

**Role of Family and School Social Capital on Hmong Children's
Perceived Academic Competence¹**

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Abstract

This study uses Coleman's (1988) social capital theory to examine the relationship between family and school social capital and perceived academic competence for Hmong students attending Hmong-focused charter schools. The 423 participants surveyed were 3rd, 4th, and 5th grade students living in Minnesota, with many (48%) receiving English Learner (EL) services. Structural equation modeling indicated that school social capital, measured by school attachment and school connection, was significantly associated with students' perceived academic competence; however, no association was found with nuclear and extended family social capital. Findings illustrate the role that school environment, especially charter schools that focus on culture and language, has on students' perceived academic competence. Implications for future research are also discussed.

Keywords: Hmong children, social capital, charter schools

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Role of Family and School Social Capital on Hmong Children’s Perceived Academic Competence

Research on students’ academic achievement has been well documented in the literature, including Asian American students (Pang et al., 2011; Portes & Rumbaut, 2001). Despite the academic success of Asian American students in general compared to other racial/ethnic students (Kao & Thompson, 2003; Lee, 2005), Hmong students seem to be falling behind academically (Council for Asian Pacific Minnesotans, 2012; Lee, 2005; Lee & Madyun, 2008; Xiong et al., 2008). This seemingly downward trend of educational achievement for Hmong children raises significant concerns to Hmong parents and educators. Hmong parents, for example, are deeply concerned about the quality of the traditional public education and the lack of heritage language and culture in the curriculum (Adler, 2004; Thao, 2003; William, 2018). As such, beginning in 2000, Hmong educators began to form public charter schools as an alternative school choice for Hmong students (Pha, 2019; Williams, 2018). Today, there are a handful of Hmong charter schools in Minnesota (Institute on Metropolitan Opportunity, 2017; Pha, 2019). Indeed, Minnesota is home to the first charter school in the nation (Nelson et al., 2000), and today it enrolls more than 56,000 students, including 7,000 Asian (mostly Hmong) students (MDE, n.d.). Yet, we know very little about Hmong students, their families, and the Hmong focused-charter schools. As such, the purpose of this study was to examine students’ perceptions of the role family and school plays in their academic performance as measured by perceived academic competence using a social capital theory (Coleman, 1988).

Social Capital Theoretical Framework

Social capital was first introduced to explain how trusted social networks serve as a bi-directional resource to benefit individuals and families (Coleman, 1988). Lin (2005) posits that

capital conceptually and theoretically is thought of in terms of resources that are gained and often used in exchange between entities such as currency for the purposes of gaining additional resources. As such, social capital is the product of relationships and interactions within specific social networks, including the interior social capital (family social capital) and exterior social capital or social capital outside the family (Coleman, 1988). Coleman’s social capital theory offers a rich contextualization necessary in understanding Hmong students enrolled in Hmong-focused charter schools, where more than 80% of the student population and school administrators are Hmong (MDE, n.d.). Coleman (1988) argued that students tend to benefit from a thick network of family (or the *interior social capital*) and community groups (or the *exterior social capital*). Interior social capital refers to relational resources embedded in the family such as the relationships and interactions between parents and their children, as well as among siblings. Quantitative studies based on Coleman’s (1988) theory typically include variables of family structure, parent-child relationships, parental involvement, and expectations and communication about the importance of education as interior social capital (Fantuzzo & McWayne, 2002; Fromme & Eccles, 1998; Lee & Green, 2008; Portes & Rumbaut, 2001; Xiong et al., 2008).

Exterior social capital represents the connection and relationship between the family and its surrounding community, including informal (e.g., the extended families) and formal institutions (e.g., school). Research suggests that social capital generated outside the family, especially for children of immigrants, can compensate for limited educational and economic resources (Portes & Rumbaut, 2001). For example, Portes and Rumbaut’s (2001) longitudinal study found that despite low parental education and economic resources, Southeast Asian American children were more likely to adapt well when living in a supportive co-ethnic

community. Furthermore, scholars have found exterior surrogates within extended family social capital (e.g., cousins) aid in the amelioration of parental language barriers (Crozier & Davies, 2006). Thus, the domain of school, as extended social capital, may complement and aid in the development and awareness of resources already found within the Hmong population.

Historically, Hmong descent individuals tend to value family connections, especially among members of the *kwv tij* (family members from the husband’s side of the family) and *neej tsa* (family members from the wife’s side of the family) and congregate in similar geographical areas to strengthen their support system and feel a sense of community and togetherness as an ethnic group (Lee & Tapp, 2010; Pfeifer et al., 2012). As a result, Hmong children’s lives tend to revolve around a thick, bonded social network of families and co-ethnic community (Lee, 2005; Xiong et al., 2006). Thus, examination of Hmong children’s interior and exterior social capital can illuminate already-held resources that may foster academic and prosocial flourishing (MDE. n.d.) critical to ameliorating academic deficits within Hmong school-aged children.

Literature Review

The Relationship between Academic Competence and Academic Achievement

While there is a robust body of literature on academic achievement and the Hmong population (Lee & Madyun, 2008; Lee et al., 2014; Ngo & Lee, 2007; Portes & Rumbaut, 2001), less attention has been paid to the concept of *perceived academic competence* (Eccles et al., 1993; Phillipson & Phillipson, 2017; Valeski & Stipek, 2001). Perceived academic competence is defined as “an individual’s perception of self with respect to academic achievement, particularly in relation to their strengths, weaknesses, abilities, attitudes, and values” (Phillipson & Phillipson, 2017, p. 2). Extant scholarship has found positive correlations between perceived

and definitive academic competence among elementary, middle, and high school age students (Miller et al., 1996; Petersen & Hyde, 2017; Valeski & Stipek, 2001). In other words, the higher a student’s perception of their own competency of reading and math, the more likely students were found to attain proficiency in the subjects (Burke et al., 1985; Miller, et al., 1996; Petersen & Hyde, 2017). For example, self-reported perceived academic competence in kindergarten students was found to be congruent to standardized and teacher assessments of math and reading proficiency (Valeski & Stipek, 2001). Similarly, Petersen and Hyde (2017) found that high perceived competence in math in fifth grade was a predictor for future high school math proficiency. Given these findings, perceived academic competence is not only advantageous for all students to develop but can also serve as an indicator of academic ability for parents and educators.

Nuclear Family Social Capital and Children’s Perceived Academic Competence

Nuclear family social capital is the relationship and interaction within the family that serves as resources and investment for children’s learning (Coleman, 1988). For instance, children are more likely to succeed educationally and to have a higher perceived academic competence in families with two parents (Garg et al., 2007; Suleman et al., 2012), fewer siblings (Shavit & Pierce, 1991), quality parent-child relationships (Fromme & Eccles, 1998; Xiong et al., 2008), and high levels of parental expectations and communication about the importance of education (Benner et al., 2016; Fan & Chen, 2001). However, in the case of the Hmong nuclear family, social capital may be disrupted by certain contextual factors, including refugee and immigrant status, acculturative stress, and poverty (Portes & Rumbaut, 2001; Xiong et al., 2008). For example, the process of acculturation affects many Hmong families in the form of frequent intergenerational parent-child conflict due to differing cultural and linguistic experiences and

abilities (Portes & Rumbaut, 2001; Xiong et al., 2008). Hmong parents struggle to fulfill their role as their children’s first teachers due to socioeconomic status, language barriers, limited formal education, and overarching cultural beliefs that respect classroom teachers and treat them with deference (Lee & Green, 2008; Xiong & Lee, 2011). These contextual factors may unintentionally perpetuate parenting barriers; thereby hindering critical parental support needed during children’s developmental years (Farkas, 2003; Fryer & Levitt, 2004).

Extended Family Social Capital and Children’s Perceived Academic Competence

Research focusing on social capital and children’s academic achievement tends to use the nuclear family as the standard against which all other familial configurations are measured. While an exhaustive review of this literature is outside the scope of this research, suffice to say there is a robust body of socio-historical research that explains how this norm came to be understood as the “typical” American cultural family constellation (see, for example, Crozier & Davies, 2006). More compelling to our research interests is recent population data (U.S Census Bureau, 2017) estimates that nearly 4.5 million households in the U.S. are categorized as multigenerational households (i.e., at least three generations living in the same household). Multigenerational households are, in fact, normative in Asian American families where grandparents frequently live with their adult children and grandchild(ren). Thus, extended family social capital (e.g., grandparents, aunts, uncles) may strongly influence children’s attitudes and academic outcomes and provide moderating influences in children’s educational aspirations (Crozier & Davies, 2006; Jaeger, 2012). For example, Pallock and Lamborn (2006) found extended family support was correlated with high education values, teacher bonding, and work ethic. Extended family social capital may supply tangible resources to children, such as money necessary for housing, food, and academic costs. This was illustrated in a recent study, in which

extended family socioeconomic resources were found to offset the financial burdens faced by low-socioeconomic nuclear families (Jaeger, 2012). Thus, the inclusion and investigation of the role of extended family social capital in multigenerational households, including Hmong families, may provide scholars, educators, and policy makers with vital insight into the preventative measures that bolster academic outcomes in marginalized populations.

School Social Capital and Children’s Perceived Academic Competence

Although the research on social capital and children’s academic achievement is extant (Dufur et al., 2013; Jaeger, 2012; Yang, 2017), few studies have examined the relationship between school social capital and students’ perceived academic competence, especially among Hmong students in charter schools. While Coleman (1988) does not explicitly identify school social capital as a construct, the term has emerged through subsequent research that has conceptualized and operationalized Coleman’s work for the school context. We add our research to school social capital as it is understood in the literature that has extended Coleman’s framework (e.g., Butler-Barnes et al., 2015; CDC, 2009; Mouton et al., 2006). In short, school social capital is comprised of three components: (a) relationships between students and their peers at school, (b) school attachment (Mouton et al., 2006), and (c) school connection (Butler-Barnes et al., 2015; CDC, 2009). In this tripart definition, *school attachment* refers to the students’ emotional bond with school personnel and peers (e.g., being liked, feelings of belonging) (Mouton et al., 2006), and *school connection* refers to the cognitive belief that educators and school-based adults care about students’ learning and overall well-being (Butler-Barnes et al., 2015; CDC, 2009).

School attachment and school connection as social capital. School connection and school attachment have been cited as crucial components for positive academic outcomes and

prosocial behavior (Butler-Barnes et al., 2015; Freidenfelt Liljeberg et al., 2011; LeCroy & Kryski, 2008). For example, in their study of Hispanic adolescents and the predictors of academic achievement and school attachment, LeCroy and Krysik (2008) found that school attachment was positively correlated with student grade point average (GPA). In addition, other research has found that high levels of school attachment are correlated with prosocial, self-regulatory behavioral in high school youth, ages 14 to 16 (Freidenfelt Liljeberg et al., 2011).

School attachment and connection may also influence student-perceived academic competence and performance. Research shows that students with high levels of school attachment were more likely to have positive school-related relationships, which in turn, is correlated with higher academic motivation (Goodenow & Grady, 1993) and performance (Birch & Ladd, 1997). Similarly, in a study of school social capital, Hoffman and Dufur (2008) discovered that students who attended schools with high instances of child-educator relationships and low delinquency rates were more likely to report high levels of school attachment and connection, as well as positive beliefs about their perceived academic performance. As a result, some scholars suggest schools with high levels of school connection and attachment may serve as a protective factor for students with disrupted or low levels of interior (i.e., family) social capital (Castro-Schilo et al., 2016; Hoffman & Dufur, 2008). In other words, high quality relationships with educators and school personnel could mitigate barriers (e.g., language, educational) that tend to impede parental academic support within immigrant and refugee populations such as the Hmong.

Peer relationships are a vital component of a child’s connection and attachment to school, as they influence student academic outcomes, psychosocial well-being, and interpersonal functioning (Crosnoe et al., 2003; Kingery et al., 2011). Students’ long-term academic goals are

often related to their peers' goals, which may indicate shared norms that are promoted through social capital; thus, it is not surprising that scholars have found moderating effects of peer influence on academic achievement (Butler-Barnes, et al., 2015; Kingery et al., 2011). For example, research found that friendships with peers with positive attitudes about school can greatly influence and increase: (a) positive social and emotional functioning; (b) communal academic-based abilities and information; and (c) exposure to additional, different forms of social capital in students (Crosnoe et al., 2003). Friends may also serve as protective factors for normative developmental transitions, such as from elementary to middle school (Kingery et al., 2011). Ladd et al. (1996) found that supportive friendships, especially "best" friends, influence students' perceived academic competence and adjustment to school. For children in charter schools, examination of school social capital (i.e., peer relationships, school connection and attachment) may provide compelling insight into the creation and development of programs that help to bolster resiliency traits and protective factors found within this student population.

Based on the extant literature and assumptions of Coleman's (1988) social capital theory, we hypothesized that all three types of social capital (family, extended family, and school) would be directly associated with Hmong students' perceived academic competence while controlling for gender, grade level, English learner (EL) status, English fluency and literacy, and place of birth. Since children spent most of their time at home and in school (Hofferth & Sandberg, 2001), we also anticipated that the magnitude of the relationships between children's reported academic competence and nuclear family and school social capital would be larger than the magnitude of the relationship between children's reported academic competence and extended family social capital.

Methods

Sample

The sample (figure 1 at the end of the paper) consisted of 423 elementary-aged Hmong students from five different Hmong-focused charter schools located in Minnesota. The number of students from each of the five schools ranged from 51 (12% of sample) to 131 (31% of sample). Due to confidential issues, none of the participating charter schools was described in detail here. Students who participated in the study were in grades 3 (32%), 4 (34%), and 5 (35%). The majority of students identified as girls (57%), were born in the United States (85%), and lived in two-parent households (88%). Close to half (48%) of students reported being in the English as a Second Language (ESL) or English Learner (EL) program within the last 3 years. Although students were unable to determine whether they received free/reduced priced meals, available aggregate data show 71.6% of students in the five schools participated in the program (MDE. n.d.).

Procedure

This was a collaborative study between the University of Minnesota and five Hmong-focused charter schools to examine the academic experiences of Hmong elementary students. All relevant school administrators reviewed and consented to the study proposal, recruitment, and survey protocol. In addition, all charter schools consented to a memorandum of understanding (MOU) in partnership and support of a projected five-year longitudinal study. Recruitment efforts were targeted to parents to ensure proper consent and assent of child participants through varied methods (i.e., flyers, word-of-mouth, parent-teacher conferences, etc.) from researchers and school staff. All students had both parental consent and self-assent prior to taking part in the

study. Specifically, there were 49 classrooms in third, fourth, and fifth grades with 1,388 students enrolled in five schools. Five hundred seventy-four students agreed to participate in the study with parents’ consents (or 41% response rate). Of the 574 students, 523 students (or 91%) took the survey. Thus, the final response rate for this study was 38%. However, for the purpose of this study, only Hmong students (n=423) were included.

Survey administration occurred during school hours in the computer lab on participants’ school grounds to eliminate transportation issues and other distractions. Even though research shows that during this period (concrete-operational stage, Piaget, 1947) children have developed sufficient reading skills and can answer well designed survey questions (Borgers et al., 2000), we decided to read the whole survey to students to reduce confusion and improve data quality. As such, the child assent form was read aloud by the research team and allotted time was provided to answer all questions students had prior to taking the survey. All survey administrations were also read to students by trained research assistants to ensure all students, regardless of reading levels, can understand the questions. On average, it took 30 to 35 minutes for students to complete the 60+ survey items.

Measures

Measures were selected as potential indicators of nuclear family, extended family, or school social capital in congruence with theoretical assumptions of social capital theory (Coleman, 1988). The Appendix contains item stems for all items included in the final analytic model. All measures were self-reported and drawn from peer-reviewed sources and earlier studies with Hmong students (Xiong & Huang, 2011; Xiong et al., 2008). To enhance the reliability and validity of the measures, graphical and visual responses (Scott et al., 1995) were added as depicted below:

Now, please tell us how you feel about your principal, teacher and school.
Please be honest since there is no right or wrong answer.

	Strongly Agree 	Agree 	Disagree 	Strongly Disagree 
(a) I can be myself at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(b) I feel like I belong at this school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(c) I have friends at this school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additionally, for measures with four or more items, we ran a one-factor confirmatory factor analysis (CFA) model to evaluate the ability of the items to measure the intended construct in our sample of Hmong students. With each measure employing ordinal items, the CFA models were estimated with a diagonally weighted least squares estimator, which makes no assumptions about the distribution of the item responses and uses the polychoric correlation matrix (Li, 2016; Rhemtulla et al., 2012). The models were run in *R* (v. 4.2.0; R Core Team, 2022) using the *lavaan* package (v. 0.6.12; Rosseel, 2012). Model fit was evaluated with typical Hu and Bentler (1999) guidelines of a comparative fit index ($CFI \geq 0.95$), root mean square error of approximation ($RMSEA \leq 0.06$), and standardized root mean square residual ($SRMR \leq 0.08$). However, these guidelines were derived under specific conditions using maximum likelihood estimation with continuous variables and their applicability to ordinal variables with diagonally weighted least squares estimation, which is the case in the present study, is not well known (Kline, 2015; McNeish & Wolf, 2021).

Perceived academic competence. Perceived academic competence is conceptualized and measured in various ways by different scholars (Eccles et al., 1993; Harter & Pike, 1984). However, we chose to use Valeski and Stipek’s (2001) *children’s feelings about school* subscale

for two reasons. First, children's perception of their competence in math and literacy subscale is short and designed for lower reading levels. Additionally, it also focuses on the two content areas (i.e., math and reading) where Hmong children struggled the most (Lee et al., 2010; Vang, 2005). This subscale has been tested with immigrant children in elementary school and found to be reliable (Cronbach’s alpha > 0.63) and valid (Valeski & Stipek, 2001). It includes five items with five response options, ranging from 0 (*Don’t know much at all*) to 4 (*Know a lot*), where higher scores indicated higher perceived competence. Sample items included: “How much do you know about numbers/math?” and “How good are you at reading?” After allowing the residuals of the two reading items to correlate, the one-factor CFA model yielded a fit of $CFI = .99$, $RMSEA = .09$, and $SRMR = .03$ with reliability of $\alpha = .82$ ($\omega = .70$).

Parent communication about the importance of education was comprised of a single-item adapted from Portes and Rumbaut (2001). Respondents were asked, “How often do your parents talk about the importance of education to you?” Seven response options were given, ranging from 0 (*Never*) to 6 (*Every day*). This single item had been used with Hmong and other Southeast Asian students in the past (Portes & Rumbaut, 2001; Xiong & Hung, 2011).

Parent availability. Adapted from the first author’s previous work (Xiong & Huang, 2011), students were asked a total of five items assessing their parents’ availability of quality time. The two items “How often is your mom [dad] too busy to do things with you?” had five response options ranging 0 (*Never*) to 4 (*Always*), along with the item “If your parents cannot help you with your homework, will one of your brothers or sisters help?” The two items “How often does your mom [dad] go out with other people without you and your siblings?” had seven response options from 0 (*Never*) to 6 (*Every day*). Excluding the item referring to brothers or sisters, the items were reverse coded so higher scores indicated greater parent availability.

Parent-child relationships. Relationship quality between parents and child was measured via four items adapted from Simons and colleagues (1993) based on the first author’s earlier work (Xiong & Huang, 2011). Two items asked, “How happy are you with the way things are between you and your mom [dad]?” with seven response options from 0 (*Never*) to 6 (*Always*). The other two items used a four response options ranging from 0 (*Never true at all*) to 3 (*Very true*) and asked, “My mom [dad] and I usually argue because of our different ways of doing things”. These two items were reverse coded, so higher scores indicated higher perceived positive relationship with parents.

Positive parenting. Four items were adapted by the first author’s earlier work from Simons and colleague’s (1992) 9-item Supportive Parenting Scale. Students were asked to rate each of the parents (8 items total) on items such as, “How often does your mom [dad] tell you the reason why they want you to do certain things?” and “How often does your mom [dad] ask you what you think before they tell you to do certain things?” Seven response options ranged from 0 (*Never*) to 6 (*Always*) where higher scores indicated higher perceived positive parenting behaviors. When asking about mom, the one-factor CFA had fit of $CFI = .99$, $RMSEA = .06$, and $SRMR = .02$ with reliability of $\alpha = .71$ ($\omega = .67$). When asked about dad, the one-factor CFA had fit of $CFI = .97$, $RMSEA = .13$, and $SRMR = .04$ with reliability of $\alpha = .72$ ($\omega = .69$).

Parental involvement at home. Five items were borrowed from the Parents’ Involvement in Home-Based and School-Based Activities measure created by Walker and colleagues (2005). For the purpose of this study, the phrase “someone in this family” was changed to “parents” to directly assess for parental behaviors. Items included, “How often do your parents talk with you about the school day?” and “How often do your parents read with you?” with four response

options ranging from 0 (*Never*) to 3 (*Every day*). The one-factor CFA had fit of $CFI = .99$, $RMSEA = .06$, and $SRMR = .04$ with reliability of $\alpha = .77$ ($\omega = .72$).

Parent contact with aunts or uncles. Students were asked, “How often do your parents and your uncles or aunts get together?” which was a single-item borrowed from Taylor and associates (2013). Seven response options were given ranging from 0 (*Never*) to 6 (*Every day*).

Closeness to aunts or uncles. One item borrowed from Taylor and colleagues (2013) asked, “How much do you agree that you feel very close to at least one of your uncles or aunts?” with five response options ranging from 0 (*I strongly disagree*) to 4 (*I strongly agree*).

Extended family support. The extended family support measure (Offer & Schnieder, 2007) included six items addressing the level of support the child’s family receives from aunts and uncles. Items included, “If your parents need to work late, can they easily find one of your uncles or aunts to watch you or your siblings?” and “If your parents have an emergency and need money, will one of your uncles or aunts help?” with five response options ranging from 0 (*Never*) to 4 (*Always*). The one-factor CFA had fit of $CFI = .99$, $RMSEA = .07$, and $SRMR = .03$ with reliability of $\alpha = .86$ ($\omega = .83$).

Extended family communication about the importance of education. Students were asked how often their aunts and uncles discussed the importance of education. Adapted from Portes and Rumbaut (2001), seven response options ranged from 0 (*Never*) to 6 (*Every day*).

School attachment. Participants were asked to assess their beliefs about school and educator relationships. Six items were borrowed from school bonding scale (Hawkins et al., 2001) with four response options ranging from 0 (*NO!*) to 3 (*YES!*). Students responded to statements such as, “I like school”; “Most mornings, I look forward to going to school”; and “I feel very close to my teacher.” Higher scores indicated higher positive beliefs about school and

educators. The one-factor CFA had fit of $CFI = .93$, $RMSEA = .12$, and $SRMR = .07$ with reliability of $\alpha = .77$ ($\omega = .73$).

School connection. Students were given Brown and Evans’ (2002) school connection measure to assess their beliefs about school. With four items per subscale, this measure contained four subscales: belonging, commitment, power, and belief. All items had four response options ranging from 0 (*Strongly Disagree*) to 3 (*Strongly Agree*). Example statements included: “I feel like I belong at this school”, “I can reach my goals through this school”, “I have many chances to make decisions at my school”, and “The rules at my school are fair.” Higher scores indicated stronger connection to school. The one-factor CFA had fit of $CFI = .95$, $RMSEA = .06$, and $SRMR = .06$ with reliability of $\alpha = .89$ ($\omega = .86$).

Number of friends. Borrowed from Poulin and Pedersen (2007), students were asked to quantify how many friends by race and cultural ethnic group (e.g., White, Black, Asian but not Hmong, Hmong, Hispanic, and Other). Responses from the six items were summed to create a single total value.

Presence of a best friend. Students were asked, “Can you write down the name of your best friend here?” to assess for the presence of a best friend (Poulin & Pedersen, 2007). Responses were dummy coded as 1 (student provided a name) or 0 (student did not provide a name).

English fluency and literacy. The English fluency and literacy scale (Gim Chung et al., 2004) was adopted to assess how well students could “Speak English”, “Understand English”, and “Read and write in English” with four response options ranging from 0 (*Not at all*) to 3 (*Very well*). Responses from the three items were summed to create a single total value where a higher score indicated more fluent and literate in English ($\alpha = .82$, $\omega = .72$).

Control Variables. In this study, student’s gender, grade level, English learner (EL) status, English fluency and literacy, and place of birth were controlled for since they have been found to associate with perceived academic competence and/or academic performance in the literature (Valeski & Stipek, 2001). For example, studies conducted with immigrant and/or EL students found that it usually takes two to five years to master English oral skills and up to seven or more years to reach high levels of literacy skills (Collier & Thomas, 1989; Thomas & Collier, 2002). As such, research shows that EL students tend to perform poorer in school compared to native-English speaking students, especially during the elementary school years. However, the achievement gap between the two student populations tends to get narrower as EL students move from elementary to middle schools (Ardasheva et al., 2012). For instance, Ardasheva et al. (2012) analyzed school district reading test scores of former EL students (those who exit the EL program already), compare to current EL students (those who are still in the EL program) and native English-speaking students, and they found that former EL students outperformed both groups. This suggests that mastering the English language plays a critical role in EL students’ academic achievement (Kim & Herman, 2009). Similarly, studies also show that girls, on average, tend to outperform boys in school (Ardasheva et al., 2012; Burusic et al., 2012; Legewie & DiPerete, 2012), including Hmong students (Lo, 2017).

Analytic Strategy

Coleman’s (1988) social capital theory informed the design of the structural equation modeling (SEM) analysis in a two-step process. The first step was to determine if the proposed observed indicators adequately measured the nuclear family, extended family, and school social capital latent variables, as well as the latent variables for perceived academic competence and English fluency and literacy (Figure 2). This is called the measurement model. For the

measurement model, five items were used as indicators for outcome variable of perceived academic competence while 63 items were considered as indicators for nuclear family, extended family, and school social capital. In the measurement model, the five latent variables were correlated (bidirectional arrows) without imposing any directional structure.

Once an adequate measurement model was ascertained, the structural component (Figure 1) was added to the measurement model to create the final model (Figure 3) in the second step. The structural model replaced the bidirectional arrows between the latent variables in Figure 2 with the hypothesized directional associations depicted in Figure 1. Specifically, perceived academic competence was regressed on the social capital variables while adjusting for student’s gender, grade, English language learner status, English fluency and literacy and birthplace. These variables have been associated with perceived academic competence (Valeski & Stipek, 2001), and thus were added to the model to investigate the unique association of the social capital variables on the outcome. As with the one-factor CFA models, the SEM models were estimated with a diagonally weighted least squares estimator in *R* (v. 4.2.0; R Core Team, 2022) using the *lavaan* package (v. 0.6.12; Rosseel, 2012). Once again, while the Hu and Bentler (1999) cutoffs for *CFI*, *RMSEA*, and *SRMR* offer useful guidelines for evaluating model fit, these guidelines were derived with a different estimator (maximum likelihood) and item type (continuous) than those used here and there are currently no equivalent guidelines for ordinal items and a diagonally weighted least estimator (Kline, 2015; McNeish & Wolf, 2021).

The initial measurement model had poor fit. To improve fit, several items were removed as indicators for latent variables due to poor factor loadings (< 0.30). There are no statistical criteria for what constitutes a low factor loading (Briggs & MacCallum, 2003). Therefore, items with low standardized factor loadings were removed iteratively by: (1) removing items with the

lowest factor loading from the measurement model, (2) re-running the model, and (3) testing for overall model fit. Furthermore, residuals for certain items were allowed to correlate based on modification indices and substantive interpretability (e.g., Mueller & Hancock, 2008). The measurement model was re-run after each residual correlation was freed to assess the change in overall model fit. Although use of the modification indices improves model fit, thus enabling estimation of the structural model, modification indices capitalize on chance unique in the current sample which makes replication in subsequent studies less likely (MacCallum et al., 1992).

Missing data and multiple imputation. Overall, the amount of missing data was low (2.8% of cells). However, 58.3% of students had missing values on at least one of the variables used in the final analysis. The two variables asking how often uncles or aunts talk to the student about the importance of education had missingness rates 21.0% and 19.1%, respectively. Only 12 students (2.8%) had missing responses on the five indicators for the outcome variable of perceived academic competence. The SEM analysis was first conducted using listwise deletion. As a sensitivity check, the SEM models were rerun using multiple imputation by chained equations procedure via the *mice* package (Buuren & Groothuis-Oudshoorn, 2011). Using all indicator and control variables in the imputation model, 60 datasets were imputed with binary variables estimated with logistic regression and categorical variables estimated with predictive mean matching (Bodner, 2008; White et al., 2011). The proportion of responses for each category by item in the original data and the multiple imputed (MI) data were compared to evaluate the reasonableness of the imputed values. The largest difference in proportion for any response option for a given item between the original and the pooled MI data was < 3%, thereby indicating that imputed values were reasonable. The final measurement model and the structural

model were run on the 60 MI datasets using the runMI function from the *semTools* package (v. 0.5-0; Jorgenson et al., 2018). The model fit indices and parameter estimates were then pooled and presented here.

Results

Measurement Model

Using the original dataset, the initial measurement model with all indicators under consideration (Figure 2) showed poor fit (Table 1). To improve measurement of the social capital variables items with low standardized factor loadings ($< .30$) were removed. For nuclear family social capital these were the items for parental communication of educational importance, living with two parents, number of siblings, parent availability, and arguing with parents. For extended family social capital, only one item (i.e., parental time with aunts and uncles) was removed. Lastly, both indicators related to friends (i.e., presence of a best friend and the total number of friends) were removed from the school social capital latent variable. To further improve the measurement of nuclear family social capital, the residuals for the items from *mom* and *dad* were allowed to correlate. In other words, instead of treating the residuals as random, we estimated the degree to which the residuals for the pairs of *mom* and *dad* items varied systematically. As a result, a more complex model was estimated, and overall fit of the measurement model improved. Additional residuals that were allowed to correlate were *uncle* items with corresponding *aunt* items and the two reading items measuring perceived academic achievement with each other. Factor loadings for all items included in the final measurement model are presented in the Appendix.

The final measurement model (Table 1) using the original data produced *RMSEA* and *SRMR* values of .04 and .08, respectively, indicating the difference between the model expected

data and the observed data were acceptably minimized based on Hu & Bentler’s (1999) guidelines of $< .060$ for RMSEA and $< .080$ for SRMR. Although CFI (.93) was just below the Hu & Bentler’s (1999) guideline of .95, taken in conjunction with RMSEA and SRMR the fit indices suggested the model adequately fit the data. Thus, the indicators sufficiently measured the latent variables, enabling the associations hypothesized in the structural model to be investigated. When the final measurement model was replicated on the 60 MI datasets the pooled fit indices showed similar RMSEA (.04) and SRMR (.07), but lower CFI (.89) indicated the model did not meet the guideline for improvement over the null model (i.e., a model with all indicators uncorrelated; Table 1).

Structural Model

The structural model with the original data ($CFI = .93$, $RMSEA = .04$, $SRMR = .08$) and with the MI datasets ($CFI = .88$, $RMSEA = .04$, $SRMR = .07$) produced similar fit indices to their measurement model counterpart, suggesting the structural model adequately fit the data by minimizing error as measured by *RMSEA* and *SRMR* (Table 1). Similar regression coefficients were estimated for the structural model in both the original data and the MI data, so only the latter are presented here (Figure 3). The first hypothesis stated that all three types of social capital (family, extended family, and school) were expected to be significantly related to Hmong students’ perceived academic competence while controlling for English fluency and literacy, along with other demographic variables (Figure 3). However, we only found school social capital to be significantly related to students’ perceived academic competence ($\beta = 0.39$, $SE = 0.08$, $p < .001$). Nuclear family ($\beta = 0.09$, $SE = 0.10$, $p = .18$) and extended family ($\beta = 0.08$, $SE = 0.09$, $p = .25$) social capital were not significantly associated with perceived academic competence. In other words, the current data showed that students who felt attached to school and felt a sense of

belonging and connection to school tended to feel confident about their math and reading abilities. Conversely, having a strong parent-child relationship and feeling attached and supported by aunts and uncles played less significant roles in students’ confidence about their math and reading abilities. As such, the second hypothesis that nuclear family and school social capital would be more strongly associated with perceived academic competence than extended family social was supported for the latter, but not the former.

Additionally, we also found that students who scored high on the English fluency and literacy scale, on average, were more likely to report higher perceived academic competence ($\beta = 0.34, SE = 0.08, p < .001$). The model also showed that being born in the U.S. was significantly associated with students’ perceived academic competence ($\beta = 0.34, SE = 0.13, p = .03$). That is, US-born students who believed they could read, write, speak, and understand English well or very well tended to feel confident about their math and reading abilities. However, after controlling for these variables, the model explained 45.6% of the variation in students’ perceived academic competence (see Figure 3).

Discussion

Understanding why some children continue to fall behind academically while other students continue to exceed is complex and full of nuances. Therefore, to explore the multifaceted factors that account for the variation in children’s achievement, Coleman’s (1988) social capital theory was adopted to guide this study. Based on this theory and the extant literature, we hypothesized that family, extended family, and school social capital are directly related to Hmong students’ perceived academic competence while controlling for gender, grade levels, English learner (EL) status, English fluency and literacy, and place of birth. Furthermore, we also anticipated that the magnitude of the relationships between children’s reported academic

competence and nuclear family and school social capital is larger than the magnitude of the relationship between children’s reported academic competence and extended family social capital since children spent most of their time at home and in school (Hofferth & Sandberg, 2001). Our results suggest that school social capital, as measured by school attachment (beliefs about school and relationships with teachers), school connection (belonging, commitment, power, and belief), and having friends at school (number of friends and the presence of a best friend), was the only factor found to be significantly related to students’ perceived academic competence. This finding may be due to a variety of reasons. First, culturally-focused charter schools where the majority of school administrators and staff are Hmong may serve as an ethnic capital (Lee & Zhou, 2017) that plays a part in how children perceive their academic competence. Research shows that school administrators are more likely to act as supportive agents and promote student learning when they understand students’ cultural context and family circumstances (Lee et al., 2014). Additionally, integration of culturally responsive curriculum and school-based activities is positively correlated with prosocial behavior and increased academic outcomes (Neblett, Rivas-Drake, & Umaña-Taylor, 2012). Therefore, it is plausible that charter school administrators and educators in this study may have successfully established congruence between the charter school, children’s homes, and Hmong cultural values. This congruence - often referred to as cultural capital in the literature - may have aided both children’s connection to school and their perceived academic competence (McNeal, 2001).

Likewise, culturally-focused charter schools, especially those like the Hmong charter schools included in this study, may have provided opportunities for Hmong students to connect with other Hmong students, teachers, and staff that other large public schools could not (Lee, 2005). Existing literature supports that when students feel a sense of attachment to school,

connection to teachers, and school-oriented friends, they are more likely to feel academically competent and perform better in school (Hoffman & Dufur, 2008; Lee et al., 2014). Although we did not include academic performance as an outcome measure in the present study, the literature suggests that high perceived competence in math and reading in the earlier years (i.e., kindergarten) is a predictor for future (i.e., high school) proficiency (Miller et al., 1996; Petersen & Hyde, 2017; Valeski & Stipek, 2001). Although this finding is limited to a small number of students from a few Hmong-focused charter schools, future studies need to expand this finding to examine these school social capital variables with students in specific culture-focused charter schools, compared to students in traditional public schools where the majority of school administrators and staff are white. Such studies may shed light on the role of culture-focused charter schools on marginalized students’ academic competence and performance.

Although nuclear family social capital (as measured by parent-child relationships, positive parenting, and parental involvement), as well as extended family social capital, have been found to correlate significantly with children’s educational performance in the literature (Benner et al., 2016; Coleman, 1988; Jaeger, 2012; Pallock & Lamborn, 2006; Portes & Rumbaut, 2001), they do not predict academic competence in children who participated in this study. First, we speculate that since the majority of our sample was comprised of US-born children to foreign-born immigrant parents, children in our sample may not credit their immigrant parents as a source of social capital impacting their perceived academic competence (Lee & Green, 2008; Xiong & Lee, 2011), partly perhaps due to parents’ language barriers, limited formal education, and other contextual factors (Lee & Green, 2008; Xiong & Lee, 2011) that have been found to hinder parental support needed during children’s developmental years (Farkas, 2003; Fryer & Levitt, 2004). Next, this nonsignificant finding could also be due to the

ways in which we measured family and extended family social capital. Since we have not pilot tested these measures prior to the study, these nonsignificant findings could be due to measurement bias. Future studies need to pilot test these measures and adapt them for Hmong students prior to the survey administration.

The third major finding in this study is students’ ability to speak, understand and read and write in English (i.e., English fluency and literacy). Although Hmong-focused charter schools are proud of their Hmong language and culture curriculum that tries to teach the Hmong language to students, our results suggest that students’ perceived academic competence is directly related to their abilities to speak, understand, read, and write in English, This result suggests that the faster educators/teachers can get students to speak, understand, read, and write in English, the more confident students will feel about their academics, and this finding is consistent with other studies with different immigrant and EL student populations (Ardasheva et al., 2012; Kim & Herman, 2009). Similarly, research also shows that the more students are confident about their abilities to do math and reading, the better their grades and standardized test scores (Petersen & Hyde, 2017; Valeski & Stipek, 2001).

Limitations

While our findings contribute to the edge of knowledge on Hmong children’s perceived academic competence, there are several limitations that need to be addressed. First, the results presented herein are based on a cross-sectional design and year 1 of a longitudinal study with Hmong students and non-Hmong students enrolling in charter schools; therefore, generalizability of the study to other students in charter schools is strongly discouraged. Next, although the SEM was grounded in theory, the development of the measurement model from the initial proposal to the final iteration was an exploratory endeavor. Many of the measures and single items have not

been adapted thoroughly to Hmong children in elementary. Thus, the results demonstrate one possible association between social capital and academic competence based on how these latent variables were measured by the indicators. The findings do not, however, rule out the possibility of alternative indicators exceeding our measures of social capital and producing different associations. Future studies should continue to explore these indicators to determine whether they are stable measures of the latent variables and begin to establish causal pathways through rigorous designs. Similarly, future measurement and analysis need to examine potential changes in students’ sense of school connection and attachment as they age. In addition, many study participants will transition from charter to mainstream public schools for high school during this longitudinal study, and it will be critical to examine the effects of this transition and the school type on sources and implementation of social capital.

Third, studying children in elementary school, especially during the concrete-operational stage (Piaget, 1947), using a survey approach may raise some validity concerns (Mellor & Moore, 2013). Although we took several preventive measures, including the use of graphical and visual responses (Scott et al., 1995) and reading all survey items to students during the survey administration, we acknowledge that surveying children of first-generation Hmong parents is a major limitation in our study in particular and in studies with young children in general (Korsavi & Montazami, 2019). Future studies need to take the necessary time to pretest the survey and data collection approach with the target population prior to the actual implementation.

Lastly, family demographic information (e.g., indicators of socioeconomic status, such as parent educational attainment and household income) was not available for analysis during the first wave of this longitudinal study due to low recruitment of parent participants. Due to the age of the study participants, accurate reporting on family socioeconomic status was not expected;

therefore, it was not included in the control variables of our results. This limitation will be addressed through future survey efforts explicitly aimed at obtaining this data.

Implications

Based on the current findings, we suggest a couple of ideas for schools, especially Hmong-focused charter schools, to consider as they continue to find ways to close the achievement gap. First, we strongly encourage Hmong charter schools to continue to promote school climates that create an atmosphere where students feel welcome and connected to other students and school administrators, teachers, and staff. Feeling a sense of belonging and connected at school has been found in this study, as well as in the literature to improve students’ self-assessment of academic competence and academic performance (Burke, Ellison, & Hunt, 1985; Miller, et al., 1996; Petersen & Hyde, 2017). Next, we recommend that school board and administrators continue to assess their EL and Hmong language and culture programs. Since most Hmong students are US-born children (MDE, n.d.), putting children in two oppositional programs (i.e., the EL program and the Hmong language and culture program) without any systematic integration may not facilitate students’ mastery of the English language quick enough to close the achievement gap. School board and administrators may want to think about, assess, and adopt other more effective transitional bilingual education programs (Marian et al., 2013) for Hmong students. Transitional bilingual education programs have been found to enhance EL students’ performance, compared to traditional EL programs, on English literacy, while still promote students’ native language (see Slavin et al, 2011).

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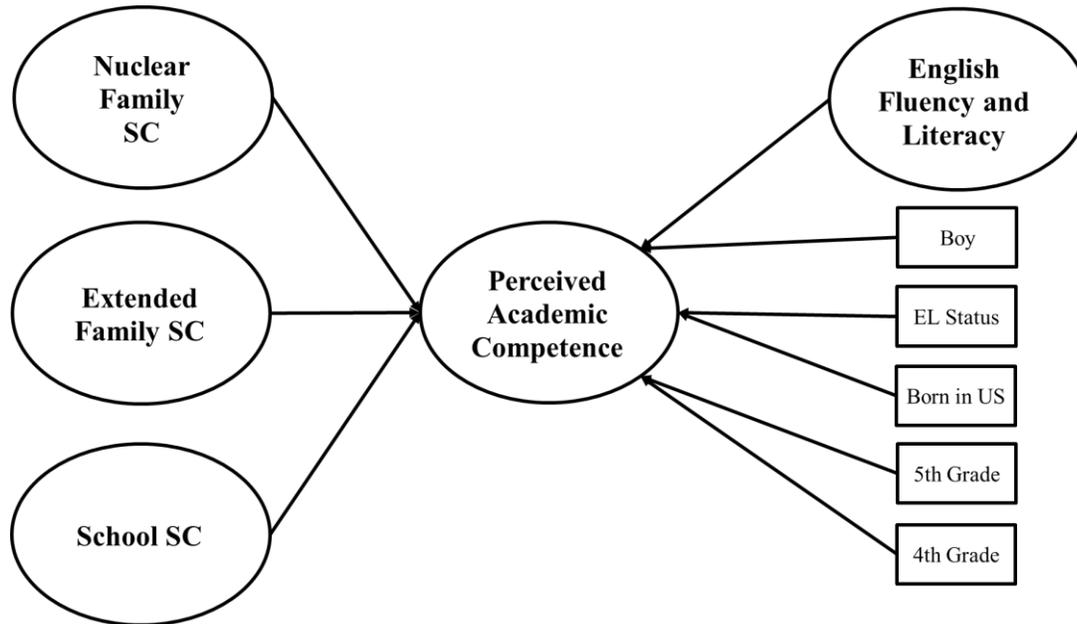
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Table 1. *Model Fit Statistics for Structural Equation Models*

Dataset - Model	n	χ^2 (df)	CFI	RMSEA	SRMR
Original - Initial	182	3499.198 (1942)	.69	0.07	0.13
Original - Measurement	222	1732.36 (1308)	.93	0.04	0.08
Original - Structural	221	2026.90 (1568)	.93	0.04	0.09
Imputed - Measurement	423	2012.40 (1308)	.89	0.04	0.07
Imputed - Structural	423	2315.28 (1568)	.89	0.03	0.07

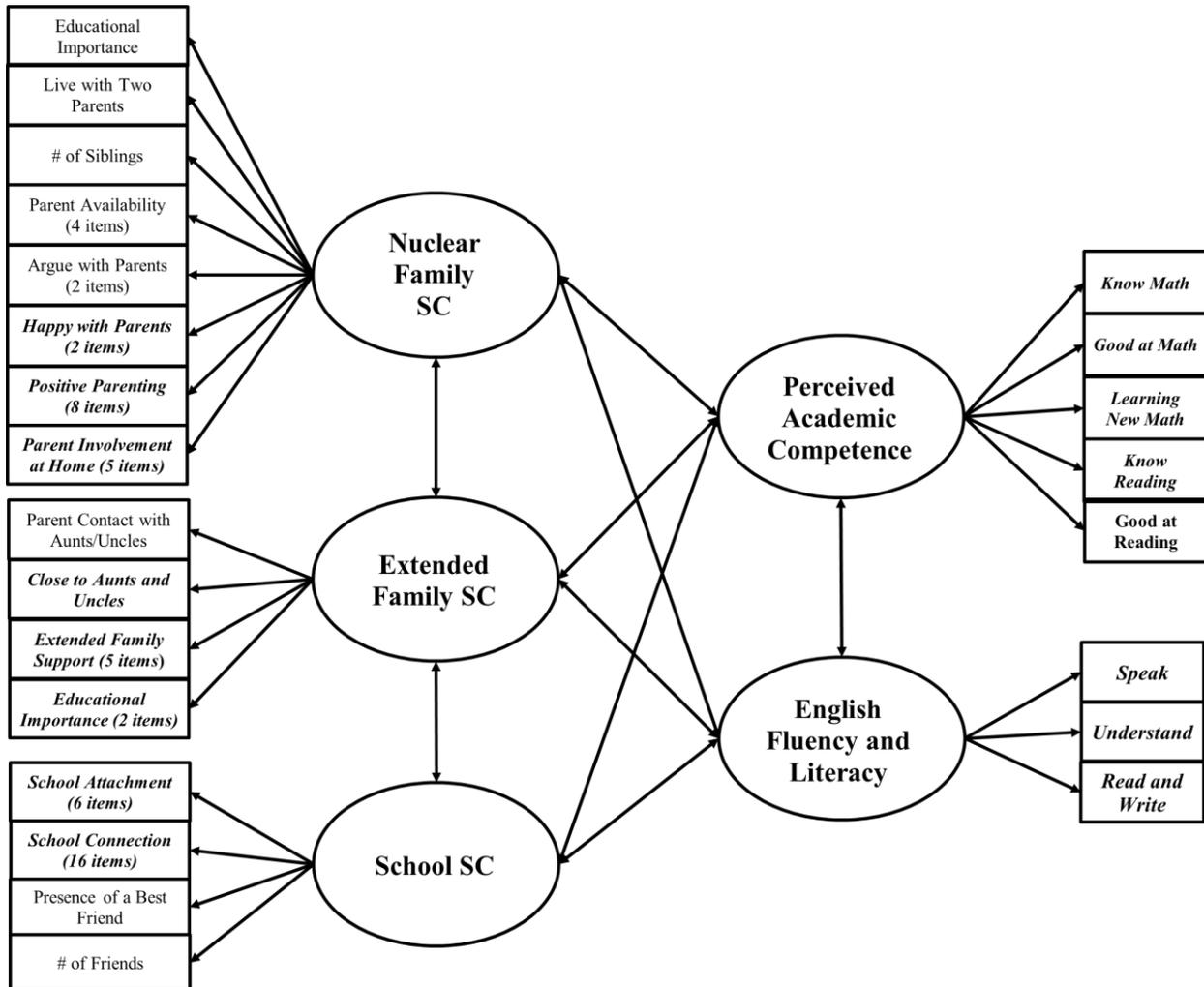
Note. CFI = comparative fit index; RMSEA = root mean squared error of approximation; SRMR = standardized root mean squared residual

Figure 1. Structural Model



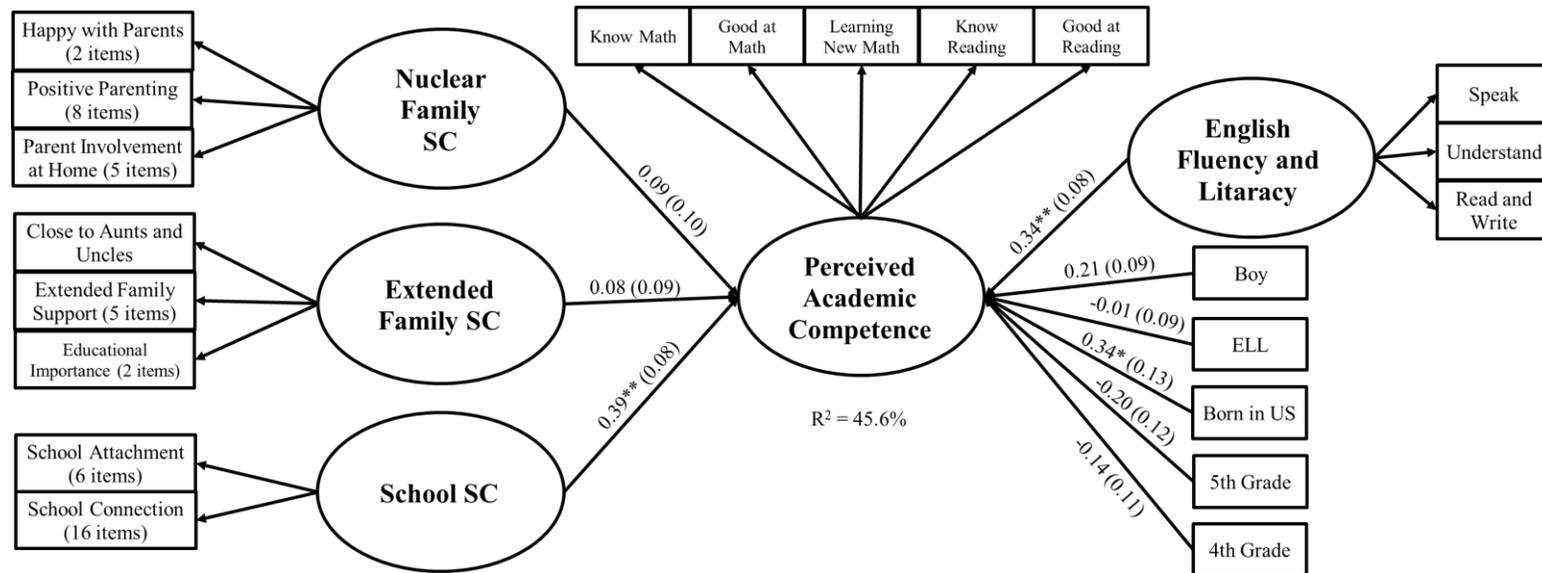
Note. SC = social capital; EL = English learner.

Figure 2. Initial Measurement Model



Note. Indicators in bold and italics were retained for the final measurement model. With the multiple imputed data, the final measurement model had fit of CFI = .89, RMSEA = .04, and SRMR = .07. SC = social capital

Figure 3. Association of Sources of Social Capital (SC) with Perceived Academic Competence



Note. Some item residuals were allowed to correlate, such as Know Reading and Good at Reading, but are not shown here. Description of all correlated residuals is provided in the text. Additionally, all social capital and control variables were allowed to correlate, which are not shown here. With the multiple imputed data, the model fit was $CFI = .89$, $RMSEA = .03$, and $SRMR = .07$. EL = English learner. $*p < .05$, $**p < .01$.

Appendix A. *Final Measurement Model Items and Factor Loadings*

Factor or Item	Stem	% Missing	Loading	
			MI	Original
Perceived Academic Competence				
Q6_53_1	How much do you know about numbers/math?	0.2	0.81	0.84
Q6_53_2	How good are you at numbers/math?	0.7	0.86	0.83
Q6_53_3	How good are you at learning something new in numbers?	1.4	0.68	0.65
Q6_53_4	How much do you know about reading?	1.3	0.63	0.67
Q6_53_5	How good are you at reading?	1.4	0.64	0.72
Nuclear Family Social Capital				
Q2_22_1_17	How happy are you with the way things are between you and your mom?	1.4	0.55	0.60
Q2_22_2_17	How happy are you with the way things are between you and your mom dad?	4.7	0.46	0.42
Q2_17_1	How often does your mom tell you the reason why they want you to do certain things?	2.8	0.57	0.63
Q2_18_1	How often does your mom ask you what you think before they tell you what to do?	6.6	0.43	0.49
Q2_19_1	How often does your mom teach you by reasoning, explaining, or talking nicely?	4.5	0.51	0.60
Q2_20_1	When you do something your mom likes, how often do they let you know that they are happy about it?	5.2	0.72	0.77
Q2_17_2	How often does your dad tell you the reason why they want you to do certain things?	6.4	0.43	0.57
Q2_18_2	How often does your dad ask you what you think before they tell you what to do?	9.7	0.40	0.47
Q2_19_2	How often does your dad teach you by reasoning, explaining, or talking nicely?	7.6	0.51	0.60
Q2_20_2	When you do something your dad likes, how often do they let you know that they are happy about it?	8.3	0.72	0.73
Q2_14_1	How often do your parents talk with you about the school day?	0.2	0.45	0.39
Q2_14_2	How often do your parents watch you do your homework?	0.2	0.43	0.31
Q2_14_3	How often do your parents help you with your homework?	0.2	0.51	0.40
Q2_14_4	How often do your parents practice spelling, math, or other skills with you?	0.5	0.59	0.45
Q2_14_5	How often do your parents read with you?	0.5	0.40	0.34

Extended Family Social Capital

Q3_31	How much do you agree that you feel very close to at least one of your uncles or aunts?	1.7	0.62	0.77
Q3_32_1	How often do your aunts talk about the importance of education to you?	19.2	0.50	0.53
Q3_32_2	How often do your uncles talk about the importance of education to you?	21.	0.40	0.54
Q3_30_1	If your parents need to work late, can they easily find one of your uncles or aunts to watch you or your siblings?	0.2	0.60	0.67
Q3_30_2	If your parents are not available to get you or your siblings to the doctor, will one of your uncles or aunts help?	0.5	0.77	0.75
Q3_30_3	If your parents cannot help you with your homework, will one of your uncles or aunts help?	1.2	0.75	0.78
Q3_30_5	If your parent have troubles or need advice, will they have someone in the family (uncles or aunts) to talk to?	2.1	0.66	0.64
Q3_30_6	If your parents have an emergency and need money, will one of your uncles or aunts help?	2.4	0.71	0.60

School Social Capital

Q6_49_1	I like school.	0.0	0.64	0.62
Q6_49_2	Most mornings I look forward to going to school.	0.7	0.56	0.50
Q6_49_3	I do extra school work on my own.	1.7	0.40	0.41
Q6_49_4	When I have homework to do, I keep working on it until it is finished.	0.7	0.49	0.49
Q6_49_5	I like my class this year.	1.0	0.53	0.56
Q6_49_6	I feel very close to my teacher.	0.5	0.51	0.61
Q6_55_1	I can be myself at school.	0.2	0.53	0.54
Q6_55_2	I feel like I belong at this school.	0.2	0.67	0.66
Q6_55_3	I have friends at this school.	1.0	0.62	0.65
Q6_55_4	I am comfortable talking to teachers at this school.	1.0	0.58	0.58
Q6_55_5	I can be a success at this school.	0.5	0.71	0.76
Q6_55_6	It pays to follow the rules at my school.	0.5	0.56	0.64
Q6_55_7	My schoolwork helps in things that I do outside of school.	1.0	0.67	0.62

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Q6_55_8	I can reach my goals through this school.	1.4	0.69	0.69
Q6_55_9	Adults at this school listen to students’ concerns.	0.7	0.59	0.59
Q6_55_10	Adults act on students’ concerns.	1.9	0.52	0.57
Q6_55_11	The principal at this school asks students about their ideas.	1.9	0.34	0.32
Q6_55_12	I have many opportunities to make decisions at my school.	1.9	0.54	0.53
Q6_55_13	The rules at my school are fair.	1.0	0.65	0.67
Q6_55_14	We do not waste time in my classes.	1.2	0.30	0.37
Q6_55_15	Students of all racial and ethnic groups are respected at my school.	2.6	0.54	0.58
Q6_55_16	When students have an emergency, someone is there to help.	0.7	0.64	0.60
English Fluency and Literacy (Control Variable)				
Q5_43_1	How well do you speak English?	0.2	0.67	0.80
Q5_43_2	How well do you understand English?	0.9	0.83	0.77
Q5_43_3	How well do you read and write in English?	2.8	0.81	0.89
Observed Control Variables				
Boy		0.2	-	-
English Learner Status		1.8	-	-
Born in the US		0.2	-	-
5 th Grade		0.0	-	-
4 th Grade		0.0	-	-