev, 2000), does not appear to have the same impact among children. A study of 73 3<sup>rd</sup>-5<sup>th</sup> grade students who were visible minorities in their classrooms and who had more cross-race friendships made fewer negative racial/ethnic attributions than students in more diverse classrooms or who had more same-race friends (Rowley et al., 2008). Schweinle and Mims (2009) also found no statistically significant differences between African American students' performance on a math task in predominantly White classrooms compared to the performance of African American students in predominantly African American classrooms, despite the authors' initial hypothesis to the contrary.

### **Discussion**

During middle childhood, children begin developing their own complex identities, including racial/ethnic identity (Quintana, 1998). Children belonging to negatively stereotyped groups may begin the process of considering and negotiating multiple aspects of identity earlier than their non-stereotyped peers (C. S. Brown et al., 2011; Gillen-O'Neel, Ruble, & Fuligni, 2011; McKown & Strambler, 2009). Identity conflict associated with explicit and implicit endorsement of stereotypes may be especially pertinent for children as they begin to take a more active role in shaping their identity and environment, including making decisions about their academic course trajectories and considering future plans (Cvencek et al., 2011). Despite arguments asserting that children in middle childhood do not have the cognitive capacity to be vulnerable to stereotype threat, 12 of the 15 studies examining stereotype threat performance effects determined that stereotype threat negatively affected children's performance on a range of intellectual tasks. When these 12 studies are considered in combination with the remaining 17 studies investigating features and concepts related to stereotype threat, the current review

provides a compelling argument that stereotype threat can prevent learning and inhibit the academic achievement of young children.

Structurally, stereotype threat in middle childhood appears to share many characteristics of stereotype threat experienced by adults: both require awareness of relevant stereotypes, a challenging task, and an evaluative context. Like adults, children do not need to explicitly endorse stereotypes in order to experience associated stereotype threat; however, explicit expression of counter-stereotypic beliefs is not enough to buffer children from stereotype threat. Table 1.2 presents a comparative summary of adult and childhood stereotype threat characteristics.

Although the essential structure of stereotype threat appears to be similar for both children and adults, findings of several reviewed studies indicate that the classical definition of stereotype threat posited by Steele and Aronson (1995) may need to be expanded, at least when considering the phenomenon among younger ages. Steele and Aronson's definition of stereotype threat notes the necessity of a negative stereotype to induce threat-related performance deficits. However, Cimpian, Mu, and Erickson (2012) found that priming children with a relevant positive stereotype also resulted in diminished task performance.

In addition to suggesting that stereotype threat may occur regardless of stereotype valence, two studies found evidence that stereotype threat may affect task performance via another pathway in addition to the anxiety response noted by Steele and Aronson. For example, Cimpian et al. hypothesized that linking perceived ability to identity characteristics invoked entity beliefs that limited children's task performance, despite the fact that the primed stereotype was ostensibly positive. Pauker et al. (2010) provided further support that stereotype threat may also influence task performance through mindsets or beliefs about a task, documenting an

association between greater personal salience of stereotyped identity characteristics and the likelihood of espousing entity beliefs.

Just as ethnic identity could function ambiguously with regard to adults' risk of stereotype threat, a similar ambiguity was found in the effects of ethnic identity on children's vulnerability to stereotype threat. Although high salience of racial/ethnic identity is generally associated with a greater risk of stereotype threat through negative race-based attributions (Armenta, 2010), particular aspects of racial/ethnic identity also buffer children from stereotype threat. In general, a positive valence to racial/ethnic identity may reduce children's incidence of stereotype threat in conditions that are otherwise conducive to the phenomenon (Schweinle & Mims, 2009). Syed, Azmitia, and Cooper (2011) note that racial/ethnic identity may be an important conduit to connect with role models and social support structures. More specifically, strengthening children's senses of the public regard and perceived status associated with their ethnic identities may help to prevent or alleviate stereotype threat (Gillen-O'Neel et al., 2011).

One key difference between adult and child stereotype threat is that the adult prerequisite of domain identification appears to be unnecessary for children to experience stereotype threat. Children at this age may be sufficiently identified with school success to meet any necessary level of domain identification (McKown & Strambler, 2009; Tomasetto et al., 2011). A related hypothesis is that stereotype threat related to broadly held social stereotypes may operate at an "ambient" level for children, meaning that the threat has a constant, implicit presence affecting performance and does not need a prime to be triggered (Ganley et al., 2013).

Another difference between the adult and child stereotype threat literature is the role that racial socialization may play in child stereotype awareness and threat experiences. Racial socialization processes that occur within families may inadvertently "prepare" or prime children

to attribute negative occurrences to bias or discrimination, which is believed to contribute to the likelihood of stereotype threat. Racial socialization of children is also associated with earlier knowledge of broadly held stereotypes, a prerequisite for experiencing stereotype threat (McKown & Strambler, 2009). However, the social support provided by families through racial socialization processes may contain “invisible strategies” that promote achievement and resilience, as well as provide exposure to examples of identity congruence that protect children from cognitive imbalance (Syed et al., 2011). Therefore, racial socialization appears to operate as an influential yet ambiguous factor related to children’s stereotype threat, in that the valence of its effect seems to be determined by the context and content of the racial socialization messages.

### **Potential intervention strategies**

Relatively simple, brief interventions appear to have the same power to trigger positive recursive processes in children (Neblett Jr, Rivas-Drake, & Umaña-Taylor, 2012) that has been previously demonstrated with adult samples (Yeager & Walton, 2011). Well-timed, age-appropriate stereotype threat intervention may help children to navigate early identity formation, formal schooling, and social perspective-taking in a way that facilitates healthy identity development and future achievement.

Flexible thinking about race and identity, rather than embracing category-linked or entity beliefs, has been demonstrated to buffer children from the effects of stereotype threat (Pauker et al., 2010). Children who were able to psychologically reframe tasks as challenges rather than focus on the diagnostic or evaluative context were also protected from performance deficits associated with stereotype threat (Alter, Aronson, Darley, Rodriguez, & Ruble, 2010). Interventions that teach and encourage children to use flexible thinking about ability and achievement, such as those promoting the “growth mindset” (Dweck, 2008) or setting mastery

goals (Ames, 1992), may also be effective at preventing and reducing stereotype threat.

Interventions in which children identify and focus on valued qualities of their personal identities could be a way to build self-esteem and confidence without relying on positive stereotypes, which still promote inflexible and category-linked beliefs about ability. Values-affirmation writing exercises (Bowen, Wegmann, & Webber, 2013; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Miyake et al., 2010) have proven extraordinarily successful at increasing academic achievement among negatively stereotyped middle school and college students, a technique which can and should be adapted for use and tested with younger students.

As children consider different aspects of their identities, interventions that strengthen positive racial/ethnic identities may be especially important for promoting the resilience of students of color in the face of stereotype threat. Specifically, positive ethnic identity interventions should focus on increasing the senses of public regard and perceived status associated with racial/ethnic group memberships, as these aspects of ethnic identity are associated with diminished academic performance and possible vulnerability to stereotype threat. Interventions concerning racial socialization practices also have potential to buffer students of color against stereotype threat, although further research needs to isolate and identify elements of racial socialization associated with positive outcomes versus elements associated with negative outcomes such as greater feelings of discrimination.

Strategies to build social support, such as highlighting role models or matching elementary school students with older children as mentors, may also be effective. However, children may need different forms of social support than those typically assumed by adults in order to reap its benefits, and social support is most effective when conceptualized as a network rather than isolated relationships (Syed, Azmitia, & Cooper, 2011). Strong teacher-student

relationships that emphasize mutual trust were hypothesized as an example of social support that may be especially powerful in preventing stereotype threat among children in this age group, although the effects of such relationships were not empirically tested (Wasserberg, 2009). Interventions to build a sense of school belonging may also be effective at preventing and reducing the effects of stereotype threat. Fostering school belonging through the classroom environment and relationships with peers and school adults was negatively associated with school devaluing and academic anxiety, two ways in which stereotype threat manifests among children (Gillen-O'Neel, Ruble, & Fuligni, 2011; Strambler & Weinstein, 2010).

One limitation of stereotype threat research's roots in psychology is that environmental or macro-level factors have not been explored to the same extent as individual-level processes (Syed et al., 2011). As a result, current research does not provide many recommendations for interventions at the policy level. First and perhaps foremost, more careful examination of standardized testing policies and procedures is needed. Simple redesigns to existing test procedures, such as requesting information on students' race/ethnicity and gender following completion of a test rather than prior to taking the test, may help to reduce the negative effects of stereotype threat on test performance. Although priming appears to operate differently in middle childhood than in other life stages, care should be taken that standardized test questions and writing prompts do not contain inadvertent stereotype primes. Finally, the ways in which standardized test results are reported and used at the national, state, and district levels may amplify the evaluative context and consequences of these tests for students, also increasing vulnerability to stereotype threat.

On a more proximal level, Syed, Azmitia, and Cooper (2011) suggested that school districts make better efforts to align their curricula with college admissions requirements and



communicate more with families regarding college admissions, funding, and implications of such requirements at all levels of education to promote college as a realistic option for children who are vulnerable to stereotype threat. Although this suggestion might sound irrelevant to students at the elementary level, the financial and academic exigencies of college attendance require that families begin preparing and planning as early as possible. At the elementary level, such school-family communication may take forms such as financial planning workshops, discussion of academic course planning through high school to prepare students for potential college admission, and providing opportunities for academic and extracurricular enrichment. Involving families in early college preparation also helps children to envision college as a realistic possibility, which can be especially important for negatively-stereotyped students.

### **Future Research**

As noted by this systematic review, the overall number of stereotype threat studies pertaining to middle childhood is small. Simply conducting more studies of stereotype threat in this population should be a goal for future research. Continuing to establish the “ecological validity” of stereotype threat findings (Syed et al., 2011) by conducting research in natural contexts rather than labs is also necessary. Studies taking place in natural contexts also provide better capacity to explore environmental and macro-level factors related to stereotype threat, of which relatively little is currently known. More detailed and rich information on children’s stereotype threat experiences is needed, including an exploration of how theories and frameworks developed with older populations, such as Shapiro and Neuberg’s 2007 typology of stereotype threat experiences, may apply to middle childhood. Such exploration will likely require more qualitative research than has been undertaken in this area to date. Finally, researchers should utilize current findings to develop interventions appropriate for use with

children in middle childhood, particularly interventions focusing on protective factors and prevention of stereotype threat. Adapting and evaluating existing stereotype threat interventions for use with a middle childhood population is likely to provide a solid foundation for intervention research in this area with children.

### **Conclusion**

The relevance of stereotype threat for a younger population has been doubted, because it was unclear whether children have developed the cognitive skills to perceive and experience stereotype threat. However, a systematic review of the existing studies of stereotype threat in middle childhood has revealed that stereotype threat is a relevant problem for younger children, and addressing the threat at younger ages may be especially critical. Not only do children at this age have the cognitive capacity to experience stereotype threat, but such experiences may have long-lasting negative consequences for identity formation, academic achievement, and life-long well-being. In order to develop effective interventions to prevent and reduce stereotype threat in middle childhood, a more ecological perspective on the problem is needed: studies should incorporate both qualitative and quantitative methods to better understand the nature of stereotype threat in middle childhood; research should take place in natural settings such as schools rather than in laboratories; and environmental and macro-level factors contributing to stereotype threat must be explored. The elements necessary to advance stereotype threat research and intervention development for children are uniquely suited to the strengths of social work's interdisciplinary, ecological approach to social research.

Table 1.1

*Studies Included in Systematic Review*

Authors	Year	Sample size/ characteristics	Constructs studied in relation to stereotype threat	Findings	Strength of effect or association
Alter, A., Aronson, J., Darley, J.M.,  Rodriguez, C., & Ruble, D. N.	2010	49 African American children,  ages 9-13years	Priming effects of demographic  information, task reframing	Indicating race/ethnicity prior to completing a test can induce stereotype threat in children. Reframing task as a challenge can prevent/reduce stereotype threat.	Effect of reframing task when race/ethnicity primed:  $\eta^2_p = 0.18$
Ambady, N., Shih, M., Kim, A., & Pittinsky, T. L.	2001	Study 1: 81 Asian-American females, kindergarten-8 <sup>th</sup> grade  Study 2: 70 Asian-American males, kindergarten-8 <sup>th</sup> grade	Stereotype awareness, multiple aspects of identity	Children as young as 5 years demonstrated stereotype threat effects.  Both positive & negative stereotypes affect children's task performance.	Unable to calculate from information provided
Brinkman, B. G., Jedinak, A., Rosen, L. A., & Zimmerman, T. S.	2011	121 children ages 10-13 years—65% White, 23% Latino, 12% other	Effect of direct education on attitudes, stereotype endorsement, prejudicial behavior	Direct education is an age- appropriate method to decrease prejudicial behaviors and attitudes in children.	Effect of intervention:  $\eta^2_p = 0.27$
Brown, C. S., Alabi, B. O., Huynh, V. W., & Masten, C. L.	2011	350 4th-8th graders—47% Hispanic/Latino, 34% White, 19% African	Ethnic identity, gender identity, experiences of discrimination	Children belonging to negatively stereotyped groups consider aspects of identity and have	Linear x linear association,

		American; 59% female, 41% male		greater identity salience than other children. Most children consider at least one of their multiple identities by 4th grade.	girls vs. boys, gender bias: 3.66, $p < .05$  African American & Latino vs. Euro American, ethnic bias: 9.98, $p < .005$
Cimpian, A., Mu, Y., & Erickson, L. C.	2012	Study 2: 144 4-7 year olds; predominantly White; 50% female, 50% male	Category-linked statements, entity beliefs, stereotype valence	Category-linked statements based on ascribed characteristics such as race/ethnicity more closely tied to entity beliefs. Entity beliefs may be a path through which stereotypes affect performance.	Effect of category statements on performance:  $d = 0.49$ vs. statements about individual ability;  $d = 0.37$ vs. neutral condition
Cvencek, D., Meltzoff, A. N., & Greenwald, A. G.	2012 (online first)	247 1st-5th graders—83% White, 10% Asian American, 7% African American; 51% female, 49% male	Identity conflict/cognitive balance	Evidence of cognitive imbalance found via explicit and implicit measures. Stereotypes may affect identification with task domain before performance	Boys' vs. girls' implicit association of math w/ own gender:

				deficits noted.	$d = 0.82$  Boys' vs. girls' explicit association of math w/ own gender:  $d = 0.60$
Désert, M., Préaux, M., & Jund, R.	2009	153 French students: 78 1 <sup>st</sup> graders, 75 3 <sup>rd</sup> graders	Evaluative context, stereotype endorsement, socioeconomic class	Low-SES students underperformed when context was evaluative, but not in non-evaluative context. Low –SES students were more likely to endorse negative class-intellectual stereotypes when in evaluative context.	Effect of evaluative context on low-SES student performance:  $d = 0.46$
Ganley, C. M., Mingle, L. A., Ryan, A. M., Ryan, K., Vasilyeva, M., & Perry, M.	2013 (online first)	Study 3: 68 9-10 year olds; 43% female, 57% male (older kids also included in other studies)	Gender priming, effect of age	Neither age nor gender primes made children vulnerable to gender-based stereotype threat performance deficits in math.	No effects found
Gillen-O'Neel, C., Ruble, D. N., & Fuligni, A. J.	2011	451 6-11 year olds; 28% Chinese American, 24% Dominican American, 20% European American, 17% Russian American, 11% African American; 57%	Stigma awareness, ethnic identity	Children's ethnic identity is similar in structure/content to adults'. Both second and fourth graders demonstrated awareness of ethnic stigma. Higher public regard and group status components of ethnic identity	Correlation with academic anxiety:  Public regard:

		female, 43% male		associated with less academic anxiety, whereas higher centrality associated with greater academic anxiety.	$r = -.11^*$ Group status : $r = -.20^{***}$ Centrality $r = .01$
Huguet, P., & Régner, I.	2009	199 French 11-13 year olds; 46% female, 54% male	Stereotype endorsement, evaluative context	Explicit expression of counter-stereotypic beliefs does not buffer girls from gender-based stereotype threat performance deficits.	Girls' underestimation of of math ability controlling for performance: $d = 0.30$
Kurtz-Costes, B., Rowley, S. J., Harris-Britt, A., & Woods, T. A.	2008	302 4 <sup>th</sup> -8 <sup>th</sup> graders; 54% White, 29% African American, 10% Hispanic/Latino, 7% other; 59% female, 41% male	Influence of adult stereotypes, self-concept	Adult stereotypes influenced self-concepts in expected directions. Adult stereotypes make child stereotype endorsement more likely.	Path coefficient between adult stereotypes & perception of girls' math competence: 4 <sup>th</sup> grade girls-- -0.41 4 <sup>th</sup> grade boys-- -0.40
McKown, C., &	2009	124 6-11 year olds; 64%	Stereotype consciousness,	Children can experience	Racial

Strambler, M. J.		White, 17% African American, 11% Asian American, 8% Hispanic/Latino; 48% female, 52% male	racial socialization, exposure to discrimination	stereotype threat. Stereotype consciousness develops concurrently with knowledge of prejudice and discrimination. Aspects of racial socialization associated with heightened stereotype consciousness.	socialization & knowledge of broadly held stereotypes: OR = 1.78  Stereotype threat effect demonstrated: $R^2 = 0.15$
McKown, C., & Weinstein, R. S.	2003	202 6-10 year olds; 41% White, 24% African American, 18% Hispanic/Latino, 16% Asian American, 1% other; 50% female, 50% male	Consciousness of individual and broadly held stereotypes, membership in negatively-stereotyped group	Awareness of broadly held stereotypes is associated with stereotype threat, but awareness of individual stereotypes is not. Children from negatively-stereotyped groups become aware of broadly held stereotypes earlier than other children.	Individual stereotype perception model $R^2 = .00$  Broadly held stereotypes model $R^2 = .04$ ( $R^2 = .15$ for stigmatized children only)

Neblett, E.W., Rivas-Drake, D. & Umaña-Taylor, A. J.	2012	Theoretical paper—no experimental studies	Racial/ethnic identity, racial/ethnic socialization, cultural orientation	Children's racial/ethnic identity influences self-concept, meaning-making, cognitive appraisal, and coping. Protective factors (of positive racial/ethnic identity, against stereotype threat) likely operate in a feedback loop rather than in a linear fashion.	N/A
Neuville, E, & Croizet, J.-C.	2007	79 French 3rd graders; 57% female, 43% male	Identity salience, task difficulty	More salient stereotyped identities are associated with stereotype threat effects. Task difficulty moderates effects of identity salience.	Effect of salient female gender identity on difficult task performance:  $d = -0.65$
Pauker, K., Ambady, N., & Apfelbaum, E. P.	2010	89 3-10 year olds; 90% European American, 6% multiracial; 5% Asian American; 44% female, 56% male	Race salience, essentialist thinking (entity beliefs)	Race salience is a precursor to development of out-group stereotypes. Essentialist thinking associated with out-group stereotypes. Older children had more essentialist beliefs than younger children.	Race Salience:  $R^2 = .06$  $f^2 = .09$  Essentialist thinking:  $R^2 = .15$  $f^2 = .29$
Rowley, S. J., Burchinal,	2008	73 African American 3 <sup>rd</sup> -5 <sup>th</sup>	Racial/ethnic identity,	Higher racial centrality and	Racial



M. R., Roberts, J. E., & Zeisel, S. A.		graders; 56% female, 44% male; 75% from low-income families	same-race and cross-race friendships, classroom racial/ethnic composition	lower public regard associated with more negative racial attributions. Number of same-race friends was a significant predictor of discrimination expectations.	<p>centrality &amp; negative racial attributions: <math>d = 0.16</math></p> <p>Public regard &amp; negative racial attributions: <math>d = -0.8</math></p> <p>Same-race friends &amp; discrimination expectations: <math>d = 0.21</math></p>
Schell, A.	2011	64 2 <sup>nd</sup> & 5 <sup>th</sup> graders (58% 2 <sup>nd</sup> grade, 42% 5 <sup>th</sup> grade); 53% female, 47% male	Adult stereotype endorsement, effect of age	Adults did not endorse stereotypes, so could not measure effects on stereotype threat vulnerability. No evidence of gender-based math stereotype endorsement or stereotype threat effects among 2 <sup>nd</sup> or 5 <sup>th</sup> graders.	No stereotype endorsement or stereotype threat effects found

Schweinle, A., & Mims, G. A.	2009	170 5 <sup>th</sup> graders; 73% European American, 27% African American; 58% female, 35% male, 7% did not indicate sex	Racial/ethnic identity, classroom racial/ethnic composition	Classroom composition did not induce stereotype threat in African American students. Authors attribute this resilience to strong racial/ethnic identity, which was not directly measured.	No significant effect of classroom composition on stereotype threat
Steffens, M. C., Jelenec, P., & Noack, P.	2010	Study 1: 147 4 <sup>th</sup> -9 <sup>th</sup> graders	Implicit and explicit stereotype endorsement	Both implicit and explicit gender stereotypes form early, and later increase, stability, or decline is highly dependent on context. Measuring both implicit and explicit stereotypes may be necessary to capture full range of children's beliefs.	Girls' vs. boys' implicit gender stereotypes, Grade 4: $d = .54$  Girls' vs. boys' explicit gender stereotypes, Grade 4: $d = -.24$
Strambler, M. J., & Weinstein, R. S.	2010	111 1 <sup>st</sup> -5 <sup>th</sup> graders; 51% Hispanic/Latino, 49% African American; 53% female, 47% male	Academic valuing/disidentification, teacher caring, teacher feedback, school community	Classroom-level perceptions of teacher caring were predictive of academic valuing by individual students. Negative teacher feedback associated with academic devaluing.	Relationship between teacher caring & academic devaluing: $\beta = -0.51$

					Negative teacher feedback & academic devaluing: $\beta = 0.45$
Syed, M., Azmitia, M., & Cooper, C. R.	2011	Theoretical paper—no experimental studies	Social support, racial/ethnic identity	Families of color/immigrant families may use “invisible strategies” to promote achievement. Social support is a network rather than individual relationships, and may be compensatory or additive. Children may require different types of social support than adults.	N/A
Tomasetto, C., Alparone, F. R., & Cadinu, M.	2011	124 5-8 year olds; all White, all Italian	Parental endorsement of gender stereotypes	Girls experienced stereotype threat performance deficits when mothers endorsed gender stereotypes, but no effect was associated with fathers’ endorsement. Girls whose mothers did not endorse gender stereotypes did not experience stereotype threat.	Regression coefficient for stereotype threat on performance: $b = -0.37$ , $p < .05$  Regression coefficient for

					interaction of mothers' gender stereotypes & ST: $b = -0.37$ , $p < .05$
Vezzali, L., Capozza, D., Giovannini, D., & Stathi, S.	2012	44 5 <sup>th</sup> Italian graders; 45% female, 55% male	Imagined contact as a stereotype-reduction intervention	Children who participated in an imagined contact intervention had reduced implicit bias and more positive behavioral intentions toward out-group members.	Effect of intervention on implicit bias: $d = 0.67$  Effect of intervention on behavioral intentions: $d = 0.74$
Wasserberg, M. J.	2009	198 3 <sup>rd</sup> -5 <sup>th</sup> graders; all African American	Domain identification, stereotype consciousness, evaluative context	Domain identification was positively associated with stereotype threat under diagnostic conditions. Greater stereotype awareness was also positively associated with stereotype threat.	Effect of diagnostic condition on reading performance of stereotype aware students: $d = 0.86$

Wei, T. E.	2012 (online first)	N = unclear; age range from 9-17 years	Stereotype primes on large-scale tests	Stereotype priming effects found with relation to gender/math stereotypes. Implied that changes in language on large-scale tests may narrow gender-based score gaps.	Effect could not be measured for 9-year olds due to content of NAEP in study years.
Woods, T. A., Kurtz-Costes, B., & Rowley, S. J.	2005	438 4 <sup>th</sup> , 6 <sup>th</sup> , & 8 <sup>th</sup> graders (35% 4 <sup>th</sup> grade, 31% 6 <sup>th</sup> grade, 34% 8 <sup>th</sup> grade); 53% African American, 47% European American	Socioeconomic class	Children perceive and endorse class-based stereotypes as early as elementary school. Children from other stereotyped groups who also come from low-income families may experience stereotype threat interaction effects.	Effect of 4 <sup>th</sup> vs. 6 <sup>th</sup> grade status on academic class stereotypes: $d = .20$

Table 1.2

*A Comparison of Stereotype Threat Characteristics in Adults and Children*

Stereotype Threat Characteristic	Adults	Children
Awareness of stereotypes	Required to experience stereotype threat (Ambady et al., 2001; Steele, 1997; Steele & Aronson, 1995)	Evidenced as early as 6 years of age (Ambady et al., 2001; McKown & Weinstein, 2003). Awareness of broadly held stereotypes is associated with stereotype threat; awareness of individually held stereotypes is not (McKown & Weinstein, 2003).
Personal endorsement of stereotypes	Unnecessary to experience stereotype threat (Steele, 1997).	Unnecessary to experience stereotype threat (Huguet & Régner, 2009).
Task difficulty	Increases likelihood of stereotype threat (Steele, 1997; Steele & Aronson, 1995)	Increases likelihood of stereotype threat; moderates effects of identity salience (Neuville & Croizet, 2007).
Domain identification	Required to experience stereotype threat (Steele, 1997; Steele & Aronson, 1995)	Although domain identification may increase a child's vulnerability to stereotype threat (Wasserberg, 2009), it is not a prerequisite for stereotype threat among children. Both domain-identified and non-domain-identified children have been found to experience stereotype threat on academic tasks (Huguet & Régner, 2007; Tomasetto et al., 2011).
Stereotype priming	Noted primes in adults: <ul style="list-style-type: none"> <li>indicating demographic information before a task</li> <li>integrating stereotypical examples into the context of a task (e.g., mathematics word problems)</li> </ul>	Noted primes in children: <ul style="list-style-type: none"> <li>indicating demographic information before a task (Alter et al., 2010),</li> <li>subtle reminders such as coloring a picture of a child behaving in a</li> </ul>

	<p>(Steele, 1997; Steele &amp; Aronson, 1995)</p> <ul style="list-style-type: none"> <li>• numeric minority status (Inzlicht &amp; Ben-Zeev, 2000).</li> </ul>	<p>stereotypic way prior to completing a task (Ambady et al., 2001).</p> <p>Priming effects unobserved in children:</p> <ul style="list-style-type: none"> <li>• stereotypical information integrated into the context of a task (Ganley et al., 2013).</li> </ul> <p>Mixed evidence:</p> <ul style="list-style-type: none"> <li>• numeric minority status (Huguet &amp; Régner, 2007 for priming effects; Rowley et al., 2008 for non-triggering effects).</li> </ul>
--	--	--

## **CHAPTER 2: MEASURING SOCIAL SUPPORT AND SCHOOL BELONGING IN BLACK/AFRICAN AMERICAN AND WHITE CHILDREN: A MULTIPLE GROUP CONFIRMATORY FACTOR ANALYSIS**

A plethora of scientific literature has established a strong association between social support and well-being throughout the life course. Among children, social support is believed to buffer stress through reinforcement of self-esteem and problem-solving behaviors, as well as promoting positive emotions, strengthening a child's sense of self-worth, and providing a sense of predictability to a child's often confusing social world (Cohen & Wills, 1985). Social support has also demonstrated a strong link to children's academic achievement (Estell & Perdue, 2013; Furrer & Skinner, 2003). Likewise, children's feelings of acceptance and inclusion at school, termed school belonging, have also shown a positive association with academic achievement (Battistich, Solomon, Watson, & Schaps, 1997; Goodenow, 1993). Recent research has highlighted that one of the ways through which social support and school belonging may bolster student achievement is by preventing and buffering stereotype threat (Wegmann, in preparation).

Under stereotype threat, people from negatively stereotyped groups experience anxiety that they will have their performances judged unfairly according to a stereotype, or that their performances will serve to confirm the negative stereotype to themselves and others (Steele & Aronson, 1995). In an academic context, stereotype threat has been found to be a significant contributor to the long-standing "achievement gaps" between different social groups of students, such as achievement differences based on race/ethnicity or sex (Nguyen & Ryan, 2008; Steele, 1997). The demonstrated relationships between social support, school belonging, and stereotype



threat may hold great promise for intervention design, answering the call for socio-environmental interventions to prevent and narrow achievement differences (Kratochwill, 2007).

### **The Nature of Children's Social Support**

Cohen (2004) defined social support as "a social network's provision of psychological and material resources intended to benefit an individual's ability to cope with stress." As alluded to in the definition, social support is a multidimensional construct, including instrumental support (provision of material support or task assistance), informational support (providing relevant information), and emotional support (Cohen, 2004). In part because of its multifaceted nature, social support influences many aspects of children's lives, including psychosocial well-being, academic achievement, and school engagement.

For children, parents or caregivers, teachers, and peers represent the most important sources of social support (Cauce & Srebnik, 1990). In a comprehensive meta-analysis of social support effects among children and adolescents, Chu, Saucier, and Hafner (2010) found that children are more likely to seek social support from authority figures, which may affect the nature of the benefits and perceptions associated with those relationships. Although measures that simply counted the number of supportive relationships in a child's life did not predict positive outcomes (Chu et al., 2010), other researchers have found that the presence of at least one supportive relationship in each of the three major roles (parent or caregiver, teacher, and peer) was uniquely associated with academic achievement and school engagement (Furrer & Skinner, 2003). In particular, parent or caregiver and teacher support were directly associated with increased academic achievement, whereas peer support demonstrated strong associations with emotional engagement in school (Estell & Perdue, 2013; Furrer & Skinner, 2003).

Consistent with a systems theory perspective (Bronfenbrenner, 1979), supportive social relationships, student engagement, and academic achievement mutually influence each other in a feedback loop (Hughes, Luo, Kwok, & Loyd, 2008). Enhancing one component of the process, such as increasing emotional engagement in school by fostering supportive peer relationships, can affect the other components and trigger a cycle of recursive benefits. For example, when supportive teacher-student relationships are established early in a child's academic career, they not only improve the quality of daily classroom interactions, but also reduce the risk of early and persistent underachievement (Hamre & Pianta 2005). The mutual nature of the relationships between social support and beneficial outcomes provides multiple points and mechanisms that can be leveraged in interventions to boost children's academic achievement and psychosocial well-being.

### **Influence of Parent or Caregiver Support on Academic Success**

In addition to its previously noted direct association with academic achievement (Estell & Perdue, 2013; Furrer & Skinner, 2003), parent or caregiver support is also significantly associated with behavioral engagement at school (Estell & Perdue, 2013). Because engagement is a main mechanism through which motivation affects learning, an increase in behavioral engagement or learning behaviors may provide an additional pathway through which parent or caregiver support promotes academic success (Estell & Perdue, 2013). Parent or caregiver support is sometimes operationalized as parental warmth, a definition that emphasizes the provision of emotional support. High parental warmth may help to promote positive social and academic outcomes through its demonstrated ability to reduce anxiety. Conversely, parent-child relationships that are low in parental warmth are associated with poor academic achievement and behaviors (Bodovski & Youn). Another important feature of parent or caregiver support is that it

may promote a "readiness for socialization" that enables children to develop and benefit from supportive relationships with other adults and peers (Furrer & Skinner, 2003).

### **Influence of Peer Support on Academic Success**

Peer support is particularly associated with greater affective or emotional engagement, which consists of children's feelings and perceptions about school and learning (Estell & Perdue, 2013; Furrer & Skinner, 2003). However, peer support also has a unique and direct impact on academic achievement (Cappella et al., 2013). Apart from generating positive emotions about school, relationships with peers may support achievement by facilitating access to learning-related resources and activities (Wentzel & Wigfield, 1998) and by contributing to the sense that the classroom is an emotionally safe space to take the risks necessary for learning (Duke et al., 2011; Smith et al., 2013).

### **Influence of Teacher Support on Academic Success**

Of the three major social support sources in children's lives (parent or caregiver, peer, and teacher), teacher support demonstrated the strongest effect on children's academic achievement and overall social well-being in Chu and colleagues' meta-analysis of social support effects. Social support from teachers consists of two components: emotional support and instructional support. In the classroom context, emotional support consists of an overall feeling of classroom warmth, sensitivity and responsiveness to individual children, positive affect and feedback, and a child-centered philosophy. Instructional support involves intensive, task-focused teacher-student interactions that facilitate children's higher-order thinking and cognition (Hamre & Pianta, 2005). Similar to other forms of support, teacher support not only directly affects student achievement, but also does so indirectly by promoting student engagement. Teacher support has been demonstrated to increase effortful engagement, the type of school engagement that consists of

focusing, persisting, and putting forth one's best effort on a task (Hughes et al., 2008), as well as behavioral and emotional engagement (Furrer & Skinner, 2003).

### **Social Support, School Belonging, and Academic Success**

Beyond their individual effects, peer and teacher relationships also affect student well-being and academic performance indirectly by influencing students' sense of school belonging (McMahon, Wernsman, & Rose, 2009). School belonging, defined as "a student's felt experience of acceptance, respect, and inclusion by adults and peers within the school social environment" (McMahon et al.), combines the nature of these relationships with features of the school environment. Phrased differently, school belonging can also be thought of as a student's sense of community regarding the school context (Osterman, 2000). As with social support and relationships, a child's *perception* of school belonging is most strongly associated with outcomes, rather than observed indicators of belonging (Osterman).

School belonging satisfies the fundamental human need for belonging, which is associated with differences in cognitive processes, emotional patterns, behaviors, health, and well-being (Baumeister & Leary, 1995). Because of its influences on cognitive processes, behaviors, and emotions, belonging plays a key role in learning and academic performance. Specifically, school belonging has been demonstrated to be an important predictor of academic success and well-being at all ages and levels of education (Osterman, 2000). A strong sense of school belonging may be particularly important in elementary school to establish a positive academic trajectory and prevent students from falling behind (McMahon et al., 2009).

Although school belonging has been shown to directly influence academic achievement (Battistich, Solomon, Watson, & Schaps, 1997; Goodenow, 1993), it also interacts with several related constructs to further influence academic learning and performance. School belonging is

associated with good feelings about school and school satisfaction (McMahon et al., 2009), lower anxiety (Osterman, 2000), higher expectations for success at school (Goodenow & Grady, 1993), lower personal risk and greater participation in school activities (Osterman) and higher frequency of prosocial and helping behaviors (Osterman). A key pathway through which school belonging may influence academic achievement is through its effects on motivation and self-efficacy. Stronger senses of school belonging are associated with higher levels of intrinsic academic motivation (Solomon et al., 1996) and greater academic self-efficacy (McMahon, Parnes, Keys, & Viola, 2008). Students who reported higher levels of school belonging also reported stronger senses of personal identity (Osterman).

### **Social Support and School Belonging as Stereotype Threat Buffers**

In addition to the many documented associations of social support with academic achievement, school engagement, and general well-being, social support and school belonging may play important roles in preventing and buffering stereotype threat among elementary school children. As mentioned earlier, stereotype threat is a social psychological phenomenon affecting task performance, notably academic achievement, for people belonging to negatively stereotyped social groups. Although stereotype threat among elementary school students has not been extensively studied, a recent systematic review found strong evidence that stereotype threat does affect the academic performance of elementary school students, and that social support and school belonging may serve as important buffers of negative threat effects (Wegmann, in preparation). Strambler and Weinstein (2010), for example, found that students who reported higher perceived teacher caring, one form of social support, also reported lower academic devaluing, an established indicator of identity conflict triggered by stereotype threat (Steele, 1997). Similarly, Wasserberg (2009) concluded that supportive teacher-student relationships may

buffer against stereotype threat, although this conclusion was not empirically tested in his study. Syed, Azmitia, and Cooper (2011) noted the important but often overlooked role that family support may play in the academic success of ethnic minority and immigrant students, recognizing that families of color and immigrant families may use "invisible" strategies to promote academic achievement that differ from traditional forms of family engagement recognized by schools.

With respect to school belonging, Gillen-O'Neel, Ruble, and Fuligni (2011) found that although Dominican students reported higher stigma awareness (a recognized prerequisite of stereotype threat) compared to European American students, they also reported higher intrinsic motivation for academic tasks. Subsequent analyses revealed that the Dominican students' levels of intrinsic motivation were positively associated with their reported feelings of school belonging. Gillen-O'Neel and colleagues hypothesized that school belonging might buffer the effect of ethnicity-related stigma on academic anxiety, or might enhance the motivation of ethnic minority students by directly reducing academic anxiety and increasing intrinsic motivation.

## **Purpose**

From an exploratory perspective, better understanding potential differences in the way school belonging and social support are perceived by different social groups of students is necessary to leverage the concepts' preventive and buffering potentials for design and implementation of stereotype threat interventions. In addition, the ability to measure and make valid comparisons of levels of social support and school belonging among different social groups of students is important for intervention selection, as well as for general assessments of the school and classroom social environments.

Although stereotype threat can be based on any number of social identity characteristics including gender or socioeconomic status, stereotype threat based on racial/ethnic status has been found to have the most serious effects on academic achievement (Nguyen & Ryan, 2008). Because of the damaging effects of stereotype threat based on race/ethnicity, as well as the longstanding achievement differences noted between students of different racial/ethnic groups (Hemphill & Vanneman, 2011; Vanneman, Hamilton, Baldwin Anderson, & Rahman, 2009), the current study sought to explore perceptions of school belonging and different forms of social support between racial/ethnic groups of elementary school students in order to better inform stereotype threat intervention selection, design, and implementation.

Although social support in general is well-researched, few comprehensive measurement tools have been validated for use and comparison of children's perceptions of school belonging and various forms of social support between racial/ethnic groups. Many measures are limited to assessing just one form or source of social support, providing an incomplete picture of a child's social context. Even the most widely used measures addressing multiple sources and forms of support, such as the Social Support Scale for Children (Harter, 1985) and the Child and Adolescent Social Support Scale (Malecki, Demaray, & Elliott, 2000), have not had their validity established with diverse populations or undergone measurement invariance testing (Gordon, 2011; Lipski, Sifers, & Jackson, 2013). If social support and school belonging are to be leveraged in stereotype threat intervention, having a measure that has been determined to provide valid assessment and comparison across racial/ethnic groups is essential. The current study sought to establish the suitability of an existing ecological assessment measure, the ESSP for Children (ESSP-C), to assess and compare perceived levels of social support and school belonging between different racial/ethnic groups of elementary school students.

**Research questions.** The current study was designed to answer the following research questions:

- Are measures of social support and school belonging in the ESSP-C invariant between Black/African American and White students?
- Do Black/African American and White students demonstrate statistically significant differences in levels of school belonging and social support?

## **Methods**

### **Sample**

Data were collected from 1251 3rd through 5th grade students in 13 elementary schools in four school districts in a mid-Atlantic state. Schools were participating in four concurrent ESSP projects. Data were collected during the 2008-2009 school year: during the fall semester from two urban school districts, and during the spring semester from two rural school districts.

On the ESSP, information on child gender, race/ethnicity, and family economic status is provided by parents/caregiver respondents. Because race/ethnicity is a primary variable of interest to the proposed study, only the 690 child cases for which race/ethnicity data from the ESSP for Families were available will be included in the analyses. (This group of cases will be referred to as the “study sample” throughout this document.) Mann-Whitney U tests were performed to determine whether statistically significant differences existed between the distributions of the full sample and the study sample on the preliminary list of variables. Significant differences between data distributions were noted on several variables; however, the sample of cases including race/ethnicity information remained diverse. Forty-six percent (46%) of caregivers in the study sample responded that their children were White, 39% answered that their children were Black/African American, 7% indicated Latino ethnicity, 2% identified as



Asian, and 1% reported Native American ethnicity. The remaining 5% of caregivers classified their children's race/ethnicity as "multiracial" or "other." Because the available sample sizes for Hispanic/Latino, Asian, Native American, multiracial, and "other" students were well under the minimum of 100 cases recommended for CFA ( $n < 50$  for each group, Kline, 2005), Black/African American and White students were the only racial/ethnic groups large enough to be compared in the analysis.

Over half (56%) of caregiver respondents indicated that their children received free or reduced price lunch at school. In addition, 41% of caregivers reported some degree of financial instability in their families by agreeing with the statement that it was difficult "to make ends meet" during at least some months of the year.

### **Data Collection**

All data were collected through child self-report using the online version of the ESSP-C. Data collection in the urban schools took place during the fall semester, and data collection in the rural schools occurred in the spring semester of the same academic year. To encourage maximum participation, most schools scheduled times for entire classes of children to come to the school computer lab and complete the survey at the same time.

### **Measures**

The ESSP is based on the School Success Profile (SSP), an analogous instrument for middle and high school students (Bowen, Richman, & Bowen, 2002; Bowen, Rose, & Bowen, 2005). Because younger children may not be developmentally able to provide valid and reliable self-report data about all aspects of their social environments, the ESSP also collects information from each child's primary caregiver and teacher via the ESSP for Families and the ESSP for Teachers. Only child self-report data were included in the analyses, because the experience of

stereotype threat is primarily individual and rests heavily on a person's thoughts, appraisals, and perceptions. The ESSP-C was not initially designed to measure stereotype threat and does not include all items that would be needed to directly measure stereotype threat. However, because of its function as a holistic assessment of a student's social environment, the ESSP-C includes items that assess key aspects of school belonging and social support. Specifically, the ESSP-C measures social support from children's family and friends as well as a general sense of social support. The ESSP-C also measures children's perceptions of their relationships with teachers and friends at school, and positive feelings about school. The version of the ESSP-C available in 2008-2009 consisted of 83 items assessing 12 dimensions along five domains spanning a child's individual and social-environmental circumstances. Items selected for the current analysis belonged to six established scales of the ESSP-C: School Is A Fun Place to Learn, Teachers Who Care, Friends Who Care, Family Who Care, Good Adjustment, and Knows Where to Get Support. The complete text of all included items can be found in Table 2.1. The four items selected from the School Is A Fun Place to Learn scale, hypothesized to reflect school belonging, assessed children's positive feelings about going to school and their sense of connection to peers at school. Items from the Teachers Who Care scale were selected to represent children's perceptions of supportive relationships with their teachers, including whether teachers engage in specific behaviors to facilitate learning and validate the importance of children's contributions to the classroom. Items from the Friends Who Care scale assessed children's perceptions of peer support (both in and out of school), based on specific supportive behaviors such as, "My friends listen to me when I have something to say," as well as through more general statements about the nature of the relationship (e.g., "My friends and I have fun together"). Similar to the teacher support and peer support items, chosen items from the Family Who Care scale reflected

children's perceptions of caregiver support. The items assessed whether caregivers encouraged children to do their best in school, provided emotional support, and fostered a healthy sense of self-esteem in their children. Items from the Good Adjustment and Knows Where to Get Support scales were hypothesized to jointly measure children's perceptions of general social support. The two items from the Good Adjustment scale are reverse-coded items inquiring about a lack of general social support ("Do you ever feel nobody cares about you?" and "Do you ever feel nobody listens to you?"). The two items from the Knows Where to Get Support scale ask whether children have someone in their lives who listens to them and "is on their side." These items are similarly worded to items from the caregiver, friend, and teacher scales; however, no specific source of support is mentioned. Therefore, these items are intended to capture other sources of social support that may not have been assessed in other items.

All items in the ESSP-C are assessed via an ordinal response scale, with most items using a four-point scale asking children to indicate how often a particular situation occurs: "never," "sometimes," "often," or "always." The ESSP-C has undergone rigorous cognitive and psychometric testing throughout its development and subsequent use, consistently demonstrating its ability to collect valid and reliable data from a middle childhood population (Bowen, 2008; Bowen, 2011; Woolley, Bowen, & Bowen, 2006).

In addition to the substantive items chosen for analysis, two important demographic variables were also measured via the ESSP. Children's race/ethnicity was indicated by a categorical item on the ESSP for Families, completed by children's parents or caregivers. Because of the nature of the research questions and the fact parents/caregivers had to complete their portion of the ESSP in order for this information to be present, only child cases that had race/ethnicity information were included in the current analysis.

A second categorical variable indicated in which of the sample schools each child was enrolled. This information was provided by the sample schools and stored as a numeric code. The presence of a school enrollment code was important in order to control for potential autocorrelation of cases from children attending the same school, which can bias results if not sufficiently addressed in analysis (Muthén & Muthén, 2002-2012).

Because all of the indicator variables included in the analysis were ordered-categorical and not normally distributed, the maximum likelihood estimator typically employed in CFA was inappropriate (Jöreskog, 2005). Ordered-categorical variables do not have an established metric, meaning that the means, variances, and covariances of the variables cannot be used to calculate a Pearson moment correlation matrix. Instead, a threshold model is used to link ordinal responses to underlying latent continuous distributions, which are assumed to be normal. Polychoric correlations between all pairs of latent response variables are then calculated (Bollen, 1989; Jöreskog, 2005; Muthén & Asparouhov, 2002). Because of its generation and use of the polychoric correlation matrix, Weighted Least Squares Means and Variances (WLSMV) estimation is the recommended method for analysis of ordered-categorical data (Bollen, 1989; Kline, 2005).

## **Analysis**

In order to determine whether the selected items from the ESSP-C perform equivalently for different racial/ethnic groups of students (Research Question 1), invariance testing was performed through multiple group confirmatory factor analysis (CFA). Multiple group invariance testing allows researchers to determine whether measurement instruments function in the same way for different groups of respondents, enabling valid comparison of scores between groups. Under traditional maximum likelihood estimation, testing for measurement invariance

consists of several steps involving sequential application of parameter constraints across groups: configural invariance (number of latent factors and *pattern* of factor loadings and covariances constrained to be equal in all groups), factor loadings constrained to be equal, intercepts constrained to be equal, factor variances constrained to be equal, and factor covariances constrained to be equal (Sass, 2011). When using WLSMV estimation to analyze categorical data, the process differs slightly, in part because factor loadings and intercepts are constrained in one simultaneous step because of their mutual influence on the item characteristic curve (ICC). The steps for invariance testing under WLSMV estimation are as follows (Byrne, 2012; Muthén & Muthén, 1998-2012):

- 1) Establishment of group-specific baseline models,
- 2) Testing of configural invariance: number of latent factors, patterns of factor loadings constrained to be equal in both groups,
- 3) Factor loadings and thresholds simultaneously constrained to be equal.

Unlike under maximum likelihood, invariance of factor variances and covariances is not required when using WLSMV in order to be able to compare latent means (Bovaird & Koziol, 2012).

**Step 1: Group-specific baseline models.** The first step for invariance testing under WLSMV is to develop separate CFA models for each racial/ethnic group. In both groups, a five-factor structure was hypothesized, with School Belonging, Social Support From Friends, Social Support From Family, General Social Support, and Teacher-Student Relationships as the posited latent factors.

**Step 2: Configural invariance testing.** After establishing group-specific baseline models, the two models were tested in a multiple group analysis of configural invariance. Although the group-specific models may differ slightly, indication of good fit in the configural

invariance test establishes that the same essential model structure (e.g., number of factors, pattern of factor loadings and covariances) holds for both groups (Cheung & Rensvold, 2002; Sass, 2011).

**Step 3: Invariance of factor loadings and thresholds.** Following the establishment of configural invariance across the two groups, factor loadings and thresholds were constrained simultaneously to be equal in both groups. Application of these equality constraints determines whether the associations between observed indicators and latent factors are invariant across groups, and whether the magnitude of the relationships between observed indicators and latent factors is equal (Cheung & Rensvold, 2002; Sass, 2011). The fit of the model with applied loading and threshold constraints is compared to the fit of the configural invariance model established in the previous step, using the WLSMV chi-square difference test. If the applied equality constraints significantly worsen model fit, full measurement invariance does not hold for the measure across groups (Bowen & Guo, 2012; Kline, 2005).

**Partial Measurement Invariance.** If full measurement invariance does not hold for a particular measure, the option to identify noninvariant parameters and continue testing for partial measurement invariance exists (Byrne, Shavelson, & Muthén, 1989). To test for partial measurement invariance, potentially noninvariant parameters are identified through modification indices and successively freed. The effect of releasing the constraint on a particular parameter is then evaluated by comparing the fit of the model with the released parameter to the configural invariance model, just as when testing for full measurement invariance. If few parameters are found to be noninvariant while the vast majority of parameters perform equally between groups, the measure can be considered to possess partial measurement invariance. Sass (2011) noted that the presence of a small percentage of noninvariant items has little to no effect on a measure's

ability to draw valid comparisons between groups. If partial measurement invariance is established for a given measure, comparison of latent means between groups is also possible (Byrne, Shavelson, & Muthén). Although invariance of latent variances and covariances is required to compare latent means when using other estimation methods, under WLSMV estimation such tests are not required (Bovaird & Koziol, 2012).

**Analysis Procedure.** The multiple group CFA was performed in Mplus version 7.11 (Muthén & Muthén, 2014), using the WLSMV estimator. The Mplus default of delta parameterization was used for all models, because the research questions and practical applications of the study did not require the stringency of invariance of residual error terms (Wang & Wang, 2012). Missing data were handled through Mplus's default full information method associated with WLSMV. Potentially inflated standard errors caused by autocorrelated data, such as the school groups represented in the current study sample, was addressed through use of Mplus's clustered data feature.

Model quality was evaluated through selected fit statistics, the magnitude and statistical significance of factor loadings and variances, and the substantive rationale for patterns of loadings and correlations between error variances. Commonly recommended fit indices for WLSMV analysis (Bowen & Guo, 2012) were used to evaluate model fit: the robust WLSMV  $\chi^2$ , the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). Hu and Bentler's (1999) recommendations for acceptable fit index values were followed for the TLI and CFI, with values equal to or greater than 0.90 indicating adequate fit, and values equal to or greater than 0.95 considered indicative of good fit. Kline's (2005) standard for RMSEA was followed, with values below .05 indicating good fit (although values between .05 and .08 suggest "reasonable" model fit). Factor loadings will be

evaluated both on their statistical significance and the strength of the factor loading. Consistent with Comrey and Lee's (cited in Tabachnick & Fidell, 2013, p.654) guidelines for exploratory factor analysis, the minimum acceptable value for a standardized factor loading will be 0.32, with greater loading values suggesting stronger relationships between the indicator and latent variable (Bowen & Guo, 2012).

The robust WLSMV  $\chi^2$  is a variation of a traditional chi-square test, adjusted for the WLSMV estimation method. Like a traditional chi-square test, non-significant values indicate good model fit, although they may be difficult to achieve with the sample size required for CFA (Thompson, 2004, pp. 128-129). Furthermore, WLSMV-estimated models should not be evaluated solely by the adjusted  $\chi^2$  score or significance, with Bovaird and Koziol (2012) even suggesting that it should not be interpreted at all. For models of categorical data using the WLSMV estimator, the real value of the adjusted  $\chi^2$  is in difference testing between nested models, such as the successively constrained models used to test for invariance between groups (Muthén & Muthén, 1998-2012; Sass, 2011). In the context of invariance testing, a non-significant adjusted  $\chi^2$  difference test indicates that whatever equality constraints were applied in the most recent model did not produce statistically significant worse fit compared to the configural model used as a baseline.

In order to achieve satisfactory model fit, modification indices provided in the Mplus output, the residual correlation matrix, and  $R^2$ /SMC values were used to identify potential improvements to the model. In accordance with the best practices for improving model fit suggested by Byrne, Shavelson, and Muthén (1989) and Bowen and Guo (2012), modifications were considered only when pre-specified fit criteria were not met, the modifications were theoretically supported, and they did not substantially alter other parameter estimates.



The measurement invariance tests described above indicated if it was appropriate to compare factor means on the constructs of interest across the two groups. In multiple group invariance testing, invariance of latent means is determined through latent mean difference testing between the analyzed groups (Byrne, 2012). Therefore, one group serves as a reference group with all latent means fixed at zero, and the latent means of the other group describe the difference in latent means of the second group relative to the first group. The *p*-value provided in the Mplus output indicates whether differences between the groups' means on each latent variable are statistically significant.

## **Results**

### **Missing Data**

Mplus output indicated that a total of 26 cases (12 Black/African American, 14 White) had missing data on all variables included in the analysis. With respect to missing data on individual items, covariance coverage rates ranged from 94% to 100% for Black/African American students and 96% to 100% for White students. Mplus reported 22 missing data patterns for White students and 27 missing data patterns for Black/African American students.

### **Group-specific Models**

In accordance with the recommendations of Byrne (2013) and Sass (2011), analysis began with fitting models to each racial/ethnic group separately. The initially hypothesized model based on substantive knowledge of school belonging and social support fit the Black/African American group's data well, requiring no changes to achieve good fit according to the fit criteria (reported in Table 2.2).

The model for White students only needed two modifications to achieve good fit, as indicated by the CFI, TLI, and RMSEA reported in Table 2.2. An error correlation was added

between items C8 (I think school is fun) and C9 (I look forward to going to school), which was substantively justified because both indicators describe general positive feelings about school. A second error correlation was added between items C8 (I think school is fun) and C17 (My teacher and I get along well). Because literature on teacher-student relationships has shown that children have more positive attitudes toward school when they have positive relationships with their teacher, the second error correlation was also considered theoretically justified.

### **Configural Invariance**

When run simultaneously, the two group models demonstrated configural invariance. As with the group-specific models, the adjusted  $\chi^2$  was significant, but all other fit indices showed good fit, as reported in Table 2.2. The good fit of the simultaneous group models demonstrates that the same latent factors, indicators, and paths are shared between the two groups. The demonstration of configural invariance justified progressing to more stringent tests of measurement invariance.

### **Measurement Invariance**

Following Muthén and Muthén's (1998-2012) and Sass's (2011) recommendations, both the factor loadings and item thresholds were constrained simultaneously in one test of strong measurement invariance. The initial measurement invariance model resulted in acceptable fit statistics, but also indicated a statistically significant worsening of fit compared to the configural model.

After concluding that the selected ESSP-C items did not demonstrate full measurement invariance, partial measurement invariance (PMI) testing was conducted per the examples of Byrne, Shavelson, and Muthén (1989) and Sass (2011). As suggested by Byrne (2012) and Muthén and Muthén (1998-2012), when a constraint on a potentially invariant item threshold

was released, the accompanying item factor loading was also freed. Only the potentially noninvariant threshold was affected by this method; other thresholds for the item remained constrained. A sequence of PMI models was tested, with each iteration freeing a threshold suggested to be potentially noninvariant by the modification indices and its corresponding factor loading. Thresholds 1 and 3 for item C9 (I look forward to going to school), threshold 1 for item 14 (I have fun with other kids at my school), and threshold 3 for item C20 (When I raise my hand, my teacher calls on me) were successively freed during the PMI testing procedure, along with the factor loadings for items C9, C14, and C20. The model with these freed parameters demonstrated overall good fit (CFI = .957, TLI = .956, RMSEA = .031) with no statistically significant difference in fit compared to the configural invariance model ( $\Delta\chi^2(65) = 84.174, p > .05$ ). In combination with the previously relaxed constraints on item C20, the third PMI model demonstrated overall good fit (CFI = .957, TLI = .955, RMSEA = .031) and no significant difference in fit compared to the configural invariance model,  $\Delta\chi^2(60) = 79.075, p > .05$ . The PMI model and parameter estimates for each group can be found in Figures 2.1 and 2.2.

### **Comparison of Latent Means**

Establishing PMI in the absence of full measurement invariance allows for further testing of parameters associated with the structural model, such as the comparison of latent means (Byrne, 2012; Byrne, Shavelson, & Muthén, 1989; Sass, 2011). The latent means of the White group model were considered the reference variables and fixed at zero. The latent means of the Black/African-American group then represented the difference in mean levels of Black/African American students compared to White students. All latent mean values are listed in Table 2.3. The only latent mean value found to be significantly different was that of School

Belonging, for which the mean for Black/African-American students was .207 unit higher than for White students, which was significant at the  $p < .05$  level.

### **Discussion**

The establishment of PMI supports the use of the ESSP-C to make valid comparisons between self-reported levels of school belonging, positive teacher-student relationships, and various forms of social support between Black/African American and White elementary school students. Although full measurement invariance did not hold for the selected ESSP-C items, the presence of a very small percentage of noninvariant parameters has a minimal effect on the validity of a measure for making group comparisons (Sass, 2011). In the current study, only six, or approximately 3.3%, of the 179 estimated parameters in the final PMI model were not invariant. Future analysis using the ESSP-C social support and school belonging scales can proceed as if the scales were fully invariant, or researchers can choose to exclude the three noninvariant items if they are not shown to adversely affect the measure's psychometric properties (Sass, 2011).

The establishment of configural invariance between the group-specific models for White and Black/African American students serves as evidence that the basic structure of the social support and school belonging model is the same for both groups, such that the same number of latent factors was obtained for each group (Sass, 2011), and the same observed indicators are associated with each latent factor (Cheung & Rensvold, 2002). The establishment of PMI across the two groups signifies that in addition to sharing the same basic model structure, the majority of relationships between the observed indicators and the latent variables are equivalent in magnitude for both White and Black/African American students (Cheung & Rensvold).

As noted by Byrne, Shavelson, and Muthén (1989), the presence of PMI also facilitates valid comparison of the levels of latent variables between groups. Black/African American students reported a statistically significantly higher level of school belonging compared to White students. In light of the evidence associating school belonging with positive academic outcomes, as well as the hypothesis that the relationships and sense of community associated with school belonging may protect students from the effects of stereotype threat (Gillen-O’Neel et al., 2011), this is an encouraging finding for the academic success of the Black/African American students in the sample. Although the finding that Black/African American students in the study sample may be able to benefit from strong feelings of school belonging is promising, some form of stereotype threat will probably affect every student at some point in his or her academic career, due to the multiple identities individuals hold (Steele, 1997). Therefore, schools must strive to build a strong sense of community for all students, to buffer them from stereotype threats as well as to foster their academic success regardless of identity characteristics.

### **Study Limitations**

Although the sample in the current study was diverse with respect to several characteristics, the total numbers of students from racial/ethnic backgrounds other than White or Black/African American were too small to permit invariance testing for other racial/ethnic groups. Given the increasing Latino population in the study state as well as in the United States overall, testing whether the ESSP-C could also be used to validly measure and compare levels of school belonging and various forms of social support for Hispanic/Latino students would have been especially useful.

Another limitation related to the study sample is that data from about half of the students in the original dataset could not be used for the study, because of missing race/ethnicity

information. Although the subset of cases used in the current analysis demonstrated some significant differences from the subset of cases without race/ethnicity information, the subset of cases used in the study maintained several important forms of diversity, such as geographic diversity (urban vs. rural) and diversity of socioeconomic status, increasing the generalizability of conclusions drawn from the eligible cases.

### **Implications for Practice**

Currently, no measurement tool exists to assess the presence or risk of stereotype threat for elementary school students, even though addressing stereotype threat in the elementary school years may be particularly critical to future academic success (Wegmann, in preparation). However, establishing that the ESSP-C can be used to make valid comparisons of the levels of social belonging and different forms of social support reported by White and Black/African American children brings a new use and interpretation of ESSP-C data. In addition to its ability to assess multiple domains of a student's general social environment and identify potential barriers to learning, the ESSP-C can also be used to highlight potential strengths or challenges within a student's social network related to stereotype threat. Awareness of these strengths and challenges can then be used to guide school belonging and social support interventions with the intention of preventing or buffering stereotype threat. The ESSP-C could also be used as a pre- and post-test to assess the results of specific interventions related to school belonging or social support.

### **Implications for Future Research**

As noted in the Study Limitations, conducting multiple group invariance tests with other racial/ethnic groups would be a valuable addition to the body of literature related to the ESSP, and enable the ESSP-C for valid use in guiding socio-environmental interventions to prevent and reduce stereotype threat for a larger, more diverse population of elementary school students. Because stereotype threats also exist in relation to other characteristics such as sex and socioeconomic class, establishing invariance for these social identities as well would also allow use of the ESSP-C to assess and guide stereotype threat prevention and reduction interventions with a wider audience.

Although the validation of use of the ESSP-C to guide social interventions related to stereotype threat is a definite step in the right direction, development and validation of a direct measure of stereotype threat for use with children in the middle childhood stage would be an invaluable tool for addressing stereotype threat in elementary school. Such a measure might be used with the ESSP-C or incorporated into the instrument. In addition to the typical best practices involved in scale development, qualitative research is necessary to better understand how children's developmental stages may uniquely influence the existence and perception of stereotype threat in this age group.

### **Conclusion**

Recent research has suggested that one pathway through which school belonging and social support foster academic achievement is by protecting or buffering students from the negative effects of stereotype threat. Selected items on the ESSP-C related to school belonging and social support have demonstrated both configural and partial measurement invariance for White and Black/African American students, permitting valid comparisons of school belonging and social support to be made. Aligned with the ESSP's primary purpose of using socio-

environmental data to guide intervention, elementary schools can use information on school belonging and social support derived from the ESSP-C to plan targeted interventions utilizing these concepts to prevent and reduce stereotype threat.



Table 2.1

*List of ESSP-C Items Used in Current Study.*

ESSP-C Scale	Item Text	Potential Factor(s)
<b>School is a Fun Place to Learn</b>		
C8	I think school is fun.	School Belonging
C9	I look forward to going to school.	School Belonging
C12	I have friends to talk to at school.	School Belonging
C14	I have fun with other kids at my school.	School Belonging
C15	I have friends to play with at school.	School Belonging
C16	I have friends to eat lunch with at school.	School Belonging
<b>Teachers Who Care</b>		
C17	My teacher and I get along well.	Teacher Relations
C18	My teacher listens to what I have to say.	Teacher Relations
C19	When I try hard or do a good job, my teacher makes me feel good.	Teacher Relations
C20	When I raise my hand, my teacher calls on me.	Teacher Relations
C21	My teacher lets me know that he or she cares about my schoolwork.	Teacher Relations
C22	When I don't understand something, my teacher helps me.	Teacher Relations
<b>Friends Who Care</b>		
C24	When I am upset, my friends help me.	Friend Support
C25	My friends listen to me when I have something to say.	Friend Support
C26	My friends are happy when something good happens to me.	Friend Support
C27	My friends and I have fun together.	Friend Support
C28	My friends are on my side.	Friend Support
<b>Family Who Care</b>		
C45	When I am upset, my family helps me.	Family Support
C46	My family listens to me when I have something to say.	Family Support
C49	Adults in my home make me feel special.	Family Support
C50	Adults in my home are nice to me.	Family Support
C51	Adults in my home tell me I did a good job.	Family Support
C52	When I am scared, worried or upset, I can talk to an adult at home.	Family Support
C53	Adults in my home tell me to try my best in school or to do well in school.	Family Support
<b>Knows Where to Get Support</b>		
C71 (reverse coded)	Do you ever feel nobody cares about you?	General Social Support
C75 (reverse coded)	Do you ever feel no one listens to you?	General Social Support
C80	Someone tells me they are on my side.	General Social Support
C82	I can talk to someone who sees things the way I do.	General Social Support

Table 2.2

*Model Fit Statistics*

Model	$\chi^2$	TLI	CFI	RMSEA	$\Delta\chi^2$ <sup>a</sup>
Group-specific Black/African American students	396.835*	0.964	0.960	0.026	--
Group-specific White students	496.556**	0.941	0.947	0.040	--
Configural invariance	881.090**	0.950	0.955	0.033	--
Measurement invariance initial	951.177**	0.955	0.956	0.031	108.374*
Partial measurement invariance model 1 (RELEASE C9\$1, C9 LOADING)	947.603**	0.955	0.956	0.031	102.516*
Partial measurement invariance model 2 (RELEASE C9\$3)	944.937**	0.956	0.956	0.031	95.584*
Partial measurement invariance model 3 (RELEASE C20\$3; C20 LOADING)	942.021**	0.956	0.956	0.031	92.520*
Partial measurement invariance model 4 (RELEASE C14\$1, C14 LOADING)	937.634**	0.956	0.957	0.031	84.174

\*  $p < .05$ , \*\*  $p < .001$ <sup>a</sup>Difference in  $\chi^2$  values between tested measurement invariance model and configural model.

Table 2.3

*Latent Mean Differences Between White<sup>a</sup> and Black/African American Students*

Latent Factor	White Mean	Black/African American Mean	p-value
School Belonging	.000	.207	.044*
Teacher-Student Relationships	.000	.147	.094
Friend Support	.000	-.061	.500
Family Support	.000	.067	.641
General Social Support	.000	.157	.231

\*  $p < .05$

<sup>a</sup>White students were the reference group for the analysis; therefore, latent mean values were fixed at zero. Mean values for Black/African American students represent change relative to White students.

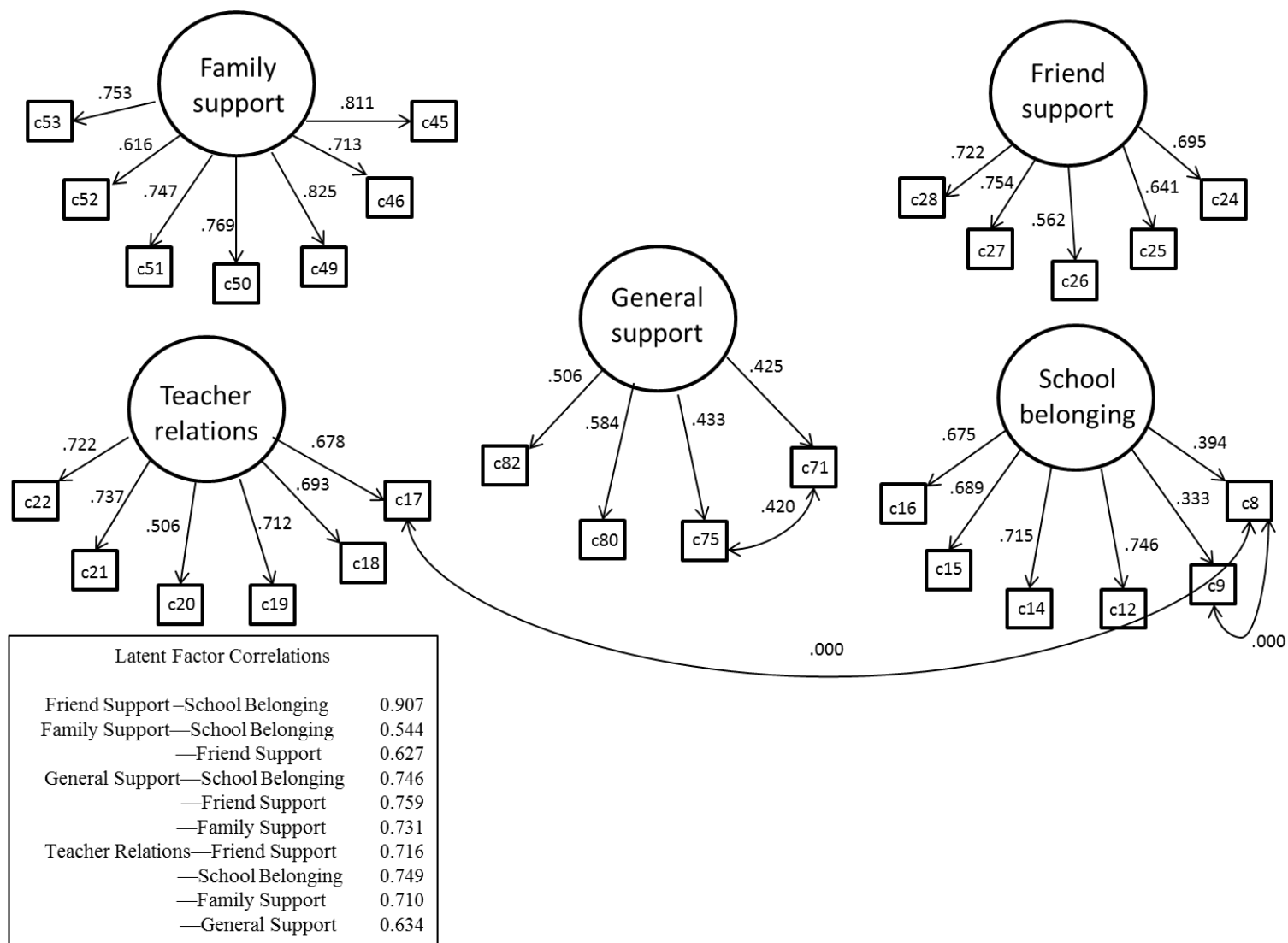


Figure 2.1

Partial measurement invariance model and standardized parameter estimates for Black/African American students. Unstandardized estimates are equal to those for White students.

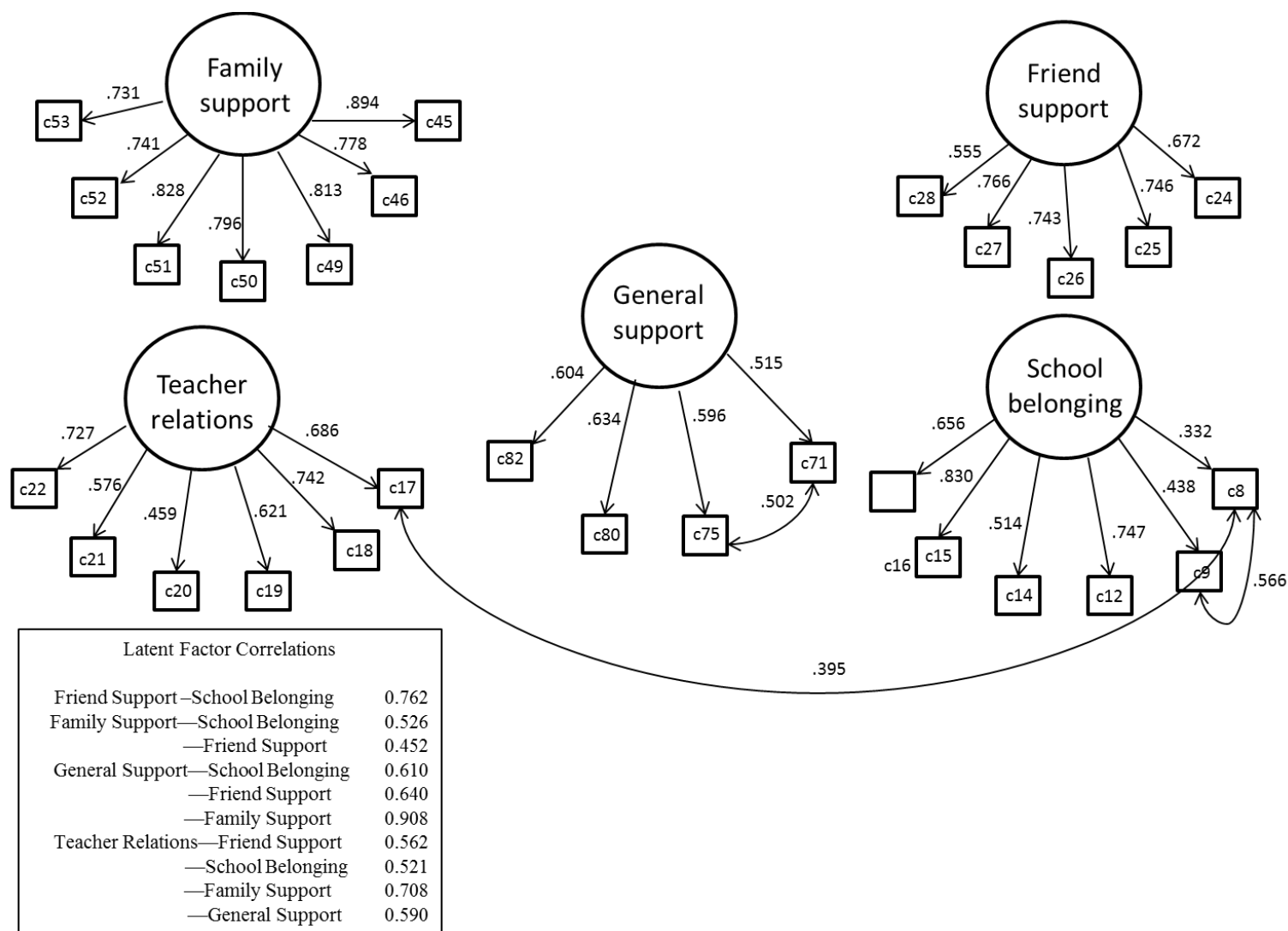


Figure 2.2

Partial measurement invariance model and standardized parameter estimates for White students. Unstandardized estimates are equal to those for Black/African American students.

### **CHAPTER 3: “HIS SKIN DOESN’T MATCH WHAT HE WANTS TO DO”: USING VIGNETTES TO EXPLORE SHAPIRO AND NEUBERG’S MULTITHREAT FRAMEWORK WITH CHILDREN**

Disparities in academic outcomes for students of different races and ethnicities have been documented in the United States since the 1960s (Coleman, et al., 1966; Katz, 1964), and recent data show that little to no progress has been made in narrowing the performance gaps (Hemphill & Vanneman, 2011; Vanneman, Hamilton, Baldwin Anderson, & Rahman, 2009). Research has highlighted the influence of stereotype threat, a social-psychological phenomenon, to the well-documented academic “achievement gaps.” When a person is experiencing stereotype threat, he or she worries that an existing negative stereotype will affect his or her performance in one of two ways: either that he or she will reaffirm the validity of the stereotype by performing poorly on the task at hand, or that his or her task performance will be unfairly judged according to the stereotype (Steele & Aronson, 1995).

Stereotype threat is primarily a situational phenomenon (Steele, 1997), although individual differences may protect or render a person particularly vulnerable to the threat (Guyll, Madon, Prieto, & Scherr, 2010). Environmental factors that contribute to stereotype threat include an evaluative context (indications that a task may be used to diagnose one’s level of intelligence) and existence of a negative stereotype regarding a particular group’s ability on the target task (Steele & Aronson, 1995). On the individual level, personal salience and awareness of a negative stereotype (Pinel, 1999; Steele & Aronson, 1995), high domain identification with the target task (Steele, 1997), and higher levels of stigma consciousness or ethnic identity (Brown &

Pinel, 2003; Guyll et al., 2010) may render a person more vulnerable to experiences of stereotype threat.

### **The Multi-threat Framework**

Because stereotype threat experiences are based on a combination of psychological and environmental factors, stereotype threat experiences likely vary depending on particular elements of a given situation. Shapiro and Neuberg (2007) identified six qualitatively different experiences of stereotype threat, differentiated by the target and source of the threat. A person might worry about confirming a stereotype in his or her own mind, or in the mind of another person. Similarly, the person's performance might be private and judged only by the person him- or herself, or the task performance may be public and judged by others. Furthermore, the "others" involved in the situation could be members of the same stereotyped social group as the person experiencing the threat, or from outside the stereotyped group.

Specifically, the Multi-threat Framework (Shapiro & Neuberg, 2007) describes six unique stereotype threat experiences based on the three dichotomies. Table 1 illustrates the six types of threats by who occupies the roles of target and judge for each threat. Self-Concept Threat is the fear of perceiving oneself as an exemplar of a negative group stereotype; Group-Concept Threat is the fear of perceiving one's own social group to be confirming a negative stereotype; Own-Reputation Threat (Outgroup) is the fear that others outside of one's social group will see him or her as an exemplar of a negative group stereotype; Own-Reputation Threat (Ingroup) is fear that others within a person's own social group will perceive the person as confirming a negative stereotype about their shared group identity; Group-Reputation Threat (Outgroup) is the fear of being a bad representative of one's group to others outside the group, inadvertently confirming the negative group stereotype to them; and Group-Reputation Threat

(Ingroup), is fear of personally confirming a negative group stereotype to members of one's own social group. An implication associated with the Multi-threat Framework is that because stereotype threat is not a singular construct, efforts to reduce the threat must take into account the particular nature of the threat and tailor strategies appropriately.

### **Stereotype Threat in Middle Childhood**

The majority of stereotype threat studies that evaluate academic outcomes have focused on adolescent or young adults and their achievement in high school or college. Studies involving young adults typically take place at universities, recruiting students from the campus. University students, to some degree, represent students who have already succeeded, because they have graduated from high school and earned the grades necessary to be accepted into a university. As such, they may not represent students who experience greater academic difficulties earlier in their academic careers and never become college students. A recent review of stereotype threat studies involving elementary-school students found that stereotype threat is a relevant concern for younger populations (Wegmann, in preparation). Furthermore, preventing and addressing the threat earlier in students' academic careers may be even more critical, because stereotype threat may operate on a universal basis for young children (Ganley et al., 2013).

Although children are aware of stereotypes (McKown & Weinstein, 2003; Quintana, 1998), can infer others' stereotypical beliefs (McKown & Weinstein), and experience diminished task performance in ostensibly stereotype threatening situations (Ambady et al., 2001; McKown & Weinstein), little is known about the specific nature of stereotype threat in children. Current literature does not provide insight as to how children perceive, describe, and make sense of potentially stereotype threatening situations. Without confirming evidence, researchers cannot assume that the theories and characteristics of stereotype threat developed through research on



older populations accurately describe children's experiences. Given the current state of the research, any attempts to design a stereotype threat measure or intervention for children would by necessity be based on information derived from an adolescent or young adult population. In addition, as noted by Shapiro (2011), different forms of stereotype threat may require tailored intervention strategies. In order to provide a foundation for well-designed and developmentally appropriate future research, exploratory methods must first be used to investigate the unique nature of stereotype threat among children.

### **Vignette Methodology**

Qualitative methods are especially appropriate for exploring issues that do not have an established research base because they illuminate key characteristics of unstudied topics (Padgett, 1998, p. 8) and allow unknown and unanticipated findings to emerge. In a qualitative context, vignette methodology allows researchers to uncover implicit social knowledge and to examine contextual influences on perceptions of a particular situation. Vignettes are "short, carefully constructed descriptions of a person, object, or situation, representing a systematic combination of characteristics" (Atzmüller & Steiner, 2010). Vignettes are constructed to manipulate situational characteristics systematically to identify those that are most relevant and influential upon respondents' perceptions (Gerber, 1999; Martin, 2004). Research using vignettes may be qualitative, quantitative, or mixed, depending on the structure of the participant response portion of the study (Atzmüller & Steiner, 2010; Martin, 2004). When employed in a qualitative study, vignettes typically become the stimulus for open-ended discussion focused on the beliefs, judgment, and reasoning underlying a participant's reactions and response to the vignette situation (Martin, 2004).

Knowledge of children's cognitive development must guide any effort to investigate stereotype threat in a younger population (Woolley, Bowen, & Bowen, 2004). During middle childhood, children are in the concrete operational phase of cognitive development, which is characterized by major advances in reasoning ability (DeLeeuw, Borgers, & Smits, 2004; Singer-Freeman, 2005). Although children in this stage can think logically about actual situations, they are still limited in their ability to apply logic to hypothesized situations (Singer-Freeman). Because children's memory capacity is still developing, they may not be able to provide reliable answers to retrospective questions about their personal history or experiences (DeLeeuw, Borgers, & Smits). Vignette methodology addresses these limitations by allowing the researcher to describe a realistic, concretely defined situation to a child and provides a mutual point of reference for discussion. Discussion of a vignette permits a child to respond to questions about a present situation (the immediately preceding vignette) with clearly defined elements, enabling children as young as seven years old to provide appropriate, valid responses (DeLeeuw, Borgers, & Smits).

In a substantively relevant application, McKown and Weinstein (2003) used vignettes to investigate children's stereotype consciousness, theorized to be a necessary antecedent of stereotype threat. McKown and Weinstein found that children in middle childhood were able to infer whether or not a character in a vignette held stereotypical beliefs and to describe the beliefs in the context of broadly held stereotypes. The McKown and Weinstein study not only supports the use of vignettes with respondents in middle childhood but also provides evidence that vignette methodology is an effective tool to explore concepts of racial/ethnic identity and stereotyping among children.

Vignettes should be based on a strong substantive theory to determine relevant factors and their component levels (Atzmüller & Steiner, 2010). The vignettes designed for this study were based on the Multi-Threat Framework by Shapiro and Neuberg (2007), described earlier. One vignette was created for each of the six qualitatively different types of stereotype threat identified in the Multi-Threat Framework.

## **Methods**

### **Research questions**

The current study was guided by the following questions:

- Does the Multi-threat Framework developed by Shapiro and Neuberg (2007) apply to children's experiences of stereotype threat?
- Which, if any, of the six types of stereotype threat identified in the Multi-threat Framework are relevant to children's experiences?

### **Vignettes**

The six vignettes created for the study followed recommended practices to increase the likelihood of relevant responses by the children sampled. First, the situations described in the vignettes took place in settings that are familiar to children such as schools and neighborhoods (Martin, 2004). The main characters in the vignettes were all children in the target age group, and other characters were peers or adults that play key roles in children's lives (such as teachers or parents). Neutral language was used in an attempt to introduce an element of mild ambiguity to force participants to articulate their thoughts and beliefs clearly (Barter & Renold, 2000). Prior to use with children, the vignettes were subject to expert review by three faculty members at the University of North Carolina and Duke University. All vignettes are included in Appendix A.

### **Sample**

Fifteen children were recruited from two small to mid-size cities in the Southeastern United States. Participants were recruited through a mass email to a university listserv, by flyers posted in prominent community locations, through community after-school and mentoring programs, and through personal contacts. The sample was self-selected; participants were required to contact the researcher in order to participate. To maintain the intended focus on middle childhood, only children between the ages of 7 and 11 were eligible to participate. In order to maintain a diverse sample, participants were asked to provide their race/ethnicity before being included in the study. The sample included four White children, two children who identified as both White and Native American, four Black/African American children, and five Hispanic/Latino children. The sample comprised nine girls and six boys.

### **Data collection**

The author met with children individually to present and discuss vignettes. Because responding to six vignettes would likely cause children to feel fatigued and reduce the quality of their responses, a fractional factorial design was used to allow each child to respond to a subset of the total vignette population (Atzmüller & Steiner, 2010). Each child was asked to respond to three vignettes, which meant that either seven or eight children responded to each vignette. The individual meetings were audio recorded. Because the study participants were children, both parent consent and child assent were required to participate, and were appropriately documented prior to beginning the meeting.

**Protocol.** Each meeting began with the investigator introducing herself and the project. After confirming that the child was ready and willing to participate, he or she was presented with the first vignette. Each participant was first given the option to read the vignettes him- or herself, because research with children has found that the opportunity to focus on reading a vignette

(rather than on face-to-face discussion with the researcher) helps to create a less intimidating research interaction (Barter & Renold, 2000). The investigator also offered to read the vignettes aloud if the participants preferred. Most children opted to read the vignettes themselves; four children preferred to have the investigator read the vignettes to them.

The presentation of each vignette was followed by an open-ended discussion to explore the participant's responses, thoughts, and beliefs regarding the vignette. Both structured and unstructured probes were incorporated into the post-vignette discussion (Gerber, 1999), with the structured probes specifically designed to explore the participant's feelings and thoughts related to stereotype threat. Throughout the discussion, the participant was asked to assume what a third party (a specific character in the vignette) might be thinking or do next. Describing the thoughts and actions of a third party, rather than always articulating personal thoughts and experiences, may help to reduce social desirability bias, increase the comfort level of the research interaction, and facilitate more honest and revealing answers (Barter & Renold, 2000). The discussion did not exclude the participant's own thoughts, feelings, and experiences, however—participants were welcome to share such information throughout the discussion, and many participants chose to do so.

**Setting.** In order to keep the meeting location as convenient as possible for the respondents, meetings were held in several community locations. Several meetings took place at public libraries in each of the two cities. Other meetings took place at the investigator's university, or a community nonprofit agency where several children regularly attended an evening program. The availability of a private space in the location, with a door that could be closed, was a requirement. In libraries, meetings took place either in private study or meeting

rooms, and meetings held at the university and the community agency took place in empty classrooms or meeting rooms.

**Data analysis.** All recordings of the individual meetings were transcribed by a professional transcription service, checked for accuracy, and uploaded into Microsoft Word 2010. Children's identities were protected by use of a pseudonym on all recordings, field notes, and concept forms. To address the whether the Multi-threat Framework fits children's stereotype threat experiences, each post-vignette conversation was evaluated using a concept form corresponding to the type of stereotype threat depicted in the vignette. The form defined key elements of the relevant type of stereotype threat and eliciting conditions described in Shapiro and Neuberg's (2007) Multi-threat Framework and was adapted from the validity concept form employed by Woolley, Bowen, and Bowen (2006). Use of the concept form facilitated comparison between the Multi-threat Framework and the study data along key features of the situations described in Shapiro and Neuberg's (2007) typology. The six vignette-specific concept forms are included in the Appendix. After a concept form was completed for all transcripts, the information was aggregated and examined to determine which, if any, situations and conditions described in the Multi-threat Framework accurately describe experiences of stereotype threat in middle childhood.

**Strategies for rigor.** The current study included several strategies to strengthen the trustworthiness of the data and findings. As mentioned earlier, the transcriptions were checked against recordings for accuracy, and all incidents of the same vignette were coded at the same time across participants to facilitate constant comparison. These two strategies are suggested by Gibbs (2007) to enhance the reliability of studies conducted by lone researchers. Because the investigator was able to have only one meeting with each participant, children's responses were

frequently summarized or paraphrased throughout the interview process to ensure that the researcher understood the full meaning of participant statements.. During the entire research process, the investigator consulted with experienced faculty and engaged in peer debriefing to further guard against researcher bias (Padgett, 1998). To enhance validity of the findings, special attention was dedicated to analyzing “negative cases” or outliers that did not appear to fit any patterns or conclusions identified in the findings (Gibbs, 2007). Finally, a detailed audit trail (Anastas, 2004; Padgett, 1998) was maintained to document the thought processes and key decisions made throughout the study.

## **Results**

The six types of stereotype threat defined in Shapiro and Neuberg’s typology were explored using vignettes. Results related to each type of threat are presented below.

### **Self-Concept Threat**

**Core concept.** According to the Multi-threat Framework, the key feature of a self-concept stereotype threat is that a person fears seeing him- or herself as possessing the negative stereotypic trait associated with a group to which he or she belongs (Shapiro & Neuberg, 2007). The vignette illustrating this threat told the story of Marquell, a young African American boy who wants to be a writer when he grows up. Marquell overhears a teacher stating that African American students only put effort into basketball, not writing.

Of the eight children who responded to the self-concept threat vignette, seven explicitly articulated that after hearing the teacher’s statement, Marquell would wonder if he was not a good writer and may question his ability to achieve his goal of becoming a writer in the future. For example, P, an eight year-old Latina girl, summed up the core concept by stating that Marquell would feel sad because “his skin doesn’t match with what he wants to do.” Another

child, J, a nine year-old Latina girl, agreed that Marquell “is trying to figure out what if he is a bad writer.” Two children described Marquell’s feelings in terms of confusion, as he attempts to integrate the stereotypic statement with his own chosen emerging identity as a writer. MS, a seven year-old White boy, stated, “Marquell is probably a bit confused, if he’s going to be a writer or if he’s just going to end up caring about basketball or other things.” DB, an eight year-old African American boy, thought that Marquell would be mentally weighing the evidence to try and figure out whether the stereotype applied to him: “[Marquell is thinking] ‘Well, I do like basketball, but what if I’m not a good writer, but I still think I’m a good writer...?’”

**Eliciting conditions.** All eight children believed that Marquell wondered about whether the stereotype was true about himself and that he was aware of his status as part of the negatively-stereotyped group, making the stereotype potentially relevant to him. A, a seven year-old White girl, stated these conditions as, “...a teacher said that not Black people are good at writing and he (Marquell) is a Black person, so he is scared that he won’t be a writer.”

Seven of the children responding to the Self-Concept Threat recognized that Marquell identified as a future writer, and six children discussed the implications of Marquell’s perceived writing ability for his self-identity: “He’s getting sad. What if he can’t do it (write books)? He’ll think he’s a bad person.” (CK, age 10, Latino). One child (J, age 9, Latina) linked the criteria of identification with writing and the implications of Marquell’s actions by saying that Marquell needs to be a good writer because writing is important to him. Several children hypothesized about the effect of the stereotypic statement on Marquell’s future actions. One child noted that if Marquell continued to think about the stereotypic statement, he would be more likely to “mess up a little” when he wrote his next story (S, age 8, White/Native American girl). Another child



suggested that the incident might discourage Marquell from writing entirely, because “when people say a person can’t do something, then they don’t want to do it much” (P, age 8, Latina).

### **Group Concept Threat**

**Core concept.** The key characteristic of Group Concept Threat is that a person fears seeing his or her own group as truly possessing a stereotypic trait (Shapiro, 2012). In the vignette illustrating Group Concept Threat, James, an African American boy, overhears other children questioning African American children’s abilities in math. James is good at math, but several of his friends, who are also African American, are struggling. James then has difficulty recalling the answers on his math test. Four of eight respondents articulated the core concept, expressing the central idea of Group Concept Threat with statements such as, “[When James] couldn’t remember what he learned, he was probably thinking, ‘Oh. Oh no. I guess they were right. I guess Black kids are not really good at math’” (C, age 10, White/Native American girl). Two children appeared to understand the core concept of Group Concept Threat but expressed it by invoking the situation’s positive converse: “James felt like he had something to prove. He’s going to keep working really hard to prove those kids wrong” (BM, age 10, African American boy). BM then contextualized his statement by saying that if James did well on the math test, it would mean that the stereotype was invalid and Black kids can be good at math. The two youngest children responding to the Group Concept Threat vignette (ages 7 and 8) recognized the presence of a threat in the vignette but felt that it was a self-concept threat only affecting James’s individual math performance and self-perception.

**Eliciting conditions.** All eight children responding to the vignette recognized the potential relevance of the stereotype to James, implying both recognition of membership in the stereotyped group as well as James’s personal identification with being African American. Five

children believed that James wondered about the truth of the stereotype. Three children stated that James would be worried about the validity of the stereotype for the group, expressed by statements such as, “[James] said that ‘My friends are Black, and they’re bad at math too.’ He feels sad for them and sad for himself, too” (S, age 9, African American girl). Other children felt that James would primarily be focused on the implications of the stereotype for himself as an individual: “[James] wonders if he is not good enough” when he forgets the answers to his math test (BM, age 10, African American boy).

James’s potential status as a representative of his group was mostly implied through statements asserting that if James did well on his math test, his performance would reflect positively on the group and render the stereotype invalid. Five children expressed this belief with statements such as that of C, a 10 year-old White/Native American girl, who said that James would likely be thinking, “I’ll show them...I’ll show them that Black kids can be good at math” as he sat down to take his test. The pressure associated with having one’s performance represent an entire group’s abilities was noted by one child, who contradicted the popular sentiment by stating that “James doesn’t want to prove that Black kids are good in math because he will probably forget everything and be nervous, or decide to focus on something else” (E, age 8, Latina).

### **Own Reputation Threat—Outgroup**

**Core Concept.** The central concept of Own Reputation Threat—Outgroup is that a person fears being the target of an outgroup member’s stereotypical judgment (Shapiro, 2012). In the vignette illustrating this threat, Miguel, who speaks Spanish, overhears classmates saying that Latino children are bad at writing because they don’t know English. Miguel is asked to read aloud a story he wrote, and he hears a non-Latino child giggle when he starts to speak.

Five of the eight respondents to the vignette recognized the core concept, as explained by H, a nine year-old White girl: “[Miguel’s] like worried that he thinks that the kids will think that he’s a bad writer because he speaks Spanish and he doesn’t really know English that well.” The three children who did not express the core concept of the vignette focused mainly on the unpleasant feelings associated with Miguel’s awareness that someone is laughing at or making fun of him.

**Eliciting conditions.** The most widely recognized eliciting condition among the eight respondents was the belief that Miguel cared about what others thought of him—all eight children expressed this idea, even if they did not articulate the central idea of Own Reputation Threat—Outgroup. Most respondents attributed Miguel’s caring about others’ perceptions to general bad feelings if classmates said negative things about him or his story; however, one respondent felt that Miguel cared because he wanted to serve as a positive example of Latino culture to his classmates: “I think Miguel feels like he’s kind of angry because he wants to be a good representative of the Latino culture” (BM, age 10, African American boy). The quote also expresses the awareness that Miguel felt his classmates would link him to the larger stereotyped group of “kids who speak Spanish,” which was articulated by the same five children who identified the vignette’s core concept. Three children noted that Miguel’s worries about what others think of him may include anxiety over confirming the group stereotype to his classmates.

Miguel’s awareness that he would be judged on his task performance was discussed by four respondents. Children who did not talk about this awareness seemed to feel that Miguel would be judged by the stereotype no matter how well he performed his task. In addition to noting that Miguel might be unfairly judged according to the group stereotype, three children discussed the negative impact that the stereotype might have on Miguel’s self-concept. For

example, S, a nine year-old African American girl, felt that “[Miguel] is probably thinking, ‘well... I probably am bad at writing.’” Several children also hypothesized about the consequences that the incident might hold for Miguel, including that he might “mess up his work” if he kept ruminating on the stereotypic statement (S, age 9, African American girl), or that Miguel might decide not to read anything aloud to the class again because he felt so anxious and sad (DB, age 8, African American boy).

### **Own Reputation Threat—Ingroup**

**Core concept.** The core concept of Own Reputation Threat—Ingroup is that a person fears confirming a negative group stereotype in the mind of another member of the same group. The vignette illustrating this threat featured Keesha, an African American girl whose grandmother advised her to work hard in school to disprove negative stereotypes about the academic ability of African Americans. Keesha takes a test and gets a poor grade, even though she studied.

Of the seven children who responded to the vignette, three children articulated the central idea of Own Reputation Threat—Ingroup. When asked what Keesha might be thinking when she sits down to take the test, S, a nine year-old African American girl, says that Keesha is “thinking about her grandma. She’s thinking about what her grandma said and worrying her own self.” BM, a ten year-old African American boy, stated a similar sentiment in a more blunt manner: “I think Keesha’s thinking about...if her grandma thinks she’s stupid.” One child expressed conflicting ideas about the core concept, at first articulating that Keesha is worried that she let her grandmother down, but later stating that she doesn’t believe that Keesha’s grandmother would think Keesha is not smart. Children who did not recognize the threat’s core concept

focused instead on the potential injustice of Keesha's grandmother not believing that she studied for her test.

**Eliciting conditions.** Although all seven respondents recognized the potential self-relevance of the stereotypic statement to Keesha, two children stated that the fact Keesha knew many smart African American people (stated in the story) invalidated the stereotype in her mind. One child's belief that Keesha knew that the stereotype was untrue framed his entire response to the vignette, neutralizing any potential for stereotype threat. Another child noted that Keesha might not believe the stereotype, but that others might think it is true and therefore the stereotype might still affect Keesha. All children also acknowledged the public knowledge of Keesha's test performance, illustrated in the vignette by her teacher calling her grandmother about Keesha's poor grade.

Five of the seven respondents believed that Keesha cared how her performance affected her grandmother's perception of her, which was sometimes expressed as the grandmother's desire for Keesha to represent African Americans well. E, an 11 year-old White girl, stated that Keesha might feel she was letting her grandmother down by doing poorly on the test, because E felt that Keesha's grandmother wanted Keesha's performance to be a good example of how well African American children can do in school. E noted that Keesha might experience increased stress due to the expectation of being a positive example. BM felt that Keesha's acquaintance with people who disprove the stereotype might add to Keesha's pressure to live up to her grandmother's standard: "I think [Keesha] feels even worse because Keesha told her grandmother she knows smart Black people, and she wants to be one of those people."

All children were aware of Keesha's identity as an African American, and three children recognized that Keesha's grandmother also identified as African American. The fact that both

Keesha and her grandmother belonged to the stereotyped group caused several children to comment on the nature of the message Keesha's grandmother was giving to Keesha about African Americans' academic potential. CK, a ten year-old Latino boy, felt that Keesha's grandmother was being encouraging by telling her that "skin color doesn't matter, just hard work." S, a nine year-old African American girl, felt that Keesha's grandmother was right to warn Keesha about the potential stereotype but needed to be cautious about the way in which she expressed her warning to avoid discouraging Keesha: "What her grandma said is right, but she shouldn't say it like ... Well, if she said it in a different way, then she probably should've said it in a nice way, like in a comforting way because probably Keesha didn't understand that and thought her grandma was being mean to her."

### **Group Reputation Threat—Outgroup**

**Core concept.** The central concept behind Group Reputation Threat—Outgroup is the fear that one's performance will serve to confirm a negative group stereotype in the mind of another person outside of the group (Shapiro, 2012). The threat was illustrated by a vignette featuring María, a young Latina girl who spends her lunch time speaking Spanish with her friends. She overhears a teacher telling another teacher that kids need to speak English at school to get good grades. Hearing the statement causes María to reflect on her own grades, including a poor grade she received last semester.

None of the seven children responding to this vignette explicitly articulated the core concept. One child implied recognition of the core concept through its positive converse: "[María's] going to try to prove to the teacher that she's wrong, that you don't need to speak English to get good grades" (CK, age 10, Latino). Although framed in positive terms rather than

in terms of a potential threat, CK's statement demonstrates his recognition of María's belief that her performance can disprove (or conversely, confirm) the stereotype in the mind of her teacher.

Five of the six children who did not articulate or imply the core concept did indicate that they felt María would be subject to a stereotype threat, though not Group Reputation Threat—Outgroup. One child noted María's potential to experience both an individual and group threat, though not necessarily linked to her performance: "She's scared for herself, because she speaks Spanish instead of English, and she's probably scared about her friends, because they speak Spanish instead of English" (A, age 7, White, girl). Four children discussed María's potential to experience individual threat: "She is worried that her teachers are going to give her bad grades...because she speaks Spanish" (J, age 9, Latina). MS, a seven year-old White boy, echoed a similar sentiment while highlighting that María might be confused about how studying and effort could affect her grades in the face of a group stereotype: "María would feel confused if she would get good grades or bad grades, because she speaks Spanish." One child did not interpret María's story in terms of the stereotype content or threat, but felt that the teacher's "discouragement" would negatively affect María's ability to concentrate on her work and get good grades.

**Eliciting conditions.** All seven respondents acknowledged the relevance of the stereotype to María and felt that María's teacher recognizes that she belongs to the stereotyped group of Spanish-speaking children. In addition, all children noted that María's performance in school would be known (or public) to her teacher. Children expressed two schools of thought regarding the nature of the relationship between María's performance and the group's reputation. The only child to hypothesize that María might feel like she is a representative or ambassador for her group was CK, through his statement that María will want her performance to disprove the

stereotype in the mind of the teacher. Rather than feeling that María's actions would reflect on the group, several children believed that the group's reputation might unfairly have been projected on María: "She's thinking...[speaking Spanish] is why she got low grades on the science" (MM, age 10, Latino). Two children felt that María would be worried about what her teacher might think, but only one child explicitly described this feeling in terms of confirming the group stereotype: "María is worried about the teacher because she [the teacher] only cares about English-speaking [kids]; she thinks the people who speak Spanish need to get low grades" (CK, age 10, Latino).

### **Group Reputation Threat—Ingroup**

**Core concept.** The core concept underlying Group Reputation Threat—Ingroup is the fear that one's performance will confirm a negative group stereotype in the mind of another member of the group. The vignette illustrating this threat featured Isabel and Jasmin, two young Mexican girls. Jasmin tells Isabel that a classmate doubted the intellectual ability of Mexican children, and Isabel fears confirming the stereotype to Jasmin when she takes a test.

One child explicitly articulated the core concept, explaining that Isabel is worried about the effect that her bad grade might have on Jasmin and "all the other Mexicans": "What if that boy (who said the stereotypic statement) spreads it (news of Isabel's bad grade) all around and everybody is thinking about that, and all the Mexican people are feeling very sad and not very happy?" (DB, age 8, African American boy). Three children noted that both Isabel and Jasmin could be affected by the negative group stereotype, though they did not mention that Isabel might fear confirming the stereotype in Jasmin's mind. For example, P, an eight-year old Latina girl, said, "[Isabel] might be worried about her friend (Jasmin), because she is Mexican too." Two children expressed that Isabel might have her test performance negatively affected by the



stereotype, but did not make a connection to Jasmin or the larger group. One child focused her answers on the negative consequences of Isabel receiving a poor grade, without discussion of the group stereotype or how it might have contributed to Isabel's test performance.

**Eliciting conditions.** The six children who discussed the group stereotype in relation to Isabel and/or Jasmin's performance recognized the stereotype as being relevant to Isabel because of her group identity. Three children believed that Isabel saw herself as a representative or ambassador of her group, expressed through DB's core concept statement describing the possible negative consequences of Isabel's bad grade for the group and also by two children who explained Isabel's representative role through her potential to disprove the group stereotype: "Because [Isabel] might get a better score next time and just [show them] and save it, all the Mexicans are so much smart" (MM, age 10, Latino). E, an 11 year-old White girl, acknowledged that the pressure to represent her group and disprove the stereotype might increase the stress that Isabel felt at test time.

Four children noted that the potential threat associated with Isabel's bad grade was dependent on who became aware of her performance—Isabel would feel increasingly worried if more people learned of her grade. If Jasmin learns of Isabel's grade, four children felt that Isabel might be worried about having inadvertently proved the stereotype to her friend: "I think she (Isabel) is worried about Jasmin too because what if she (Jasmin) thinks is that Mexicans are not very smart [because] of what those boys said." (DB, age 8, African American boy). Four children also recognized that the group stereotype had the ability to negatively affect Isabel on an individual basis, either alone or in combination with Isabel's worries about confirming the stereotype to Jasmin.

## **Discussion**

Knowledge of children's identity development and social development (Quintana, 1998; Selman, 1971; Shapiro, 2012) and a systematic review of current research on stereotype threat in middle childhood (Wegmann, Chapter 1 of this document) suggest that stereotype threat is a critical concern for children between the ages of 7 and 11. The findings of the current study emphasize children's recognition and awareness of different forms of stereotype threat and provide a first step in understanding how children perceive and discuss stereotype threatening situations in middle childhood. Of the six qualitatively different forms of stereotype threat identified by Shapiro and Neuberg (2007), children in the current study perceived and explicitly articulated the core concepts for five forms of stereotype threat: Self-Concept Threat, Group Concept Threat, Own Reputation Threat—Outgroup, Own Reputation Threat—Ingroup, and Group Reputation Threat—Ingroup. Children were also able to identify and discuss the “eliciting conditions” hypothesized by Shapiro and Neuberg for all six forms of threat.

### **Relevance of Specific Threats**

Threats involving the self, either as target and/or judge, were the most easily recognized and most resonant with the child participants. Self-Concept Threat, in which the self is both target and judge, was recognized by participants of all ages and ethnicities. Whether or not a child responded specifically to the Self-Concept Threat vignette, self-concept threat was often mentioned in responses to other vignettes, especially when children were aware that a threat was present but might not have been able to draw the connections between the threat, the group identity, and others' judgments. While the majority of respondents recognized Group Concept Threat (in which the self is judge and the group is the target), responses were divided along age lines: the youngest children (ages 7 and 8) perceived the threat as a self-concept threat for the main character, whereas the older participants connected the threat to the character's own beliefs

about his or her group. Both forms of Own Reputation Threat, in which the self becomes the target for another's judgment, were more difficult for children to recognize but nonetheless identified by over half of the participants. A unique feature of the Own Reputation Threat vignettes compared to the Self- and Group Concept Threat vignettes is that children needed to make assumptions about how a secondary character in the vignette might perceive the main character. For some participants, making such an assumption may have been beyond the capacity of their emerging social perspective-taking abilities (Selman, 1980).

Group-Reputation Threats, the least recognized forms of stereotype threat in this study, also require more sophisticated social perspective-taking skills. In the Group Reputation Threats, a person's social group is the target of a judgment by either an ingroup or outgroup other. Participants were more able to recognize and articulate the threat in the vignette illustrating Group Reputation Threat—Ingroup, in which a girl worries about inadvertently confirming a stereotype about their shared identity to a friend. The vignette for Group Reputation Threat—Outgroup involved a girl worried about confirming a negative group stereotype in the mind of her teacher. The fact that the ingroup secondary character whose perspective the children needed to assume was more similar (a peer of the main character) to the respondents themselves than the outgroup secondary character (a teacher) might have facilitated their abilities to make the necessary cognitive leaps in the Ingroup vignette but not in its Outgroup counterpart. The Group Reputation Threats also elicited a more fatalistic response than the other forms of threat, in that children tended to assume that the main character would be judged by the group stereotype regardless of her task performance.

Many children felt that a vignette character might be experiencing more than one threat simultaneously: for example, the character might be worried about confirming a stereotype in the

mind of another person, but also wondering about the implications of the stereotype for her own performance and self-image. Shapiro (2012) noted that experiencing threats in combination is expected and may even be predicted through the Multi-threat Framework. Because eliciting conditions may be shared by several threats, threats with the most criteria in common might also be most likely to co-occur.

Overall, children's responses to vignettes illustrating the six types of stereotype threat posited by Shapiro & Neuberg's Multithreat Framework (2007) supported the assertion that children are developmentally capable of perceiving stereotype threat. Threats causing a person to question his or her own self-concept or opinion of the social group to which he or she belongs were the most resonant with the child participants, which aligns with theories of child and identity development. Children in the study were less likely to articulate threats involving judgments levied on entire social groups by another person, whether an outgroup or ingroup other. From a developmental perspective, such threats may test the limits of children's emerging social perspective-taking skills. In addition to recognizing and commenting on the forms of threat and their eliciting conditions, children also discussed emotional responses to particular kinds of threat, and articulated consequences of stereotype threat described in previous stereotype threat research performed with adults.

### **Emotional Responses to Threat**

An implication associated with the Multithreat Framework is that specific forms of stereotype threat are hypothesized to elicit particular emotions—for example, shame or a sense of letting someone down may be more associated with group threats, whereas threats to a person's own reputation might trigger anger or social anxiety (Shapiro, 2012). Particular features of children's social relationships may change the associations between types of the

threat and emotional response. Among the respondents in the current study, Own Reputation Threats generated the emotional responses that Shapiro hypothesized for both Own Reputation and Group Reputation Threats. In agreement with Shapiro's hypothesis, several children noted that the character of Miguel would feel angry when his reputation was subject to judgment by his peers based on a group stereotype in the Own-Reputation Threat—Outgroup vignette, with one child even suggesting that Miguel would write revenge stories about the children who judged him to channel his anger.

Although Shapiro associated the feeling of disappointing someone with group reputation threats, a number of children responding to the Own Reputation Threat—Ingroup vignette about Keesha and her grandmother expressed that Keesha felt she let her grandmother down. Children who identified the vignette's core concept believed that Keesha worried about disappointing her grandmother by confirming the negative group stereotype with her poor test performance, whereas children who did not perceive the stereotype threat thought that Keesha worried about disappointing her grandmother because her grandmother would not believe Keesha had worked hard enough to earn a good grade. A possible key difference between the two Own Reputation Threat vignettes is that one (Outgroup) featured a character being judged by his peers, and the other (Ingroup) involved a child being judged by an authority figure (grandmother). Children typically derive more social support from relationships with authority figures than adults do (Chu, Saucier, & Hafner, 2010), which may mean that worries about disappointing others could be associated with a wider range of stereotype threats for children than for adults, particularly when an authority figure is the judge in the threat situation.

### **Consequences of Stereotype Threat**

Rather than seeing the situations described in the vignettes as minor and isolated, the children in the current study understood that the events described in the vignettes can have serious and lasting implications. One of the most common consequences identified by study respondents was the conflict between aspects of identity that people may experience in stereotype-threatening situations. Such a conflict occurs when a negative stereotype causes success in a valued domain to be seen as fundamentally incompatible with a feature of a person's identity and can be particularly salient when the "incompatible" identity characteristic is seen as ascribed and unchangeable, such as race/ethnicity. Across vignettes, children articulated that characters were likely to feel confused as they struggled to make sense of the apparent dissonance between who they are and who they would like to be, and what that might mean for their future. The ways in which children believed characters would respond to this sense of confusion influenced the hypothesized short- and long-term outcomes of the situations in ways that parallel existing stereotype threat literature based on adult experiences.

**Disidentification.** One of the classic responses to a conflict between aspects of identity triggered by stereotype threat is disidentification (Steele, 1997). To a person who has come to see his identity as inherently incompatible with success in a valued domain, the only option to resolve the conflict might seem to be to distance oneself from either the task domain or the identity characteristic. The unchangeable and sometimes visible nature of ascribed identity characteristics means that disidentifying from the task domain is often more feasible than disidentifying from the identity feature. Several respondents stated their belief that the characters in the vignettes would avoid or refuse to participate in the stereotyped task domain in the future. One child explained this belief by saying, "When people say a person can't do something, then they don't want to do it much." Similar to identity conflict, disidentification was seen as a

common consequence across the vignettes, rather than being particularly associated with a particular type of threat. In academic settings such as those described in the vignettes, disidentification is a mechanism by which stereotype threat effects evolve from simple performance deficits into serious consequences such as persistent underachievement, retention, and dropout.

**Disproving the stereotype.** An alternative response to the apparent identity conflict endorsed by many children was that the vignette characters would perform exceptionally well on the stereotyped tasks, and thus render the negative stereotypes invalid. Notably, a child did not need to recognize that a character felt him- or herself to be a representative of the stereotyped group in order to have the potential to disprove the negative stereotype on behalf of the group. Although disproving a negative stereotype through success may happen and feels morally satisfying, it does not represent a permanent solution to stereotype threat, nor to the identity conflict triggered by threat. As Steele, Spencer, and Aronson (2002) noted, disproving a stereotype through successful performance is a context-bound solution that may solve the problem in one setting or situation, but does not address the societal conditions that cause stereotype threat. It becomes, as Steele and colleagues described, “a Sisyphean task,” in which a person must replicate success over and over as he or she encounters new settings where the stereotype might apply. The pressure to meet high expectations, either for oneself or on behalf of one’s group, can also be overwhelming and adversely affect performance (Cheryan & Bodenhausen, 2000). This sentiment was noted by one respondent in the current study, who stated that a character would not want to attempt disproving the stereotype because he would get too nervous, causing him to disengage from the task. While research suggests that reframing stereotype threat as a challenge can be beneficial (Alter, Aronson, Darley, Rodriguez, & Ruble,

2010), caution must be taken to ensure that the desire to serve as a positive example does not result in additional stress and diminished performance.

**Mindsets and self-talk.** Occasionally, children stated that whether a character disengaged from a task or attempted to disprove the stereotype through success depended on the characters' thoughts and mental states. Vignette characters who maintained a positive, confident mindset were often believed to succeed in spite of the threat, whereas characters who ruminated on the stereotype-threatening situation or focused on the associated negative emotions were seen as more likely to fail. Studies using self-affirmation as a method to prevent or reduce stereotype threat have produced striking results, validating the idea that positive self-talk may be an effective threat-reduction technique (Bowen, Wegmann, & Webber, 2012; Cohen, Garcia, Apfel, & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009). Thought replacement strategies have also demonstrated an ability to disrupt stereotype threat effects if a positive focus for thinking has been provided (McGlone & Aronson, 2007). Several successful stereotype threat interventions have addressed other aspects of thought processes, such as reframing threatening situations as challenges and teaching students about the malleable nature of intelligence (Alter et al., 2010; Blackwell, Trzesniewski, & Dweck, 2007; Good, Aronson, & Inzlicht, 2003; Johns, Schmader, & Martens, 2005). Although only one of these interventions (Alter et al., 2010) has been implemented with participants in middle childhood, the discussion of the role of mindset and mental state conducted by children in the current study implies that such intervention techniques may be a natural match for the ways in which children perceive and respond to stereotype threat.



## **Study Limitations**

Although the current study contributes to the emerging knowledge base on stereotype threat among children, several limitations must be noted. Given the study's focus on racial/ethnic stereotype threat, recruitment efforts were focused on obtaining a sample including White, African American, and Latino children in approximately equal numbers. Identity characteristics that may be related to other forms of stereotype threat, such as sex or socioeconomic status, were considered less important in participant recruitment. The self-selected nature of the sample thus means that participants may not be representative of the general population. As with any small, exploratory qualitative study, the generalizability of the findings of the current study is limited.

Because the current study was conducted by a lone researcher, the risk of researcher bias is inherent. Considerable efforts were made to prevent introducing bias into the study, including expert review of the vignettes and interview questions, regular consultation and debriefing with faculty and peers at the researcher's university, and directing particular attention to cases that contradicted either the general pattern of responses in the sample or the researcher's own assumptions. Because the researcher was able to have only one meeting with each participant, regular summarizing or rephrasing of participant responses was conducted during each interview to ensure that the researcher correctly understood the full meaning of participant statements.

As noted earlier, children are particularly likely to seek approval or support from relationships with authority figures. Although the researcher conducting the study interviews was not in an established position of authority over the child participants, some children may have viewed her as an authority figure simply because of her status as an adult. Participants were also explicitly told prior to the interview and reminded throughout that there were no right or wrong

answers to give; however, the desire to please the researcher and to “do well” on the interview may have introduced a degree of social desirability bias into participant responses.

### **Implications for Stereotype Threat Theory**

The perceptions and views expressed by participants in the current study suggest that the phenomenon of stereotype threat for children may be more nuanced and complex than described in the original definition put forth by Steele and Aronson (1995). Although Steele and Aronson consider diminished task performance to be the hallmark outcome of stereotype threat, children in the current study also associated experiences of stereotype threat with serious consequences for motivation and self-concept. Participants noted that characters in the vignettes may be more likely to doubt their own ability and competence after experiences of stereotype threat, which the participants assumed would make the characters less likely to participate in or devote effort to similar tasks in the future. While these consequences may eventually manifest in diminished task performance, they also represent serious negative effects of stereotype threat on their own.

A second implication of the current study for the definition of stereotype threat concerns Steele and Aronson’s (1995) assertion that anxiety is the primary emotional response in a stereotype threat experience. Although children in the current study often noted that vignette characters experiencing stereotype threat would feel anxious, worried, or nervous, they also stated characters’ likelihood to experience other emotions, such as anger or sadness, in response to the threat. Shapiro (2012) has posited that different stereotype threat experiences may be associated with particular emotions. While anxiety is associated with some stereotype threats described in the Multithreat Framework, other threats may be more likely to induce emotional responses of anger, sadness, or disappointment, such as those articulated by children in the current study. Expanding the definition of stereotype threat to recognize the range of associated

emotional responses would more accurately represent the complexity of stereotype threat and prevent a limited focus on the role of anxiety in stereotype threat experiences.

### **Implications for Future Research**

The current study represents a first step towards better understanding of the nature of stereotype threat experiences in middle childhood. Given the limited generalizability of small qualitative studies, conducting a similar study on a larger scale would help to verify the initial conclusions drawn from the current work. Findings from the current study and larger scale work could then be used to inform development and testing of a measure to assess the presence and characteristics of stereotype threat in a middle childhood population. Another critical area for future research is to design and implement age-appropriate interventions targeting the most relevant forms of threat and threat-inducing conditions for children. Although the Multi-threat Framework demands targeted intervention (Shapiro, 2012), it does not provide specific strategies to address each form of threat or particular eliciting conditions. Identifying effective mechanisms for intervention associated with various types of threat and testing them empirically is an important direction for stereotype threat research overall, and identifying and testing age-appropriate strategies for intervention should be a focus of stereotype threat research targeting children. The results of the current study, as well as a recent review of literature on stereotype threat in children, highlight the importance of increasing the research base in this area, as well as the tremendous potential that stereotype threat intervention holds when conducted early in life.

### **Implications for Intervention**

The current study has demonstrated that children have the cognitive capacity to recognize and respond to the different threats posited by the Multi-threat Framework. Just as the framework implies threat-specific interventions for adults (Shapiro, 2012), stereotype threat

interventions for children should also be tailored to match particular threat experiences. In addition to the implications associated with the qualitative characteristics of specific stereotype threats, developmental considerations must also be taken into account when designing and implementing interventions for a child population. Interventions targeting Self-Concept Threat, Group Concept Threat, and the Own Reputation Threats may be especially effective to reduce, if not prevent, stereotype threat in middle childhood. Given children's recognition of multiple threats within the same situation, as well as Shapiro's (2012) assertion that threats with common eliciting conditions may co-occur, the most effective interventions may target multiple forms of threat through a combination of strategies. As noted earlier, children's recognition of the influence of thought patterns and mindsets indicates particular promise for interventions focusing on strategies such as thought replacement, self-affirmation, and the malleable nature of intelligence.

Overall, respondents in the current study evidenced a general sense of hope and optimism that with the proper attitude, the vignette characters would be able to overcome the challenges presented by stereotype threat. Such a sentiment bodes well for middle childhood as a critical period for stereotype threat intervention—although stereotype threat may hold serious consequences even at a young age, children in this stage are receptive to positive strategies for managing identity conflicts, and not yet likely to have deidentified from academic success. Age-appropriate, thoughtfully designed interventions may prevent children from ever doing so.

### **Conclusion**

The current study represents an initial step in understanding the nature and relevance of stereotype threat experiences in middle childhood, and specifically, how Shapiro and Neuberg's (2007) Multi-threat Framework might serve as a template for child stereotype threat experiences.

Participants' responses to vignettes illustrating the forms of stereotype threat posited in the Multi-threat Framework demonstrated children's understanding and perceptions of stereotype threat. Threats involving an individual as either target or judge, especially Self-Concept Threat, were particularly meaningful for children. Despite demonstrating a keen understanding of the serious nature of stereotype threat and its consequences, children also maintained a strong sense of optimism that success is possible in the face of such obstacles. Because many children have not yet experienced the long-term consequences of stereotype threat and are receptive to strategies for managing identity conflict, middle childhood may indeed represent a critical period for stereotype threat intervention.

Table 3.1

*Shapiro & Neuberg's (2007) Types of Stereotype Threat by Judge and Target*

Threat	Target	Judge
Self-Concept Threat	self	Self
Group Concept Threat	group	Self
Own Reputation Threat— Ingroup	self (personal reputation)	other (group member)
Own Reputation Threat— Outgroup	self (personal reputation)	other (outside group)
Group Reputation Threat— Ingroup	group (collective reputation)	other (group member)
Group Reputation Threat— Outgroup	group (collective reputation)	other (outside group)

## **CHAPTER 4: INTEGRATIVE SUMMARY**

The current dissertation used mixed methods to investigate the relevance and nature of stereotype threat in middle childhood. Although stereotype threat has been widely studied since the publication of Steele and Aronson's seminal paper in 1995, little research has examined the phenomenon or its effects among children. Empirical findings from research with young adults and adolescents have shown that stereotype threat is a significant contributor to academic achievement disparities between students of different races/ethnicities, depressing academic performance as well as inhibiting learning. Because such "gaps" arise early and remain persistent throughout a student's academic career (Crosnoe et al., 2010), addressing stereotype threat in the elementary school years has the potential to profoundly narrow or even prevent achievement disparities.

Despite the significant possible benefits of stereotype threat intervention during elementary school, questions surrounding the phenomenon's relevance to children have prevented widespread extension of stereotype threat research to a middle childhood population. In order to be vulnerable to stereotype threat, a person must be able to take a series of cognitive leaps: to be aware of broadly held stereotypes, to recognize the self-relevance of a stereotype based on personal identity, and to possibly infer another's thoughts. Researchers have doubted whether children have the cognitive capacity and social perspective-taking skills necessary to make these leaps, without which stereotype threat would be irrelevant to a middle childhood population.

In an effort to determine what is already known about stereotype threat in middle childhood, the first manuscript identified and synthesized stereotype threat research involving participants between the ages of 6 and 11. In contrast to the doubts regarding stereotype threat's relevance to children, findings suggest that not only is stereotype threat applicable to children, but it may be even more prevalent among children than in adults or adolescents. Because children seek approval from authority figures (Chu et al., 2010) and are generally motivated to do well in school (McKown & Strambler, 2009; Tomasetto et al., 2011), a particular identification with the task domain appears to be unnecessary for children, in contrast to adults. The relaxed prerequisites for stereotype threat among children may mean that stereotypes operate on a constant, ambient level (Ganley et al., 2013), making stereotype threat continually present rather than a situational phenomenon for children.

In addition to supporting the relevance of stereotype threat to children, Paper 1 identified two constructs that have been demonstrated to serve as buffers against stereotype threat for children: social support and school belonging. Various forms of social support were associated with resilience in the face of stereotype threat, including mentoring relationships, examples provided by role models, racial socialization within families, and supportive teacher-student relationships. Greater levels of school belonging were associated with reduced levels of school devaluing and academic anxiety, both of which are correlated with stereotype threat. Because of the relationships identified in the systematic review, interventions based on school belonging and social support hold particular promise to reduce or buffer the effects of stereotype threat among children.

Measurement of social support and school belonging, however, presents an impediment to the implementation and evaluation of such interventions. Because stereotype threat affects



particular social groups associated with a situationally relevant stereotype, the ability to assess and compare levels of social support and school belonging between social groups of children is necessary to successfully assess the impact of interventions leveraging the buffering constructs. Paper 2 establishes the ability of the ESSP-C, an existing socio-environmental assessment, to measure levels of social support and school belonging between Black/African American and White students. Given the dearth of psychometrically validated measures to assess stereotype threat and related constructs among children, use of the ESSP-C in this capacity provides a statistically sound method to evaluate levels of important buffers of stereotype threat in a middle childhood population.

Currently, no direct measure of stereotype threat exists for use among children. Although Paper 1 provided empirical evidence of stereotype threat performance effects, none of the studies reviewed attempted to measure levels of the phenomenon directly, or to investigate how children may perceive stereotype threatening experiences. To understand the nature of stereotype threat among children, Paper 3 applied the Multithreat Framework developed by Shapiro and Neuberg (2007) to children's experiences. Children's responses to vignettes illustrating six ostensibly stereotype threatening situations further confirmed that children are capable of perceiving stereotype threat, as well as consequences that may result from the threat experience. Situations that caused vignette characters to question their own emerging self- or group identities were especially resonant with the child respondents. The particular importance of these types of threats aligns with theories of child identity development, which assert that children begin to negotiate their own self- and social identities during the elementary school years (García Coll et al., 1996; Harter, 1998; Quintana, 1998; Ruble & Martin, 1998; Selman, 1971). Although vignettes have previously been used to study stereotype awareness among children (McKown &

Weinstein, 2003), Paper 3 is the only known study to investigate children's abilities to perceive and discuss stereotype threat itself. As such, it takes an essential initial step in advancing children's stereotype threat research, and begins building a foundation for development of age-appropriate stereotype threat measures and interventions.

### **Implications for Stereotype Threat Theory**

Although the basic mechanisms of stereotype threat identified by Steele and Aronson (1995) apply to children's experiences of the phenomenon, developmental adaptations to stereotype threat theory are needed to articulate stereotype threat experiences in middle childhood. Both previously published empirical research and findings from the vignette interview study imply the necessity of incorporating principles of child development theory, theories of identity development, and social perspective-taking theory to fully and accurately describe key differences between child and adult stereotype threat experiences. For example, although domain identification is considered a mandatory prerequisite for stereotype threat vulnerability in adults, it is not needed for children to experience stereotype threat because of the particular nature of children's social relationships and the fact that children's identities have typically not evolved to "rule out" or disidentify from academic success. Another unique feature of stereotype threat among children is that stereotypes may operate on a constant, ambient level for younger populations, making the presence of a prime or trigger to catalyze stereotype threat unnecessary and increasing the prevalence of stereotype threat effects among children.

Beyond the developmental implications of the three studies, several findings also suggest the need to reconsider aspects of Steele and Aronson's (1995) classical definition of stereotype threat. For example, Steele and Aronson's definition requires the existence of a negative stereotype in order for a person to experience the performance deficits associated with stereotype

threat. However, current research has demonstrated that even ostensibly positive stereotypes can diminish children's task performance (Cimpian et al., 2012), suggesting that a negative stereotype valence may not be necessary to produce a stereotype threat effect.

Models posited according to the traditional definition of stereotype threat assume that psychological and physiological processes triggered by an anxiety response cause the diminished task performance associated with stereotype threat (Schmader, Johns, & Forbes, 2008; Schmader & Johns, 2003; Steele & Aronson, 1995). Two studies included in the systematic review found evidence that diminished task performance may actually be caused by entity or category-linked beliefs triggered by a stereotype threatening situation rather than by anxiety-related processes (Cimpian et al., 2012; Pauker et al., 2010). In the vignette interview study, children recognized anxiety as a common emotional response to stereotype threatening situations, but also identified other emotions that may be triggered by experiences of stereotype threat, such as sadness and anger. This finding was in accordance with Shapiro's (2012) hypothesis that different types of stereotype threats can trigger various emotional responses, rather than assuming that anxiety is an inherent response to stereotype threat.

### **Implications for Practice**

The developmental differences in stereotype threat theory and experiences identified in this dissertation also hold implications for social work practice, particularly in schools. The relaxed prerequisites for stereotype threat vulnerability among children, as well as the multiple facets of children's identities, highlight the need for universal stereotype threat prevention and intervention. The identification of social support and school belonging as potential buffers of stereotype threat among children suggests that interventions designed to strengthen children's sense of relatedness and community, especially at school, may also be effective in addressing

stereotype threat. Interventions involving mental strategies, such as those teaching self-affirmation and thought replacement strategies or focusing on the malleable nature of intelligence, align well with children's understanding of stereotype threat and may represent another promising avenue for stereotype threat intervention in middle childhood. As noted in Paper 3, while children demonstrated a keen understanding of stereotype threats and their serious consequences, they remained optimistic that such obstacles can be overcome. Children's sense of hope, combined with the empirical evidence highlighting effective intervention strategies, makes middle childhood a critical period to successfully address stereotype threat and maximize lifetime benefits. Social workers are well-positioned to address stereotype threat in schools, and social work researchers must contribute their expertise in multilevel interventions and evaluation to successfully combat this "threat in the air" (Steele, 1997).

### **Implications for Future Research**

The research presented in this dissertation takes an important first step toward better understanding of the nature of stereotype threat in middle childhood. As stated in the systematic review, few studies to date have focused on stereotype threat among children. Simply increasing the number of stereotype threat studies involving child participants, particularly in natural contexts such as schools, would significantly advance the state of research in this area. Although studies such as the vignette study presented here demonstrate exciting initial findings, other studies, including those on a larger scale, are needed in order to increase the generalizability of these preliminary findings and better establish the unique nature of stereotype threat among children.

Another impediment to the extension of stereotype threat intervention research to middle childhood is the lack of a psychometrically validated stereotype threat assessment measure.

Psychometrically valid and reliable assessment tools are needed to detect the presence or potential of stereotype threat, particularly in school settings, so that the problem can be recognized and addressed effectively. Given the relatively small knowledge base on stereotype threat among children, development of such a scale should take a rigorous mixed-methods approach including cognitive testing to ensure that the resulting measure is both conceptually and statistically valid. Results describing specific features of stereotype threat among children, such as those of the vignette study presented in this dissertation, should guide overall development of the measure, as well as to inform item construction.

Better understanding of exactly how existing interventions successfully counteract stereotype threat, paired with research on the unique features of child stereotype threat experiences, will provide a starting point for expansion of stereotype threat intervention research with a younger population. Both the Multithreat Framework (Shapiro & Neuberg, 2007) and the results of the vignette study typology indicate a need for interventions to be matched to the specific type of stereotype threat (Shapiro, 2011). Little research has been done to develop interventions targeting specific stereotype threats, much less involving a child population. As the research base on stereotype threat among children continues to emerge, efforts must be dedicated to identifying effective strategies to counter specific threats and to developing age-appropriate interventions that successfully apply these strategies in natural contexts such as schools.

## **APPENDIX A: VIGNETTES ILLUSTRATING SHAPIRO & NEUBERG'S MULTITHREAT FRAMEWORK**

### **Self-Concept Threat**

Word count: 60

Marquell tries really hard in school<sup>1</sup>. He wants to write books when he grows up<sup>1</sup>. One day, Marquell heard a teacher talking in the hallway. She said that Black kids aren't good writers because they only care about basketball. Marquell is Black<sup>4</sup>. Marquell wonders if he is a bad writer.<sup>2</sup> What if he can't write books when he grows up<sup>3</sup>?

#### **Situation Criteria**

<sup>1</sup>domain identification

<sup>2</sup>worry that stereotype may apply

<sup>3</sup>care about implications of stereotype

<sup>4</sup>recognition of stereotyped group membership

### **Group Concept Threat**

Word count: 70

Yesterday, James heard some kids on the bus say that Black kids are bad at math. James is Black<sup>1, 5</sup>. Some of his friends who are also Black have a hard time in math.<sup>2</sup> James has a math test today. He wants to show everyone that a Black kid can be good at math.<sup>3, 4, 5</sup> When he starts to work on the test, he can't remember what he learned.

#### **Situation Criteria:**

<sup>1</sup>recognition of stereotyped group membership

<sup>2</sup>belief that stereotype might be true of the group

<sup>3</sup>care about implications of stereotype

<sup>4</sup>sees self as representative of stereotyped group

<sup>5</sup>identification with stereotyped group

## **Own-Reputation Threat—Outgroup**

Word count: 69

Miguel heard some White kids say that Latino kids are bad at writing because they don't know English. Later, Miguel's teacher asks him to read a story that he wrote to the whole class.<sup>2</sup> The kids Miguel heard talking are in his class too.<sup>1</sup> One of them giggles when Miguel starts reading.<sup>4</sup> Miguel feels worried. What if the kids think he is a bad writer because he speaks Spanish?<sup>3, 4, 5</sup>

### **Situation Criteria:**

<sup>1</sup>belief that one's stereotype-related actions are public to outgroup others

<sup>2</sup>stereotyped actions are linked to self (everyone knows it's Miguel's homework)

<sup>3</sup>caring about implications of stereotype-relevant actions for the way outgroup others see oneself

<sup>4</sup>belief that outgroup others think the stereotype applies to oneself

<sup>5</sup>outgroup others might recognize membership in stereotyped group

## **Group Reputation—Outgroup**

Word count: 87

María has a lot of friends at school who speak Spanish just like she does<sup>3,5</sup>. She is talking in Spanish with her friends at lunch.<sup>1</sup> She hears her teacher say to another teacher that it is important for kids to speak English at school if they want to get good grades. María thinks about how her teacher gave her a low grade in social studies on her last report card.<sup>2, 6, 8</sup> When María goes back to her classroom, she can't keep her mind on her work.

### **Situation Criteria:**

<sup>1</sup>recognition that one belongs to stereotyped group

<sup>2</sup>stereotype-relevant actions are public to outgroup others

<sup>3</sup>outgroup others recognize one's membership in stereotyped group

<sup>4</sup>see oneself as representing the group

<sup>5</sup>need to identify with the group

<sup>6</sup>belief that outgroup others might think stereotype is true of the group

<sup>7</sup>caring about implications of how outgroup others see the group

<sup>8</sup>need to believe stereotype-relevant actions are linked to the group

## **Own Reputation—Ingroup**

Word Count: 106

Keesha and her grandma are Black<sup>1</sup>. Keesha's grandma tells her to always work hard and get good grades, because some people think Black people aren't smart<sup>5</sup>. Keesha knows that isn't true, because she knows lots of very smart Black people. She wants to show her grandma, and everyone else, that a Black kid can be smart and get good grades<sup>1, 3</sup>. One day, Keesha takes a test. She studied hard, but felt worried when it was time to take the test. Keesha gets a D on the test, and her teacher calls her grandma about it<sup>2, 4</sup>. What if her grandma thinks Keesha is not very smart<sup>6, 7</sup>?

### **Situation Criteria:**

<sup>1</sup>recognize that one belongs to the stereotyped group

<sup>2</sup>belief that stereotype-relevant actions are linked to oneself

<sup>3</sup>identification with stereotyped group

<sup>4</sup>stereotype-relevant actions are public to ingroup others

<sup>5</sup>ingroup others recognize that one belongs to the group

<sup>6</sup>caring about implications of stereotype-relevant actions for how ingroup others see oneself

<sup>7</sup>belief that ingroup others might think the stereotype is true of oneself

## **Group Reputation—Ingroup**

Word Count: 66

Isabel and her friend Jasmin are both Mexican<sup>1, 3, 6</sup>. One day, Jasmin tells Isabel that a kid in her class said that Mexican kids are not very smart. Later, Isabel has to take a test. She is worried. What if she gets a bad grade on her test and Jasmine finds out<sup>5</sup>? Will Jasmin think that what the kid in her class said about Mexicans is true<sup>2, 4, 7, 8</sup>?

### **Situation Criteria**

<sup>1</sup>recognize that one belongs to the stereotyped group

<sup>2</sup>need to see oneself representing the group

<sup>3</sup>identification with stereotyped group

<sup>4</sup>need to believe that stereotyped actions are linked to the group

<sup>5</sup>stereotype-relevant actions are public to ingroup others



<sup>6</sup>ingroup others recognize that one belongs to the group

<sup>7</sup>belief that ingroup others might think stereotype is true of the group

<sup>8</sup>caring about the implications of one's stereotype-relevant actions for the way ingroup others see the group

## **APPENDIX B: INTERVIEW GUIDE FOR VIGNETTE STUDY**

-Please tell me what happened in the story, in your own words. (Check for understanding of situation)

-How does (main character) feel?

-Why do you think he or she feels that way?

-What do you think (main character) is thinking?

-Do you think (main character) is worried about what other people will think of him or her?

-Why or why not?

-What do you think (main character) will do next?

-How do you think (main character) will do on his or her next (test/writing assignment)?

-Why?

-Do you think this story is like real life?

-Why?

-What is the same?

-What is different?

## **APPENDIX C: CONCEPT FORMS FOR VIGNETTE STUDY**

<b>Stereotype threat: Self Concept Threat (self as target, self as judge)</b>		
<b>Core Concept:</b> Character fears seeing him- or herself as actually possessing/embodying negative stereotypic trait	<b>Present?</b>	<b>Example text</b>
<b>Eliciting Conditions:</b> <ul style="list-style-type: none"> <li>* Character identifies with stereotyped domain<sup>1</sup></li>   <li>* Character wonders if stereotype might be true of oneself</li>   <li>* Character cares about the implications of his or her stereotype-relevant actions for the way he/she sees him- or herself</li>   <li>* Character recognizes membership in stereotyped group</li> </ul>		

<b>Stereotype threat: Own Reputation Threat—Outgroup (self as target, outgroup other as judge)</b>		
<b>Core Concept:</b> Character fears being the target of an outgroup member's stereotypical judgment.	<b>Present?</b>	<b>Example text</b>
<b>Eliciting Conditions:</b> <ul style="list-style-type: none"> <li>* Task performance is public</li> <li>* Character believes other will judge him/her based on task performance</li> <li>* Character cares about how other perceives him/her</li> <li>* Character worries about confirming existing stereotype to other</li> <li>* Character knows other will link him/her to group</li> </ul>		

<b>Stereotype threat: Group Concept Threat (group as target, self as judge)</b>		
<b>Core Concept:</b> Character fears seeing his or her own group as truly possessing or embodying stereotypic trait	<b>Present?</b>	<b>Example text</b>
<b>Eliciting Conditions:</b> <ul style="list-style-type: none"> <li>* Character recognizes membership in stereotyped group</li> <li>* Character wonders if stereotype might be true of group</li> <li>* Character sees him- or herself as representing the group</li> <li>* Character identifies with the group</li> <li>* Character cares about implications of own stereotype-relevant actions for how the group is perceived</li> </ul>		

<b>Stereotype threat:</b> Group Reputation Threat—Outgroup (group as target, outgroup other as judge)		
<b>Core Concept:</b> Character fears reinforcing negative stereotypes about his or her group in the minds of outgroup others.	<b>Present?</b>	<b>Example text</b>
<b>Eliciting Conditions:</b> <ul style="list-style-type: none"> <li>* Character recognizes membership in negatively stereotyped group</li> <li>* Task performance is public</li> <li>* Character is aware that others perceive him or her as part of the group</li> <li>* Character sees self as representing the group</li> <li>* Character believes actions are linked to the group</li> <li>* Character identifies with the group</li> <li>* Character worries that others may believe that stereotype is true</li> <li>* Character believes that own stereotype-relevant actions will affect perceptions of group by outgroup others</li> </ul>		

<b>Stereotype threat: Own Reputation Threat—Ingroup (self as target, ingroup other as judge)</b>		
<b>Core Concept:</b> Character fears confirming the negative group stereotype in the mind of another member of the group.	<b>Present?</b>	<b>Example text</b>
<b>Eliciting Conditions:</b> <ul style="list-style-type: none"> <li>* Character recognizes membership in negatively stereotyped group</li> <li>* Character believes stereotype-relevant actions are linked to him or herself</li> <li>* Character identifies with group</li> <li>* Task performance is public</li> <li>* Character knows ingroup others see him/her as group member</li> <li>* Character cares about how own action affect the way ingroup others perceive him/her</li> <li>* Character worries that ingroup others might believe stereotype is true of self</li> </ul>		



<b>Stereotype threat: Group Reputation Threat</b> —ingroup (group as target, ingroup other as judge)		
<b>Core Concept:</b> Character fears affirming the negative group stereotype to an ingroup other	<b>Present?</b>	<b>Example text</b>
<b>Eliciting Conditions:</b> <ul style="list-style-type: none"> <li>* Character recognizes membership in negatively stereotyped group</li> <li>* Character sees him- or herself as representing group</li> <li>* Character identifies with group</li> <li>* Task performance is public</li> <li>* Character knows other will link him/her to group</li> <li>* Character cares about how his or her stereotype-relevant actions will affect the group</li> <li>* Character believes that others in the group might think the negative group stereotype is true</li> </ul>		

## References

- 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, 166-171. doi: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.
- Anastas, J. W. (2004). Quality in qualitative evaluation: Issues and possible answers. *Research on Social Work Practice*, 14, 57-65. doi:10.1177/1049731503257870
- Armenta, B. E. (2010). Stereotype boost and stereotype threat effects: The moderating role of ethnic identification. *Cultural Diversity and Ethnic Minority Psychology*, 16, 94-98. doi:10.1037/a0017564
- Aronson, J., & Dee, T. (2012). Stereotype threat in the real world. In M. Inzlicht, & T. Schmader (Eds.), *Stereotype threat: Theory, process, and application* (pp. 264-279). New York: Oxford University Press.
- Atzmüller, C., & Steiner, P. M. (2010). Experimental vignette studies in survey research. *Methodology*, 6, 128-138. doi: 10.1027/1614-2241/a000014
- Barter, C., & Renold, E. (2000). 'I wanna tell you a story': Exploring the application of vignettes in qualitative research with children and young people. *International Journal of Social Research Methodology*, 3, 307-323. doi:10.1080/13645570050178594
- Battistich, V., Solomon, D., Watson, M., & Schaps, E. (1997). Caring school communities. *Educational Psychologist*, 32, 137-151.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497-529.
- Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, 78, 246-263. doi:10.1111/j.1467-8624.2007.00995.x

- Bodovski, K., & Youn, M.-J. (2010). Love, discipline, and elementary school achievement: The role of family emotional climate. *Social Science Research*, 39, 585-595. doi:10.1016/j.ssresearch.2010.03.008
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York: John Wiley & Sons.
- Bovaird, J. A., & Koziol, N. A. (2012). Measurement models for ordered categorical indicators. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp.495-511). New York: Guilford Press.
- Bowen, G. L., Richman, J. M., & Bowen, N. K. (2002). The School Success Profile: A results management approach to assessment and intervention planning. In A. R. Roberts & G. J. Greene (Eds.), *Social Workers' Desk Reference* (pp. 787-793). New York: Oxford University Press.
- Bowen, G. L., Rose, R. A., & Bowen, N. K. (2005). *The reliability and validity of the School Success Profile*. Philadelphia, PA: Xlibris.
- Bowen, N. K. (2008). Cognitive testing and the validity of child-report data from the Elementary School Success Profile. *Social Work Research*, 32, 18-28.
- Bowen, N. K. (2011). Child-report data and assessment of the social environment in schools. *Research on Social Work Practice*, 21, 476-486. doi:10.1177/1049731510391675
- Bowen, N. K., Bowen, G. L., & Woolley, M. E. (2004). Constructing and validating assessment tools for school-based practitioners: The elementary school success profile. In A. R. Roberts, & K. R. Yeager (Eds.), *Evidence-based practice manual: Research and outcome measures in health and human services* (pp. 509-517). New York: Oxford University Press.
- Bowen, N. K., & Guo, S. (2012). *Structural equation modeling*. New York: Oxford University Press.
- Bowen, N. K., Wegmann, K. M., & Webber, K. C. (2013). Enhancing a brief writing intervention to combat stereotype threat among middle-school students. *Journal of Educational Psychology*, 105(2), 427.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

- Brown, C. S., Alabi, B. O., Huynh, V. W., & Masten, C. L. (2011). Ethnicity and gender in late childhood and early adolescence: Group identity and awareness of bias. *Developmental Psychology*, 47, 463-471. doi:10.1037/a0021819
- 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, 626-633. doi:10.1016/S0022-3514(03)00022-2
- Byrne, B. M. (2012). *Structural equation modeling with Mplus*. New York: Routledge.
- Byrne, B. M., Shavelson, R. J., & Muthén, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin*, 105, 456-466. doi:10.1037//0033-2909.105.3.456
- Cappella, E., Kim, H. Y., Neal, J. W., & Jackson, D. R. (2013). Classroom peer relationships and behavioral engagement in elementary school: The role of social network equity. *American Journal of Community Psychology*, 52, 367-379. doi: 10.1007/s10464-013-9603-5
- Cauce, A. M., & Srebnik, D. S. (1990). Returning to social support systems: A morphological analysis of social networks. *American Journal of Community Psychology*, 18, 609-616.
- Centers for Disease Control and Prevention. (2012a). Middle childhood (6-8 years of age). Retrieved from <http://www.cdc.gov/ncbddd/childdevelopment/positiveparenting/middle.html>
- Centers for Disease Control and Prevention. (2012b). Middle childhood (9-11 years of age). Retrieved from <http://www.cdc.gov/ncbddd/childdevelopment/positiveparenting/middle2.html>
- Cheryan, S., & Bodenhausen, G. (2000). When positive stereotypes threaten intellectual performance: The psychological hazards of “model minority” status. *Psychological Science*, 11, 399-402. doi: 10.1111/1467-9280.00277
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, 9, 233-255. doi: 10.1207/S15328007SEM0902\_5
- Chu, P. S., Saucier, D. A., & Hafner, E. (2010). Meta-analysis of the relationships between social support and well-being in children and adolescents. *Journal of Social and Clinical Psychology*, 29, 624-645.

- Cimpian, A., Mu, Y., & Erickson, L. C. (2012). Who is good at this game? linking an activity to a social category undermines children's achievement. *Psychological Science*, 23, 533-541. doi:10.1177/0956797611429803
- Cohen, G. L., Garcia, J., Purdie-Vaughns, V., Apfel, N., & Brzustoski, P. (2009). Recursive processes in self-affirmation: Intervening to close the minority achievement gap. *Science*, 324, 400-403. doi:10.1126/science.1170769
- Cohen, S. (2004). Social relationships and health. *American Psychologist*, 59, 676-684.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98, 310-357.
- Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A. M., Weinfield, E D., & York, R. L. (1966). *Equality of educational opportunity*. Washington, DC: U.S. Government Printing Office.
- Crosnoe, R., Morrison, F., Burchinal, M., Pianta, R., Keating, D., Friedman, S.,L., . . . The Eunice Kennedy Shriver National Institute of Child Health and Human Development Early Child Care,Research Network. (2010). Instruction, teacher-student relations, and math achievement trajectories in elementary school. *Journal of Educational Psychology*, 102(2), 407-417.
- Cvencek, D., Meltzoff, A. N., & Greenwald, A. G. (2011). Math-gender stereotypes in elementary school children. *Child Development*, doi:10.1111/j.1467-8624.2010.01529.x
- DeLeeuw, E., Borgers, N., & Smits, A. (2004). Pretesting questionnaires for children and adolescents. In S. Presser, J. M. Rothgeb, M. P. Couper, J. T. Lessler, E. Martin, J. Martin, & E. Singer (Eds.), *Methods for Testing and Evaluating Survey Questionnaires* (pp. 409-429). Hoboken, NJ: John Wiley & Sons, Inc.
- Désert, M., Préaux, M., & Jund, R. (2009). So young and already victims of stereotype threat: Socio-economic status and performance of 6 to 9 years old children on raven's progressive matrices. *European Journal of Psychology of Education*, 24, 297-318.
- Dika, S., & Singh, K. (2002). Applications of social capital in educational literature: A critical synthesis. *Review of Educational Research*, 72, 31–60. doi:10.3102/00346543072001031.

- Duke, N. N., Borowsky, I. W., & Pettingell, S. L. (2011). Adult perceptions of neighborhood: Links to youth engagement. *Youth & Society*, 44, 408–430. doi:10.1177/0044118X11402852.
- Dweck, C. S. (2008). Mindsets: How praise is harming youth and what can be done about it. *School Library Media Activities Monthly*, 24(5), 55-58.
- Eccles, J. S. (1999). The development of children ages 6 to 14. *The Future of Children*, 9, 30-44.
- Eccles, J. S., Roeser, R., Wigfield, A., & Freedman-Doan, C. (1999). Academic and motivational pathways through middle childhood. In L. Balter, & C. Tamis-LeMonda (Eds.), *Child psychology: A handbook of contemporary issues* (pp. 2-69). New York, NY: Garland.
- Estell, D. B., & Perdue, N. H. (2013). Social support and behavioral and affective school engagement: The effects of parents, peers, and teachers. *Psychology in the Schools*, 50, 325-339. doi: 10.1002/pits
- Foster, W., A., & Miller, M. (2007). Development of the literacy achievement gap: A longitudinal study of kindergarten through third grade. *Language, Speech, and Hearing Services in Schools*, 38(3), 173-81.
- Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, 95, 148-162. doi: 10.1037/0022-0663.95.1.148
- Ganley, G. M., Mingle, L. A., Ryan, A. M., Ryan, K., Vasilyeva, M., & Perry, M. (2013). An examination of stereotype threat effects on girls' mathematics performance. *Developmental Psychology*, doi:10.1037/a0031412
- García Coll, C. G., Lamberty, G., Jenkins, R., McAdoo, H. P., Crnic, K., Wasik, B. H., & García, H. V. (1996). An integrative model for the study of developmental competencies in minority children. *Child Development*, (67), 1891-1914.
- Gerber, E. R. (1999). *Hidden assumptions: The use of vignettes in cognitive interviewing*. Retrieved from <http://www.census.gov/srd/papers/pdf/sm9405.pdf>
- Gibbs, G. R. (2007). *Analyzing qualitative data*. Thousand Oaks, CA: Sage.

- Gillen-O'Neel, C., Ruble, D. N., & Fuligni, A. J. (2011). Ethnic stigma, academic anxiety, and intrinsic motivation in middle childhood. *Child Development, 82*, 1470-1485. doi:10.1111/j.1467-8624.2011.01621.x
- Goldstein, L. S. (1999). The relational zone: The role of caring relationships in the co-construction of mind. *American Educational Research Journal, 36*, 647-673.
- Good, C., Aronson, J., & Inzlicht, M. (2003). Improving adolescents' standardized test performance: An intervention to reduce the effects of stereotype threat. *Applied Developmental Psychology, 24*, 645-662. doi:10.1016/j.appdev.2003.09.002
- Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*, 79-90.
- Goodenow, C., & Grady, K. E. (1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. *Journal of Experimental Education, 62*, 60-71.
- Gordon, A. T. (2011). *Assessing social support in children: Development and initial validation of the Social Support Questionnaire for Children* (Unpublished doctoral dissertation). Louisiana State University, Baton Rouge, LA.
- Guyll, M., Madon, S., Prieto, L., & Scherr, K. C. (2010). The potential roles of self-fulfilling prophecies, stigma consciousness, and stereotype threat in linking Latino/a ethnicity and educational outcomes. *Journal of Social Issues, 66*, 113-130.
- Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Development, 76*, 949-967. Retrieved from <http://www.jstor.org/stable/3696607>
- Harter, S. (1985). *Manual for the Social Support Scale for Children*. Denver, CO: Author.
- Harter, S. (1998). The development of self-representations. In W. Damon, & N. Eisenberg (Eds.), *Handbook of child psychology* (5th ed., pp. 553-617). Hoboken, NJ: John Wiley & Sons Inc.
- Hemphill, F. C., & Vanneman, A. (2011). *Achievement gaps: How Hispanic and White students in public schools perform in mathematics and reading on the National Assessment of Educational Progress*. Washington, D. C.: National Center for Education Statistics.

- Hilliard, A. G. (2003). No mystery: Closing the achievement gap between Africans and excellence. In T. Perry, C. M. Steele & A. G. Hilliard (Eds.), *Young, gifted, and Black: Promoting high achievement among African-American students* (pp. 131-166). Boston, MA: Beacon Press.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55. doi: 10.1080/10705519909540118
- Huguet, P., & Régner, I. (2007). Stereotype threat among schoolgirls in quasi-ordinary classroom circumstances. *Journal of Educational Psychology*, 99(3), 545.
- Huguet, P., & Régner, I. (2009). Counter-stereotypic beliefs in math do not protect school girls from stereotype threat. *Journal of Experimental Social Psychology*, 45(4), 1024-1027.
- Huguet, P., & Regner, I. (2007). Stereotype threat among schoolgirls in quasi-ordinary classroom circumstances. *Journal of Educational Psychology*, 99(3), 545-560. doi:10.1037/0022-0663.99.3.545
- IBM Corp. (2010). IBM SPSS Statistics for Windows, Version 19.0. [computer software].
- 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), 365-71.
- 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), 467-81.
- Johns, M., 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, 175-179. doi:10.1111/j.0956-7976.2005.00799.x
- Johnson, D. W., Johnson, R., Ortiz, A., & Stanne, M. (1991). Impact of positive goal and resource interdependence on achievement, interaction, and attitudes. *Journal of General Psychology*, 118, 341-347. doi:10.1080/00221309.1991.9917795.
- Katz, I. (1964). Review of evidence relating to effects of desegregation on the intellectual performance of Negroes. *American Psychologist*, 19, 381-399. doi: 10.1037/h0040569.



- Kiess, H. O. (2002). *Statistical concepts for the behavioral sciences* (3rd ed.). Boston: Allyn & Bacon.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York: Guilford Press.
- Kurtz-Costes, B., Rowley, S. J., Harris-Britt, A., & Woods, T. A. (2008). Gender stereotypes about mathematics and self-perceptions of ability in late childhood and early adolescence. *Merrill-Palmer Quarterly*, 54, 386-409. doi:10.1353/mpq.0.0001
- Lipski, D. M., Sifers, S. K., & Jackson, Y. (2013). A study of the psychometric properties of the Social Support Scale for Children. *Journal of Psychopathology and Behavioral Assessment*, 1-10.
- Malecki, C. K., Demaray, M. K., & Elliott, S. N. (2000). *The Child and Adolescent Social Support Scale*. DeKalb, IL: Northern Illinois University.
- Martin, E. (2004). Vignettes and Respondent Debriefing for Questionnaire Design and Evaluation. In S. Presser, J. M. Rothgeb, M. P. Couper, J. T. Lessler, E. Martin, J. Martin, & E. Singer (Eds.), *Methods for Testing and Evaluating Survey Questionnaires* (pp. 149-171). Hoboken, NJ: John Wiley & Sons, Inc. doi: 10.1002/0471654728.ch8
- McGlone, M. S., & Aronson, J. (2007). Forewarning and forearmng stereotype-threatened students. *Communication Education*, 56, 119-133. doi:10.1080/03634520601158681
- McKown, C., & Strambler, M. J. (2009). Developmental antecedents and social and academic consequences of stereotype-consciousness in middle childhood. *Child Development*, 80(6), 1643-1659.
- McKown, C., & Weinstein, R.,S. (2003). The development and consequences of stereotype consciousness in middle childhood. *Child Development*, 74(2), 498-515.
- McMahon, S. D., Parnes, A. L., Keys, C. B., & Viola, J. J. (2008). School belonging among low-income urban youth with disabilities: Testing a theoretical model. *Psychology in the Schools*, 45, 387-401.
- McMahon, S. D., Wernsman, J., & Rose, D. S. (2009). The relation of classroom environment and school belonging to academic self-efficacy among urban fourth- and fifth-grade students. *The Elementary School Journal*, 109, 267-281.

- Miyake, A., Kost-Smith, L. E., Finkelstein, N. D., Pollock, S. J., Cohen, G. L., & Ito, T. A. (2010). Reducing the gender achievement gap in college science: A classroom study of values affirmation. *Science*, 330, 1234-1237. doi:10.1126/science.1195996
- Muthén, B. O., & Asparouhov, T. (2002). *Latent variable analysis with categorical outcomes: Multiple-group and growth modeling in Mplus*. Retrieved from <http://www.statmodel.com/download/webnotes/CatMGLong.pdf>
- Muthén, L. K., & Muthén, B. O. (2014). Mplus Version 7.11 [computer software].
- Muthén, L.K. and Muthén, B.O. (1998-2012). *Mplus user's guide*. (7<sup>th</sup> ed.) Los Angeles, CA: Muthén & Muthén.
- Muzzatti, B., & Agnoli, F. (2007). Gender and mathematics: Attitudes and stereotype threat susceptibility in Italian children. *Developmental Psychology*, 43, 747-759.
- Neblett Jr, E. W., Rivas-Drake, D., & Umaña-Taylor, A. J. (2012). The promise of racial and ethnic protective factors in promoting ethnic minority youth development. *Child Development Perspectives*, 6, 295-303. doi:10.1111/j.1750-8606.2012.00239.x
- Neuville, E., & Croizet, J. C. (2007). Can salience of gender identity impair math performance among 7–8 years old girls? the moderating role of task difficulty. *European Journal of Psychology of Education*, 22(3), 307-316.
- Nguyen, H.,D., & Ryan, A. M. (2008). Does stereotype threat affect test performance of minorities and women? A meta-analysis of experimental evidence. *The Journal of Applied Psychology*, 93(6), 1314-34.
- Noam, G. G., Warner, L. A., & Van Dyken, L. (2001). Beyond the rhetoric of zero tolerance: Long-term solutions for at-risk youth. *New Directions for Youth Development*, 92, 155-182.
- Okech, D. (2012). Reporting multiple-group mean and covariance structure across occasions with structural equation modeling. *Research on Social Work Practice*, 22, 567-577. doi: 10.1177/1049731512446709
- Osterman, K. F. (2000). Students' need for belonging in the school community. *Review of Educational Research*, 70, 323-367. doi: 10.3102/00346543070003323

- Padgett, D. K. (1998). *Qualitative methods in social work research: Challenges and rewards*. Thousand Oaks, CA: Sage.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods (3<sup>rd</sup> ed)*. Thousand Oaks, CA: Sage.
- Pauker, K., Ambady, N., & Apfelbaum, E. P. (2010). Race salience and essentialist thinking in racial stereotype development. *Child Development, 81*(6), 1799-1813. doi:10.1111/j.1467-8624.2010.01511.x
- Piaget, J., & Inhelder, B. (1969). *The psychology of the child*. Basic Books: New York.
- Pianta, R. C., Belsky, J., Vandergrift, N., Houts, R., & Morrison, F. J. (2008). Classroom effects on children's achievement trajectories in elementary school. *American Educational Research Journal, 45*, 364-397. Retrieved from <http://www.jstor.org/stable/30069451>
- Pinel, E. C. (1999). Stigma consciousness: The psychological legacy of social stereotypes. *Journal of Personality and Social Psychology, 76*, 114-128.
- Pinel, E. (2000). You're just saying that because I'm a woman: Stigma consciousness and attributions to discrimination. *Self and Identity, 3*, 39-51. doi: 1010801357650034031
- Quintana, S. M. (1998). Children's developmental understanding of ethnicity and race. *Applied and Preventive Psychology, 7*, 27-45. doi:10.1016/S0962-1849(98)80020-6
- Rogers, L. O., Zosuls, K. M., Halim, M. L., Ruble, D., Hughes, D., & Fuligni, A. (2012). Meaning making in middle childhood: An exploration of the meaning of ethnic identity. *Cultural Diversity and Ethnic Minority Psychology, 18*(2), 99.
- Rohrbeck, C. A., Ginsburg-Block, M. D., Fantuzzo, J. W., & Miller, T. R. (2003). Peer-assisted learning interventions with elementary school students: A meta-analytic review. *Journal of Educational Psychology, 95*, 240-257.
- Rowley, S. J., Burchinal, M. R., Roberts, J. E., & Zeisel, S. A. (2008). Racial identity, social context, and race-related social cognition in African Americans during middle childhood. *Developmental Psychology, 44*, 1537-1546. doi:10.1037/a0013349

- Ruble, D., & Martin, C. L. (1998). Gender development. In W. Damon, & N. Eisenberg (Eds.), *Handbook of child psychology* (5th ed., pp. 933-1016). Hoboken, NJ: John Wiley & Sons.
- Rydell, R.,J., Shiffrin, R.,M., Boucher, K.,L., Van Loo, K., & Rydell, M.,T. (2010). Stereotype threat prevents perceptual learning. *Proceedings of the National Academy of Sciences of the United States of America*, 107(32), 14042-7.
- Sass, D. A. (2011). Testing measurement invariance and comparing latent factor means within a confirmatory factor analysis framework. *Journal of Psychoeducational Assessment*, 29, 347-363. doi: 10.1177/0734282911406661
- Selman, R. L. (1971). Taking another's perspective: Role-taking development in early childhood. *Child Development*, 42, 1721-1734. Retrieved from <http://www.jstor.org/stable/1127580>
- Shapiro, J. R. (2011). Different groups, different threats: A multi-threat approach to the experience of stereotype threats. *Personality and Social Psychology Bulletin*, 37, 464-480. doi: 10.1177/0146167211398140
- Shapiro, J. R. (2012). Types of threats: From stereotype threat to stereotype threats. In M. Inzlicht & T. Schmader (Eds.), *Stereotype threat: Theory, process, and application* (pp.71-88). New York: Oxford University Press.
- 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, 107-130. doi:10.1177/1088868306294790
- Singer-Freeman, K. E. (2005). Concrete operational period. In N. J. Salkin (Ed.), *Encyclopedia of Human Development* (pp.292-293). Thousand Oaks, CA: Sage.
- Smith, E., Osgood, D., Caldwell, L., Hynes, K., & Perkins, D. (2013). Measuring collective efficacy among children in community-based afterschool programs: Exploring pathways toward prevention and positive youth development. *American Journal of Community Psychology*, 52, 27-40. doi:10.1007/s10464-013-9574-6.
- Solomon, D., Watson, M., Battistich, V., Schaps, E., & Delucchi, K. (1996). Creating classrooms that students experience as communities. *American Journal of Community Psychology*, 24, 719-748.

- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52(6), 613-629.
- Steele, C. M., & Aronson, J. A. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69(5), 797-811.
- Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. *Advances in Experimental Social Psychology*, 34, 379-440.
- Strambler, M. J., & Weinstein, R. S. (2010). Psychological disengagement in elementary school among ethnic minority students. *Journal of Applied Developmental Psychology*, 31, 155-165. doi:10.1016/j.appdev.2009.11.006
- Syed, M., Azmitia, M., & Cooper, C. R. (2011). Identity and academic success among underrepresented ethnic minorities: An interdisciplinary review and integration. *Journal of Social Issues*, 67(3), 442-468.
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6<sup>th</sup> ed.). Upper Saddle River, NJ: Pearson.
- Taylor, V. J., & Walton, G. M. (2011). Stereotype threat undermines academic learning. *Personality & Social Psychology Bulletin*, 37(8), 1055-67.
- Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. Washington, DC: American Psychological Association.
- Tomasetto, C., Alparone, F. R., & Cadinu, M. (2011). Girls' math performance under stereotype threat: The moderating role of mothers' gender stereotypes. *Developmental Psychology*, 47, 943-949.
- Vanneman, A., Hamilton, L., Baldwin Anderson, J., and Rahman, T. (2009). *Achievement gaps: How Black and White students in public schools perform in mathematics and reading on the National Assessment of Educational Progress*. Washington, D.C.: National Center for Education Statistics.
- Wang, J., & Wang, X. (2012). *Structural equation modeling: Applications using Mplus*. West Sussex, UK: John Wiley & Sons.

- Wasserberg, M. J. (2009). *Stereotype threat and standardized testing experiences of African American children at an urban elementary school*. (Unpublished PhD). Florida International University, Miami, FL.
- Wentzel, K. R., & Wigfield, A. (1998). Academic and social motivational influences on students' academic performance. *Educational Psychology Review*, 10, 155–175.
- Woolley, M. E., Bowen, G. L., & Bowen, N. K. (2006). The development and evaluation of procedures to assess child self-report item validity. *Educational and Psychological Measurement*, 66, 687-700. doi:10.1177/0013164405282467
- Yeager, D. S., & Walton, G. M. (2011). Environmental and psychological interventions in education: They're not magic. *Review of Educational Research*, , 1-35. doi:10.3102/0034654311405999
- Zarate, M., Bhimji, F., & Reese, L. (2005). Ethnic identity and academic achievement among Latino/a adolescents. *Journal of Latinos and Education*, 4, 95-114.