

MEASURING PARENT-TEACHER EXPECTATION CONGRUENCE AND EXAMINING  
STUDENT OUTCOMES

by

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(Under the Direction of Amy L. Reschly)

ABSTRACT

The current study explores the construct of congruence, specifically with regard to school-family collaboration and partnerships. Chapter 1 serves as an introduction and review of the literature pertinent to this area of research. In Chapter 2, authors define congruence, discuss its role in creating and maintaining effective school-family partnerships, and critically review common approaches to measuring congruence and similar constructs. Although the evidence presented illuminates the methodological challenges inherent in congruence research and measurement, and the most commonly used methods to date suffer from substantial shortcomings, several modern approaches are discussed which offer promise for researchers interested in congruence. Applying the information presented and conclusions reached in Chapter 2, Chapter 3 presents an empirical examination of the impact of parent and teacher expectations and congruence in expectations on student achievement and other outcomes, using data from the Educational Longitudinal Study of 2002 (ELS:2002). As expected, parent and teacher expectations were significant predictors of student achievement and future outcomes, whereas findings related to congruence yielded mixed results. Finally, authors review conclusions from both studies in Chapter 4, along with implications for families, practitioners,

and researchers. In addition, limitations of the studies presented here are discussed and directions for future research are presented.

**INDEX WORDS:** congruence, school-family partnerships, academic achievement, congruence measurement, parent and teacher expectations

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## CHAPTER 1

### INTRODUCTION AND LITERATURE REVIEW

With the enactment of federal initiatives like the No Child Left Behind Act, the push toward increased student achievement, high-quality teaching, and school accountability have become more evident than ever (Epstein, 2005). Furthermore, these goals implicate the need for establishing a strong evidence base supporting effective educational interventions involving parent involvement and, more importantly, school-family collaboration (Beretvas, Keith, & Carlson, 2010). While the argument has been made in recent literature that school-family partnerships, in particular, play a critical role in optimizing student outcomes (e.g., Christenson, 2004; Christenson & Sheridan, 2001; Patrikakou, Weisberg, Redding, & Walberg, 2005; Pianta & Walsh, 1996; Reschly & Christenson, 2009; Webster-Stratton & Ried, 2010), we continue to have significant limitations to our knowledge base regarding the processes involved in establishing and maintaining effective school-family partnerships, particularly considering the diverse nature of our population (Beretvas et al., 2010; Downer & Myers, 2010).

Although several studies have yielded promising empirical results related to positive outcomes to be gleaned from educational interventions involving a school-family collaboration component (Cox, 2005; Colton & Sheridan, 1998; Guli, 2005; Ollendick, 2005; Scribner, Young & Pedroza, 1999; Sheridan, Clarke, Knoche & Edwards, 2006; Sheridan, Eagle, Cowan & Mikelson, 2001; Sheridan, Eagle, & Doll, 2006; Sheridan, Kratochwill, & Elliott, 1990; Weiner, Sheridan, & Jenson, 1998), theoretical arguments for the importance of such partnerships currently account for the vast majority of the literature in this area. At present, there is a general consensus between educational researchers and practitioners that *partnerships* between schools

and families should be the focus of future research endeavors, in lieu of investigating parent or family involvement alone. According to several researchers, partnerships refer to a specific type of relationship between home and school which is characterized by shared goals and responsibility, two-way communication and collaborative problem solving, and joint decision-making (e.g., Fantuzzo, Tighe, & Childs, 2000; Reschly & Christenson, 2009). Furthermore, these partnerships should maintain a student-focused philosophy and be preventative and solution-oriented (Christenson & Sheridan, 2001). Pianta and Walsh (1996) also argued that school-family partnerships play a key role in ameliorating student risk by providing consistent messages to students about the importance of school and the expectations for success.

With school-family partnership importance so well established by theoretical postulation, researchers increasingly call for empirical studies to investigate this phenomenon. More specifically, now that theoretical research has adequately dealt with the question of *why* involve families, the task at hand is to examine the more process-oriented question of *how* school-family partnerships can be established and maintained in order to effectively facilitate positive student outcomes. It is important to note, however, that in the course of endeavoring to conduct this type of research, investigators have encountered several challenges and limitations, mostly regarding insufficient methodological rigor (e.g., unreliable/invalid measures, failure to isolate component effects, lack of replication or follow-up) (Bates, 2005; Fishel & Ramirez, 2005; Guli, 2005; Hoard & Shepard, 2005; Valdez, Carlson, & Zanger, 2005; etc.). In addition, past research has expressed the need for better measurement of partnership characteristics and research designs that allow for testing of indirect and mediational relations among proximal inputs (Beretvas et al., 2010).

Congruence has emerged as a construct central to the creation and maintenance of school-family partnerships (e.g., Christenson, 2004; Christenson & Anderson, 2002; Christenson & Sheridan, 2001; Clarke, Sheridan, & Woods, 2010; Lohman & Matjasko, 2010; Pianta & Walsh, 1996, 1998; Reschly & Christenson, 2009; Speara & Matto, 2007; Webster-Stratton & Reid, 2010). Clarke and colleagues (2010) described congruence as continuity or a common approach across home and school, stressing this as an underlying principle of healthy school-family partnerships. In addition, incongruence has been cited as one of the leading contributors to the level of child risk (Pianta & Walsh, 1996, 1998; Phelan, Davidson, & Yu, 1998).

While some researchers have found positive effects such as achievement gains when home and school environments are congruent (e.g., Hansen, 1986; Peet, Powell, & O'Donnel, 1997), in order to support the hypothesis that congruence plays a vital role in maintaining effective school-family partnerships, additional empirical research on this construct must be done. However, one major challenge involved in congruence research is measurement of the construct. Approaches to measuring congruence have not been adequately examined and evaluated, particularly in the context of school-family connections. While several similar constructs (e.g., person-environment fit, agreement, correlation) are commonly explored throughout the empirical literature in other research areas (e.g., vocational psychology, goodness of fit), it is not clear whether these techniques will translate to measuring school-family congruence in certain areas. In order for researchers interested in school-family partnerships to make the advances necessary to optimize student outcomes, attention needs to be paid to developing sound methods for measuring congruence in various aspects of these two environments.

### **Purpose of the Study**

The purpose of the present study is to explore the construct of congruence, particularly with regard to school-family collaboration and partnerships. First, Chapter 2 will provide an in-depth review of the empirical and theoretical literature supporting a shift in focus from encouraging family involvement to creating effective school-family *partnerships*, followed by an investigation into the construct of congruence and methodological challenges it presents. Based on the information presented in Chapter 2, Chapter 3 will empirically investigate the concept of congruence in parent and teacher expectations as it relates to various outcomes for students, using advanced statistical techniques to address methodological issues common to previous similar investigations. Finally, in Chapter 4 authors present conclusions and implications for families, practitioners, and researchers.

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## CHAPTER 2

### EXAMINING CONGRUENCE WITHIN SCHOOL-FAMILY PARTNERSHIPS: DEFINITION, IMPORTANCE, AND CURRENT MEASUREMENT APPROACHES<sup>1</sup>

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### **Abstract**

The purpose of this paper was to explore the construct of congruence, particularly with regard to school-family collaboration and partnerships. An in-depth review of the empirical and theoretical literature supporting a shift in focus from encouraging family involvement to creating effective school-family *partnerships* is presented, followed by an investigation into the construct of congruence and methodological challenges it presents. Authors define congruence, discuss its role in creating and maintaining effective school-family partnerships, and critically review common approaches to measuring congruence and similar constructs. Implications for researchers and practitioners are discussed.

Within educational research, there has, for many years, been a growing interest in the impact that families and schools have on student performance. Spurred by the seminal work of Bronfenbrenner (1977, 1986), ecological systems theory has become a commonly used lens through which to view and explore students and their development over time (e.g., Tudge & Hogan, 2005). This theory details children and adolescents' development within a set of interrelated, interacting environmental systems (e.g., home, school, community). However, while much of the educational research rooted in systems theory has focused on protective factors embedded within *either* the home or school environments (e.g., Bates, 2005; Fan & Chen, 2001; Ginsburg-Block, Manz, & McWayne, 2010; Guli, 2005; Reynolds & Clements, 2005; Valdez, Carlson, & Zanger, 2005), recent literature suggests that this approach is flawed. That is, in lieu of simply aiming to improve family involvement in students' education, researchers are increasingly highlighting the need for development of *collaborative* school-family partnerships, which are believed to be essential to promoting positive outcomes for students (Bempechat, 1998; Christenson & Reschly, 2010; Christenson & Sheridan, 2001; Patrikakou, Weisberg, Redding, & Walberg, 2005; Pianta & Walsh 1996; etc.).

### **Students in Context: The Importance of School-Family Partnerships and Collaboration**

The importance of family involvement in education has been well established in the literature. Furthermore, emphasis on family inclusion and outreach by schools has also been evidenced by calls for reform to assessment and intervention practices (Gutkin, 2009; Reschly, Coolong-Chaffin, Christenson, & Gutkin, 2007; Sheridan & Gutkin, 2000; Ysseldyke & Christenson, 2002), as well as federal legislation that has reinforced the rights and need for family presence and participation in schools (i.e., No Child Left Behind; Epstein, 2005). However, rather than focusing on families and schools as separate contributors with separate

responsibilities, scholars are increasingly emphasizing the consideration of school-family partnership components as integral parts of the learning environment (e.g., Christenson, 2004; Henderson & Mapp, 2002; Ysseldyke & Christenson, 2002), while also claiming their particular significance as protective factors for children at risk of academic failure (Christenson & Sheridan, 2001; Pianta & Walsh, 1996, 1998).

Before proceeding with a review of literature in this area, it is imperative to clearly define the terminology involved. Most importantly, there must be a clear understanding of the difference between school-family *relationships* and school-family *partnerships*. *Relationships* between schools and families refer to the connection between these two learning contexts and the reciprocal interactions among them over time, which represent a separate social system that plays an important role in optimizing student achievement (Christenson & Anderson, 2002; Reschly & Christenson, 2009). While relationships always exist, simply as a function of the connection between families and schools (Pianta & Walsh, 1996), *partnerships* refer to a specific type of relationship that researchers urge all schools and families to strive for (e.g., Christenson & Anderson, 2002; Christenson, 2004; Reschly & Christenson, 2009); one characterized by collaboration and joint ownership of responsibilities and accountability for outcomes (Reschly & Christenson, 2012).

Within the extensive theoretical literature base that promotes partnerships between schools and families, several characteristics have consistently been posited as being inherent to creating these successful partnerships. Reschly and Christenson (2009) argued that partnerships imply *engaged* relationships between families and schools; that is, relationships consisting of two-way communication about children's academic needs, collaborative problem-solving, and shared decision-making, all with the focus of supporting students and families in order to

optimize educational outcomes. Other researchers have highlighted the need for shared goals, contributions, and accountability within these partnerships (Fantuzzo, Tighe, & Childs, 2000). In addition to agreeing with the need for a student-focused philosophy and shared responsibility for outcomes, Christenson and Sheridan (2001) also suggest an emphasis on the *quality* of interactions between families and schools, as well as a preventative, solution-focused approach in which families and educators work to create conditions that facilitate student learning, engagement and development.

Throughout the literature, authors have also discussed the specific influence of school-family partnerships in reducing the level of academic, behavioral, and emotional risk for students throughout their development (Stormshak, Dishion, & Falkenstein, 2010; Webster-Stratton & Reid, 2010). Risk is typically defined as particular conditions (i.e., risk factors) which increase the likelihood that an individual will experience certain adverse consequences, and rather than being viewed as a property of children themselves, risk is more contemporarily thought to exist in interactions among the multiple systems surrounding children (Finn & Rock, 1997; Pianta & Walsh, 1996, 1998). Furthermore, conceptualizing risk from an ecological systems theory perspective, researchers have cited the quality of school-family partnerships as a primary contributing factor to the level of child risk (Pianta & Walsh, 1996). As Reschly and Christenson (2009) stated:

“...for students and families who are at higher risk for poor outcomes (e.g., those living in poverty, students with disabilities), the mesosystem of home and school takes on greater importance as a factor that either exacerbates these risk conditions or ameliorates them by promoting additional learning opportunities aimed at enhancing positive outcomes for youth.” (p. 9)

While it seems most authors agree on the *theoretical* necessity and importance of collaboration, interaction, and continuity in creating and maintaining effective school-family partnerships and improving student outcomes (e.g., Christenson, 2004; Clarke, Sheridan & Woods, 2010; Downer & Myers, 2010; Hoover-Dempsey, Whitaker, & Ice, 2010), little empirical research has been done to explore the impact these or other characteristics actually have on student success. The shift in focus from microsystemic influences (e.g., home *or* school) to the mesosystemic influences of a successful school-family partnership has led to consensus that additional research is needed. While numerous investigations exist reporting significant correlations between parent involvement indicators (e.g., home-school communication, parental aspirations, participation in school activities) and student success (e.g., Fan & Chen, 2001; Ginsburg-Block et al., 2010; Reynolds & Clements, 2005), and demonstrating the positive influence of parent/family components in interventions aimed at changing student learning and behavior (Bates, 2005; Guli, 2005; Valdez et al., 2005), less research has been done investigating the mesosystemic, reciprocal interactions that characterize school-family relationships or partnerships.

Many of the empirical studies which have been done specifically investigating these variables were reviewed by the Parent and Family Intervention domain of the Evidence-Based Interventions in School Psychology Task Force (formerly called the Task Force on Empirically-Supported Interventions in School Psychology) and presented in a special issue of *School Psychology Quarterly* (2005). The purpose of the Task Force was to examine the degree to which scientifically based research has found that parent and family interventions were effective in changing children's school learning and behavior (Carlson & Christenson, 2005). Within the investigations presented, a number of interventions with a family-school collaborative



component were found to be promising. In his commentary, Ollendick (2005) noted that more support was found for interventions that were highly focused in scope, were part of a multi-component program, and involved *active collaboration* between parents, students, and schools. For example, in a review of 18 empirical studies conducted by Cox (2005), home-school collaboration interventions were found to be effective in helping achieve desired outcomes for students (e.g., improved academic performance and school-related behavior), specifically when parents and school personnel worked together to implement the intervention with regular two-way exchange of information. Cox noted that a key feature found in the most successful interventions among those reviewed was that schools and families not only collaborated with one another, but treated each other *as equals*, causing families to feel “more empowered to help their children and more comfortable participating in their child’s education.” (emphasis added; Cox, 2005, p. 491).

Additional studies have reported similar findings with regard to school-family partnerships and positive student outcomes. For example, in a study investigating eight Texas schools in which Hispanic students consistently achieved beyond state averages, Scribner, Young, and Pedroza (1999) found that a focus on building collaborative relationships (e.g., learning about and incorporating Hispanic cultural values, stressing personal contact with parents, fostering communication, and creating a welcoming environment) was the key factor differentiating these schools from surrounding schools that were lower achieving. In addition, Simon (2000; as cited in Henderson & Mapp, 2002), found that partnerships between families and schools, which included involvement in parenting, learning at home, and decision-making, were related to several indicators of achievement (i.e., higher grades in English and math, more completed course credits, better attendance and behavior, and increased preparedness for class).

Furthermore, research examining consultation approaches and their effect on student outcomes has found evidence for the utility of involving parents *and* teachers in the consultation process. For example, among the various parent consultation strategies investigated in Guli's (2005) review of the literature, the Conjoint Behavioral Consultation (CBC) model (Sheridan & Kratochwill, 2007), involving consultation with parents *and* teachers, provided the strongest evidence for producing significant school-related outcomes. This finding is consistent with other published reviews which found that consultation services involving families, educators, and school psychologists in joint problem solving are effective in improving students' academic, social, and behavioral functioning and are viewed as favorable by participants in the process (Sheridan, Eagle, Cowan, & Mikelson, 2001; Sheridan, Eagle, & Doll, 2006). Additionally, experimental studies have reported positive effects of CBC as an intervention for increasing positive social behaviors of withdrawn or disruptive children, increasing homework completion and accuracy, and decreasing noncompliance and tantrum behaviors (Colton & Sheridan, 1998; Sheridan, Clarke, Knoche, & Edwards, 2006; Sheridan, Kratochwill, & Elliott, 1990; Weiner, Sheridan, & Jenson, 1998).

As evidenced by the above studies, the influence of and rationale for schools partnering with families is well established, and scholars are increasingly calling for a shift in research focus from the question of "why" to more process related questions of "how" and "what works" (Reschly & Christenson, 2009). In order to make this shift, researchers must both determine which process variables warrant investigation and develop approaches to empirically examine such constructs. Along these lines, the current paper adds to the process-oriented literature base by focusing on the concept of congruence and its development through the school-family partnership process. Authors endeavor to clearly define school-family congruence, discuss its

importance in achieving student success, and most importantly, address the challenges involved in research and measurement of the concept in more detail.

### **Congruence: Defining the Construct**

As previously mentioned, the success of school-family partnerships is thought to be dependent on the level of *congruence* between these environments (Bempechat, 1998; Christenson, 2004; Christenson & Anderson, 2002; Christenson & Sheridan, 2001; Clarke et al., 2010; Lohman & Matjasko, 2010; Webster-Stratton & Reid, 2010; etc.). When investigating this construct, however, it is important to first adequately define what we are examining. The construct of congruence is not a new one, but rather is central to many different areas of theoretical literature and empirical research. For example, in vocational psychology and related areas of research the term “congruence” is sometimes used interchangeably with “fit,” and typically refers to value congruence or person-environment fit (i.e., alignment between employee values and interests and the characteristics of the organization provided in the form of culture, structure, and support), a concept that is hypothesized to influence a wide variety of psychological phenomena including satisfaction, motivation, engagement, commitment to organization, turnover intention, and personality consistency (Dik & Hansen, 2011; Donahue, 2006; Eccles & Wang, 2012; Hinkle & Choi, 2009; Roberts & Robins, 2004; Whiting, Kine, & Sulsky, 2008; etc.). Similarly, congruence is also discussed throughout the literature related to “goodness of fit,” a model most often associated with child temperament theory and investigations of parent-child interactions, which posits that adaptation results from congruence or match between child characteristics and environmental demands (Churchill, 2003; Lagace-Seguin & Coplan, 2005; Talwar, Nitz, & Lerner, 1990; Thomas & Chess, 1977; etc.). “Agreement” is also a term that is often used interchangeably with “congruence,” and it typically

refers to similarity in ratings or reports of various characteristics (Devine, Wasserman, Gerhenson, Holmbeck, & Essner, 2011; Human & Biesanz, 2011; Jakobsson & Westergren, 2005; LeBreton & Senter, 2008; etc.).

For the purposes of this review, authors are interested in the construct of congruence as it relates to school-family relationships and collaboration, and thus have adopted Clarke and colleagues (2010) definition of “congruence” as the continuity or common approach among home and school contexts. Using this definition, authors discuss what bearing congruence has on student outcomes, what can be done to facilitate higher levels of congruence, and how levels of congruence should be measured. Below is a review of the theoretical and empirical literature supporting the importance of school-family congruence, followed by a detailed discussion of ways researchers have attempted to measure this and similar constructs.

### **Theoretical and Empirical Support for School-Family Congruence**

Within the research that exists supporting the importance of home and school environments in the lives of students, the topic of congruence is often discussed, typically from a theoretical perspective. Numerous authors have cited congruence between these environments as an integral variable in facilitating student success and an important outcome of the previously discussed school-family collaboration process (Christenson, 2004; Christenson & Anderson, 2002; Finn & Rock, 1997; Reschly & Christenson, 2009, etc.). For example, regarding the socialization process in general, Speara and Matto (2007) proposed a contextual-congruence model which focuses on the degree of congruence among socializing agents as key for healthy child development (e.g., the level of match or similarity between values, goals, expectations, and aspirations advocated for and acted upon by stakeholders across different contexts in a child’s life). They posited that children who experience higher levels of congruence across social

contexts will be more likely to behaviorally and socially commit to those social contexts. Additionally, Clarke and colleagues (2010) named *continuity* as one of three principles underlying positive and successful school-family partnerships. They emphasized that, over time, common and shared (congruent) approaches across home and school promote reliable and consistent learning opportunities. Furthermore, developing this continuity requires the establishment of consistent goals, the communication of common messages about the value of education, and the consistent demonstration of practices that exemplify a strong family-school connection. These areas of emphasis are consistent with earlier research findings of Christenson and Peterson (1998) who, through a review of over 200 studies on school, family, or community influences, concluded that students perform optimally when they experience congruence in the following 6 factors: 1) standards and expectations, 2) structure, 3) opportunity to learn, 4) support, 5) climate/relationships, and 6) modeling.

As previously mentioned, the construct of congruence is also discussed at length among authors investigating at-risk populations. For example, Pianta and Walsh (1996, 1998) identified congruence in messages provided by home and school environments as a contributing factor to maintaining low levels of risk for poor student outcomes. They also discussed the specific impact that incongruence can have on children, stating that children who receive conflicting or incongruent messages from their home and school with regard to the importance of learning will likely derive meaning from these messages resulting in conflicting emotions, motivations, or goals. Phelan, Davidson, and Yu (1998) echoed that concern, explaining that while all adolescents experience psychosocial pressures, those who experience discontinuity among home, school, and peer systems have the most difficulty making transitions among different contexts and are at greatest risk for poor school performance or mental health concerns.

The hypothesis that congruence or continuity among the home and school learning contexts is a necessity for positive student outcomes is not a new one, and some research supports this theory. For example, Hess and Holloway (1984) found that a consensus among home and school pertaining to the goals of education was essential to counter information from competing sources (e.g., media, peers), and discontinuities between families and schools compromised parents' and teachers' effectiveness as socializing agents. In addition, in a 1986 study, Hansen found positive achievement gains from third grade to fifth grade for students who experienced congruence in rules and interaction styles among home and school environments. Peet, Powell, and O'Donnel (1997) also found support for the influence of congruence in mother-teacher perception of child competence and school engagement; that is, children of mother-teacher dyads who were more congruent in terms of these perceptions had significantly higher grade point averages than did the children of mother-teacher dyads who were less congruent. Despite the positive evidence presented here, this field of research remains far more advanced theoretically than empirically, and additional research is needed to adequately tie theory to practice.

### **Measuring Congruence: A Comparison of Commonly Used Methods**

One major obstacle to be overcome in order to further investigate the concept of congruence as it relates to school-family partnerships is that of measurement. While many different approaches have been used to measure congruence and other similar constructs (e.g., agreement and fit), to date, no comprehensive review of these methods has been conducted. Furthermore, most relevant measurement approaches have never been specifically applied to the definition of congruence outlined above, leaving educational researchers interested in the topic of school-family congruence with little methodological guidance for measuring such a construct.

It is important to note, too, that these issues primarily come into play when attempting to measure *actual* congruence rather than *perceived* congruence. While perceptions of congruence arguably play a significant role in several of the areas of study mentioned above, measurement of these poses less of a problem, as they are often determined through questionnaire items (e.g., “my values are generally compatible with...” or “...to what extent are the values of your department similar to your own values”) (Fleck & Quester, 2007; Lamm, Gordon, & Purser, 2010; Posner, 2010; Wright & Pandey, 2008; etc.). The current review focuses on sorting out the more convoluted measurement of *actual* congruence, typically done by collecting self-report data regarding multiple parties’ views, opinions, values, practices etc. and comparing one party’s data to another in some way. While this paper does not focus on the measurement of components of congruence specifically, it warrants mentioning that researchers are urged to ensure that the various component measures involved in quantifying congruence possess sound psychometric properties. In addition, certain precautions should be taken to lessen confounds common to these data (e.g., social bias, favorable reporting, etc.), such as de-identifying respondent information. Following is a discussion of several commonly employed methods for measuring congruence and other similar constructs along with their respective advantages, disadvantages, and arguments for or against use in the research on school-family partnerships.

### **Historical Methods of Congruence Measurement**

We begin our comparison by discussing some of the more rudimentary approaches to congruence measurement. As with any construct, early approaches to measurement tended to be more methodologically flawed than those developed later; however the following approaches warrant mentioning due to either their popularity of use within the various fields of congruence-

related research or their promise as potential bases for development of improved statistical approaches.

**Difference scores.** One common way researchers attempt to measure congruence, agreement, or fit is by using difference scores (Amos & Weathington, 2008; Constantino, Malgady, & Primavera, 2009; Church, 1997; Peet et al., 1997; Talwar et al., 1990; Ton & Hansen, 2001; Vancouver, Millsap, & Peters, 1994; Warr & Bourne, 1999; etc). Most often this is done by asking respondent dyads (e.g., schools and families, parents and children, employers and employees) to answer the same questionnaire item or items, and based on numerical codes of their respective answer or answers (e.g., values assigned to individual responses, scale index scores, mean response values, *D* statistic), a difference score is determined. The resulting value is taken to indicate the level of congruence between different respondents or response points of view (e.g., perceived versus actual), with higher difference scores, indicating lower levels of congruence and vice versa. Researchers may also group such scores into broader categories for the purposes of comparison or analysis of group differences (e.g., Helms, Walls, Crouter, & McHale, 2010).

Although the use of difference scores is widespread in research investigating congruence and similar constructs (Edwards & Parry, 1993), most likely due to the ease with which they are calculated and their seemingly accurate representation of similarity between two constructs or responses, numerous substantive and methodological problems exist with these indices (Edwards, 1994, 2001). Noted disadvantages include, but are not limited to, low reliability of difference scores compared to that of their component measures, misrepresentation of the relative contributions of each individual component score to relationships being investigated, and difficulty with interpretation when component scores exhibit unequal variance or direction of



congruence/incongruence is skewed. Furthermore, when authors elect to subdivide continuous variables (e.g., individual ratings, overall index scores, calculated difference scores) into categories for the purposes of group comparison or analyses, this can result in a loss of important information, explained variance, and statistical power (Cheung, 2009; Edwards, 1994, 2001). Overall, the disadvantages and methodological flaws associated with the calculation and interpretation of difference scores make them a less than optimal choice for measuring home-school congruence.

**Correlation and agreement statistics.** When investigating inter-rater reliability or agreement specifically, correlation coefficients (e.g., Pearson's  $r$ , Spearman's  $\rho$ , intra-class correlation coefficients) and kappa statistics (Cohen's  $\kappa$ ) have been widely accepted as methods of measurement. It is important to distinguish between these two types of statistics, however, when considering them as methods for measuring congruence as authors have defined it here. While most correlation coefficients including Pearson's  $r$  or Spearman's  $\rho$  are widely applied to measure agreement in ratings (Allen & Robbins, 2010; Kalyva, 2010; Knafo & Schwartz, 2004; Morton & Markey, 2009; Suar & Khuntia, 2010; Warr & Bourne, 1999; etc.), they are actually measures of *association* and do not satisfactorily measure agreement (Jakobsson & Westergren, 2005; LeBreton & Senter, 2008). Specifically, when one observer consistently provides higher ratings than another, these responses would result in high correlation based on their pattern of association, despite the low level of agreement (Jakobsson & Westergren, 2005). Intraclass correlation coefficients (ICCs) are an exception to this limitation, however, as they provide information about the level of association *and* agreement between ratings (Churchill, 2003; LeBreton & Senter, 2008; Salbach-Andrae, Klinkowski, Lenz, & Lehmkuhl, 2009; Speyer, Herbinet, Vuillemin, Chastagner, & Briancon, 2009; etc.). Kappa statistics have also been used

when authors are specifically interested in the level of agreement observed, given the level of agreement expected by chance (e.g., Thompson, Liu, Hays, Katon, Rausch, Diaz, Jacob, Vassar, & Vickrey, 2011). Furthermore, a weighted kappa statistic can be calculated when dealing with ordinal data and the *magnitude* of disagreement is of interest, as well (Jakobsson & Westergren, 2005), as is often the case when measuring congruence between family and school characteristics. However, it is important to note that the determination of weights is somewhat subjective, and thus comparison between studies that use weighted  $\kappa$  can be more difficult than those that use ICCs.

When considering these statistics' utility in school-family partnership research, a strong argument can be made for the use of Cohen's  $\kappa$  or an intraclass correlation coefficient, based on the information they can provide regarding similarity or difference in respondent reports. However, they do not provide significant advances in terms of overcoming the methodological flaws of difference scores discussed above, besides potentially being based on sounder component measures, involving more statistically complex calculation procedures, and maintaining continuous scales of measurement. By using these as measures of agreement or congruence, investigators are still collapsing component measures into one statistic, and thus risk losing or overlooking valuable information.

**Holland-type congruence.** Within the field of vocational psychology, one of the most commonly researched and cited theories of person-environment fit is Holland's (1959) theory of choice. According to this theory, individuals' personalities and work environments can be categorized based on six vocational types – Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Furthermore, congruence between individuals' interests and environments has a strong impact on work-related outcomes (Dik & Hansen, 2011;

Holland, Sorenson, Clark, Nafzinger, & Blum, 1973; Wolniak & Pascarella, 2005), while high levels of incongruence may predict career choice or change (Dik, Strife, & Hansen, 2010; Donahue, 2006). Holland-type measures of congruence have been widely employed, most typically in studies investigating the impact of person-environment fit on job satisfaction and career persistence (e.g., Dik & Hansen, 2011; Dik et al., 2010; Donahue, 2006; Hoeglund & Hansen, 1999; Ishitani, 2010; Miller, 2008; Wolniak & Pascarella, 2005). Others have used this theory as a basis for examining personality type congruence and therapeutic outcomes (Taber, Leibert, & Agaskar, 2011; Zanskas & Strohmer, 2010) or interest-major congruence and its influence on timely degree attainment (Allen & Robbins, 2010).

According to Holland's (1959) theory, one's personality and work environment are best represented by the vocational type scale or scales (i.e., RIASEC) on which they have the highest scale score. Furthermore, each scale represents a point on a hexagon, with points nearest to each other being more similar than those farther apart (Holland, 1997). Different approaches to measuring Holland-type congruence take into account different numbers of salient scales in determining similarity between personality and environmental rankings. For example, early indices involved the use of first-letter agreement to represent the level of congruence between an individual's personality and environment (Hoeglund & Hansen, 1999; Ishitani, 2010; Wolniak & Pascarella, 2005), while more recently developed indices (i.e., the M index, the K-P index, and the C index) involve consideration of the three highest or most salient scale scores (Brown & Gore, 1994; Iachan, 1984; Kwak & Pulvino, 1982). The most widely used index of Holland-type congruence in recent years has been Brown and Gore's (1994) C Index, which takes into account the three most salient scale scores and determines congruence based on the similarity between each personality scale and the corresponding same-ranked environmental scale (Dik et al., 2010;

Donahue, 2006; Miller, 2008; Taber et al., 2011). This approach has been deemed advantageous due largely to the ease with which the C Index is calculated (Miller, 2008), but also because of its adaptability to measuring congruence between scale profiles of different lengths (Eggerth & Andrew, 2006).

While several of the aforementioned indices enjoy empirical support as valid measures of Holland-type, and for that reason they warrant mention in a comparison of methodological approaches to congruence measurement, it is important to note that they are limited in their use, as they were all developed specifically for use with Holland's personality and environment scales. Although, as mentioned above, the C Index was later adapted for use with different interest and occupational ranking systems (i.e., Strong Interest Inventory and Occupational Information Network; Eggerth & Andrew, 2006), it still requires the use of Holland's hexagonal model (i.e., RIASEC scales) to determine distance scores. As such, significant adjustments would have to be made to adapt these indices for use in school-family congruence research (e.g., creation of a hexagonal model relevant to school and family characteristics or factors). It is possible that Holland's model can be applied to compare school and family characteristics or views, but further research must be done before this can be definitively determined.

### **Modern Methods of Congruence Measurement**

The approaches to measuring congruence discussed to this point are all computed by collapsing two or more component measures into a single index. As such, these indices tend to be inherently ambiguous while also confounding the effects of their constituent components and implying a set of constraints that are rarely tested (Edwards, 1994, 2001), calling for more modern approaches which utilize complex statistical procedures in order to more accurately represent the relationships being measured. Below, authors discuss three general statistical

approaches which hold several advantages over measurement techniques addressed above. Each approach is explained in detail and advantages and disadvantages are presented.

**Polynomial regression.** Polynomial regression is one example of a proposed alternative to using difference scores in organizational research (Edwards, 1994, 2001; Edwards & Parry, 1993). This approach involves the use of regression equations containing component measures composing the congruence term as well as certain higher-order terms (e.g., squares of both component measures and their product). Proposed by Edwards (1994), the general polynomial regression procedure is guided by three principles. First, Edwards argued that the relationship between congruence and an outcome should be considered in three dimensions (i.e., each component variable along with an outcome variable), rather than two (i.e., congruence index and outcome variable). Because the two components represent distinct constructs (e.g., employee preferences and job characteristics, or parent and teacher ratings), collapsing them, as mentioned before, only serves to introduce significant methodological problems. Second, for the reasons given above, relationships between congruence and an outcome should be viewed as a three-dimensional response surface rather than a two-dimensional function, and it is these surfaces that should constitute the focus of data analysis and interpretation (see Figure 1). Third, constraints implied by congruence indices should not simply be imposed on the data without explicit testing. Rather, these constraints should be viewed as a set of hypotheses that, if confirmed, lend support to the conceptual model or theory on which the index is based.

The procedure for the polynomial regression approach (Edwards, 1994) to measuring congruence is as follows. First, it is assumed that the component measures involved express both components in terms of the same content dimension and share the same scale of measurement (e.g., identical questionnaires given to parents and teachers, or employees and

employers). This assumption must be met in order to meaningfully interpret the results. Next, one or more conceptual models of congruence are chosen and corresponding regression equations are developed. These models may include up to five factors (i.e., first component term, second component term, first component term squared, second component term squared, and/or the product of the first and second component terms), allowing examiners to test virtually any functional form of agreement, while avoiding problems associated with commonly used agreement indices (Atwater, Ostroff, Yammarino, & Fleenor, 1998). After an appropriate equation or multiple equations are identified, tests to evaluate the model(s) of interest are conducted. These should establish that the overall proportion of variance explained is significant, determine significance of appropriate coefficients in the right directions, and confirm that implied constraints are valid and no higher-order terms are significant beyond those indicated in the model (Edwards, 1994). In addition, as previously mentioned, Edwards recommends constructing three-dimensional surface plots of the raw data as well as those estimated by the model(s) of interest, allowing for further examination of the precise nature of congruence relationships (Atwater et al., 1998; Kristof-Brown & Stevens, 2001). It should also be noted that Edwards's approach may be done in an exploratory manner, if no model can be determined a priori (e.g., Shipper, Kincaid, Rotondo, & Hoffman, 2003; Myers, Droge, & Cheung, 2007)

To elaborate, consider a study in which researchers venture to examine the effect of congruence in parent and teacher aspirations for students on academic achievement. Assuming that measures used to indicate components (i.e., parent aspirations, teacher aspirations) are sound and use the same numeric scale, researchers would use those to create three new variables: the square of parent aspirations rating, the square of teacher aspirations rating, and the cross-product

of the parent and teacher aspiration ratings. Researchers would then run the polynomial regression by running a model including each component along with the three new variables. Researchers would use these results to determine whether the proportion of variance in academic achievement explained by the model is significant, to plot a three-dimensional response surface, calculated certain significant surface values (i.e., slope of perfect agreement line, slope of incongruence line, and the curvature of each line). In this example, researchers would use this information to interpret how agreement in parent and teacher aspirations relates to the achievement, how the degree of disagreement in aspirations relates to the achievement, and how the direction of disagreement in aspirations relates to achievement.

This approach has been employed in numerous studies of congruence (e.g., Atwater et al., 1998; Bashshur, Hernandez, & Gonzalez-Roma, 2011; Bono & Colbert, 2005; Gentry & Sosik, 2010; Johnson & Ferstl, 1999; Kristof-Brown & Stevens, 2001; Kalliath, Bluedorn, & Strube, 1999; Meyer, Hecht, Gill, & Toplonysky, 2010; Vecchio & Anderson, 2009) and is often cited as advantageous due to the fact that polynomial regression equations avoid many of the problems with difference scores while still permitting the direct investigation of relationships difference scores are intended to represent (Edwards, 1994). More specifically, it retains interpretability of original component measures by providing separate estimates of relationships between individual components and the outcome variable while also providing a complete test of models underlying congruence indices. Using this approach in the area of home-school congruence research, for example, investigators would presumably be able to explore the overall magnitude of relationships between congruence in home and school factors and various student outcomes, as well as the roles played by home and school factors individually.

However, the polynomial regression approach is not without its disadvantages or limitations. First, similar to other approaches discussed above, polynomial regression assumes variables are measured without error (Edwards, 1994). When this assumption is violated, as is most often the case, resulting coefficient estimates are often biased leading to inaccurate representations of relationships between variables. Edwards argued, however, that focus should be placed on creating more reliable measures prior to data analysis, rather than attempting to compensate for measurement error at later stages. Another limitation of the current procedure is that, despite requiring measurement equivalence, no simple way to test for this assumption is provided (Cheung, 2009). It is also important to note that the current procedure has generally been employed in cases involving congruence as an independent variable and offers no solution to the methodological issues associated with studies that have attempted to use congruence as an outcome measure. The main claim against polynomial regression, however, is that its complexity relative to other methods for assessing congruence is likely to lead to interpretation and inference difficulties and misconceptions (Cohen, Nahum-Shani, & Doveh, 2010). Although attempts have been made to clarify the inference methods involved in this approach (Cohen et al., 2010; Edwards, 2001), it remains a difficult technique to apply and interpret accurately. Furthermore, applications with moderators become even more highly complex and difficult to interpret, and little research attention has been given to exploring the application of multilevel polynomial regression (Cohen et al., 2010).

**Structural equation modeling and the latent congruence model approach.** Structural equation modeling (SEM) is another approach that may be applied to measurement of congruence (Cheung, 2009, 2009b; Edwards, 2009), while also offering a general framework that allows for testing of multiple possible causes on multiple possible effects, as is typically the aim



in much of the research on school-family connections (Beretvas, Keith, & Carlson, 2010). Often referred to as path analysis, SEM permits the consideration of not only the effects of variables on outcomes, but also the effects of variables on each other, making it ideal for testing for possible mediating and moderating factors. SEM also allows for latent variable modeling, which permits separation of the part of each response that is attributable to imperfect measurement (i.e., error) from the part that is in common with other measures of the construct (i.e., true score). Of particular significance here is the application of the general framework of SEM and latent variable modeling to the measurement of congruence, first proposed by Cheung (2009) as his latent congruence model (LCM) approach.

Cheung's (2009, 2009b) approach includes three latent congruence models (LCMs), each of which serves a different and necessary purpose in the investigation of congruence. The first model (LCM-1) is a confirmatory factor analysis model which serves to examine the measurement model being used and measurement equivalence across latent components. The second model (LCM-2) is a second-order SEM for congruence analysis. More specifically, this model examines antecedents and consequences of congruence and congruence constructs. The third model (LCM-3) is a first-order component analysis model which examines antecedents and consequences of the *components* of congruence. It is important to emphasize that the component measures involved in this approach are latent measures, determined based on multiple observed measures. Figure 2 provides a graphic representation of the model used for Cheung's approach to latent-component congruence analysis.

Let us consider how this approach could be applied to the example discussed above in which researchers are investigating the relationship between parent and teacher aspiration congruence and students' academic achievement. Using Cheung's approach, three structural

equation models would be run, rather than the one polynomial regression model presented above. The first model would serve to examine the measurement of the latent variables of parent and teacher aspirations separately and verify that measurement equivalence exists among them. This would be integral if, for example, separate questionnaires were given to ascertain parent and teacher aspirations for students resulting in an overall score for each. The second model would investigate the hypothesized predictors and consequences of congruence in parent and teacher aspirations (measured by the difference in the overall score for parent and teacher aspirations). Finally, the third model would investigate the hypothesized predictors and consequences of parent and teacher aspirations.

When compared with the polynomial regression approach discussed above, Cheung's (2009, 2009b) LCM approach offers many advantages. First, it assesses congruence directly, rather than assessing congruence via joint effects of components as in polynomial regression. In this way, results from these analyses are easier to interpret than those yielded from polynomial regression procedures. Furthermore, in areas like school-family partnership research, when theory is focused on congruence/fit/similarity/agreement as opposed to components' effects, LCM analyses are more relevant than polynomial regression. The LCM approach also directly examines measurement equivalence of component measures, a condition that is assumed in polynomial regression models. Furthermore, the measurement error that is in effect ignored when using polynomial regression is partialled out in LCM by using latent variables which are measured by multiple observed variables. LCM also offers a more parsimonious and coherent method for examining complex models involving multiple congruence indices as independent variables, dependent variables, and/or mediators.

The final major difference between the LCM approach and that of polynomial regression is one that remains the subject of debate currently (Cheung, 2009b). Within LCM, congruence and its components are viewed as separate and distinct constructs, while congruence is viewed as the joint effects of its components in polynomial regression. In line with polynomial regression procedures and the theory that underlies them, Edwards (2009) proposed an adaptation of the current procedure (i.e., structural equation model with latent component variables) in which specification of the latent congruence and level factors is not required, citing that these terms are redundant because they are derived from algebraic transformations of component variables (e.g., mean and difference) and do not represent distinct constructs. Ultimately, Cheung (2009, 2009b) stated that the view one takes, and consequently the approach one chooses to employ, should be based on the research questions and hypotheses being tested (e.g., are investigators exploring congruence as a distinct construct or as a combination of component effects).

There are a few important limitations to note with respect to Cheung's (2009, 2009b) approach. First, LCM requires larger samples due to the number of variables involved in the analyses (i.e.,  $n > 200$  recommended). In addition, although LCM provides for the explicit testing of measurement equivalence, there are still no remedial procedures offered if this assumption is rejected. It is also important to note that LCM does not yet have procedures for modeling interaction and higher-order terms involving component level and congruence, meaning it is not readily applicable to studying interaction effects and non-linear (e.g., quadratic) relationships between congruence and/or its components and the outcome variable of interest. Cheung (2009) recommends that polynomial regression be used instead if this type of relationship is suspected based on available theory.

**Multi-level modeling.** A final technique that warrants discussion here is multi-level modeling (MLM), particularly due to its usefulness in investigating school-family connections as well as its potential application to the measurement of congruence. Although SEM provides for the explanation and modeling of correlations among observed variables, additional sources of dependency (i.e., clustering effects) are accounted for by using an MLM approach (Beretvas et al., 2010). Educational research data (e.g., student-, educator-, or parent-report), for example, are typically collected within an inherent multilevel structure (e.g., students within classrooms within schools), and thus call for an approach to analysis that includes indicators for clusters at all levels of a design (Gelman & Hill, 2007). Notable advantages of this approach include enhanced estimation of models and standard errors, more accurate estimation of between and within-group variance, accounting for non-independence within groups, all of which are highly valuable to research in which data is clustered (e.g., couples, classrooms, schools) (Cano, Johansen, & Franz, 2005).

To elaborate, this approach may also be applied to the example discussed previously, and would be of particular relevance given the clustered nature of parent and teacher data (i.e., parents and teachers from the same school may show less variance in ratings than parents and teachers from different schools). It would be particularly beneficial in situations when parent and teacher aspirations, for example, are directly measured rather than latently represented by multiple observed measures. Using a MLM approach, researchers could run hierarchical models investigating the relationship between congruence (measured by difference in teacher and parent aspiration ratings) and achievement, while also accounting for non-independence among school-based samples.

Although the advantages of this approach are clear, particularly for use in studying school-family connections, there have only been a handful of studies applying this technique in investigations of congruence specifically. Furthermore, of these few studies, most have focused exclusively on congruence as an outcome variable. For example, Maguire (1999) presented hierarchical linear modeling (HLM), a form of MLM, as the analysis of choice for examining congruence and direction of difference in dyad member ratings. Using Maguire's findings as support, Cano and colleagues (2005) used HLM to examine congruence in ratings of pain, interference, and disability within couples. Other studies have employed MLM techniques with congruence or agreement terms as independent variables (e.g., Davison, Kwak, Seo, & Choi, 2002; Human & Biesanz, 2011); however, it is unclear to what extent these studies suffer from similar methodological flaws as those studies discussed above in which congruence indices (e.g., difference scores) were used without MLM techniques. The clear advantages of this approach for educational research, noted above, taken with the few instances discussed here in which it was successfully applied to measuring congruence, make this approach, at the very least, one to be considered and investigated further.

### **Conclusions, Implications, and Future Directions**

The role of collaborative school-family partnerships in facilitating positive student outcomes and ameliorating student risk has been well established in the theoretical literature (e.g., Christenson & Anderson, 2002; Christenson, 2004; Clarke et al., 2010; Downer & Myers, 2010; Hoover-Dempsey et al., 2010; Pianta & Walsh, 1996, 1998; Reschly & Christenson, 2009; Stormshak et al., 2010; Webster-Stratton & Reid, 2010); however, empirical evidence supporting this claim is still relatively sparse. Furthermore, although congruence in home and school environments, values, and other characteristics has been shown through literature review (e.g.,

Christenson & Peterson, 1998) to be a key factor in providing for optimal student performance, and theoretical literature has argued for its importance in developing and maintaining effective partnerships between schools and families (Christenson & Anderson, 2002; Clarke et al., 2010; Finn & Rock, 1997; Reschly & Christenson, 2009, etc.), very few studies have investigated these constructs further. As such, the concept of congruence has rarely been explicitly operationalized, as it relates to the school-family partnerships literature, and measurement of the construct remains largely flawed. Authors of the current review sought to clearly define school-family congruence and determine the most effective approach or approaches to measuring the construct.

Overall, the more modern statistical procedures discussed in the final section enjoy many advantages over the other approaches presented. Specifically, two approaches seem to be the most readily applicable to the investigation of congruence within school-family partnerships and offer the most promise. First, Cheung's (2009) latent congruence model (LCM) offers a comprehensive approach to measuring both congruence effects *and* latent component effects on the outcome variable of interest. There is still some debate over the conceptualization of congruence as a distinct concept. In response to this argument, Edwards (2009) provides an alternative procedure similar to LCM that enjoys most of its advantages but does not require the specification of congruence or level terms (i.e., typical SEM with latent component variables). Future research should compare these models to examine similarities and differences in the results they produce.

Second, the MLM approach has also been widely used in educational research and offers many advantages when analyzing clustered data (Beretvas et al., 2010; Gelman & Hill, 2007). Furthermore, this approach has been shown to be useful in determining higher-order factors that may be associated with congruence (Cano et al., 2005; Maguire, 1999). Few studies, however,

have employed congruence as an independent variable within these models, and it is yet unclear whether the advantages of MLM outweigh the methodological flaws inherent in most congruence indices used in these studies.

Although the current paper focuses largely on reviewing methodological approaches and proposing future directions for research in school-family factor congruence, implications can be drawn for educational practitioners as well. With collaboration and congruence between home and school receiving increasing emphasis in the educational literature (e.g., Clarke et al., 2010; Reschly & Christenson, 2012; Webster-Stratton & Reid, 2010), it is important for educational practitioners to carefully consider their approach to working with students' families and other stakeholders in students' lives. As previously discussed, the shift from relationships to *collaborative* partnerships between schools and families involves a change in focus for both of these socializing agents, with increasing emphasis placed on two-way communication, collaborative problem-solving and shared contributions, congruent goals, and shared accountability. While families should be made aware of these goals and the reasons for pursuing them, the onus for initiating, developing, and maintaining these partnerships falls largely on the school and its personnel, as professionals in the field of education. With little doubt that congruence and collaborative efforts between schools and families are important for student success, we as educational practitioners must work to bring these about. Furthermore, it is essential that educators stay up-to-date with the empirical research related to school-family partnerships and congruence and this body of literature expands.

Overall the concept of congruence, as it relates to school and family characteristics, is relatively uncharted territory with respect to empirical research. In addition, it is not yet clear whether approaches to measuring concepts like person-environment fit, person-organization

value congruence, or self-other agreement in ratings will readily apply to measurement of similarity in school and family values or expectations, for example. The current paper presents a thorough comparison of the most commonly used techniques to measure these and other similar constructs, along with advantages and disadvantages of each approach. Based on this discussion, future research should focus on comparing results from various measurement approaches in order to determine which present common or conflicting results, as well as which procedures offer the most practical and methodological advantages, while imposing the fewest limitations. In addition, development of rating instruments specifically aimed at measuring home-school congruence and/or its components may very well be called for. Research such as this will lead to a better understanding of the construct of congruence, as well as what can be done to facilitate congruence and its potential for positive impact in the lives of students.



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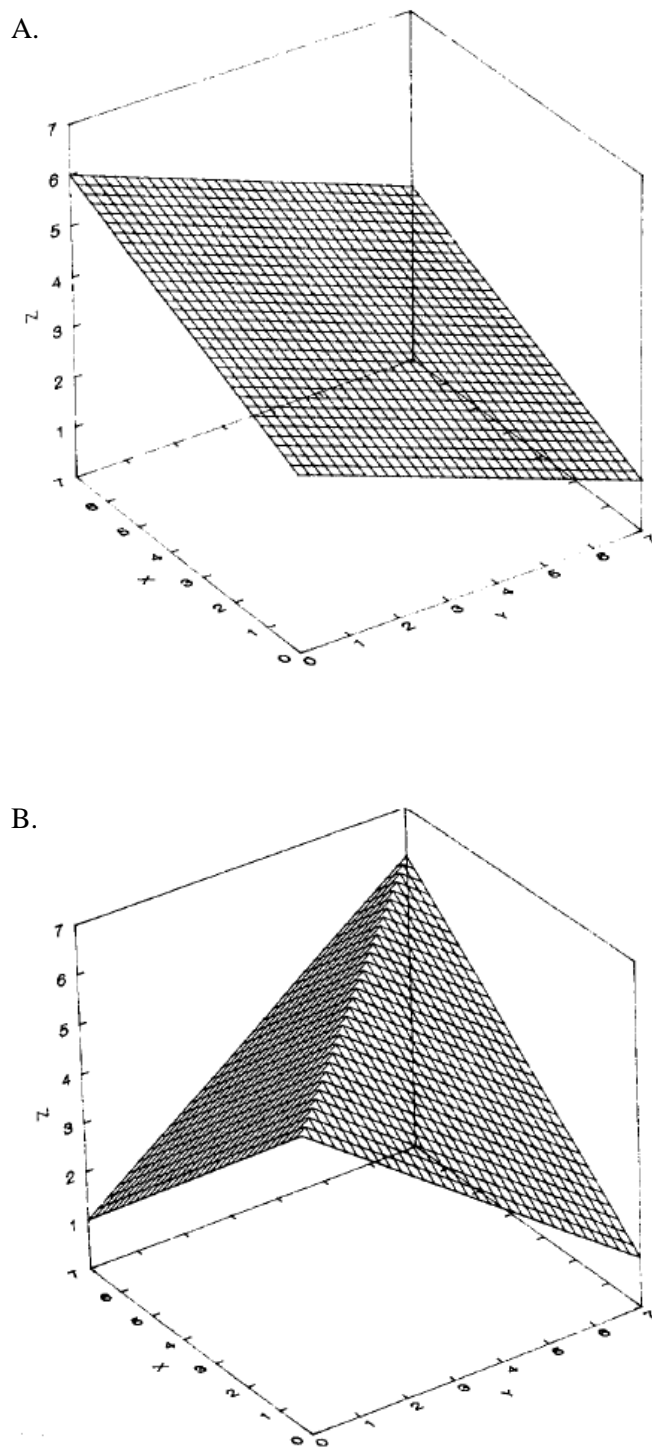


Figure 2.1: Examples of three-dimensional models used for polynomial regression analysis interpretation: (A) algebraic difference in component measures; (B) absolute difference in component measures. (adapted from Edwards, 1994)

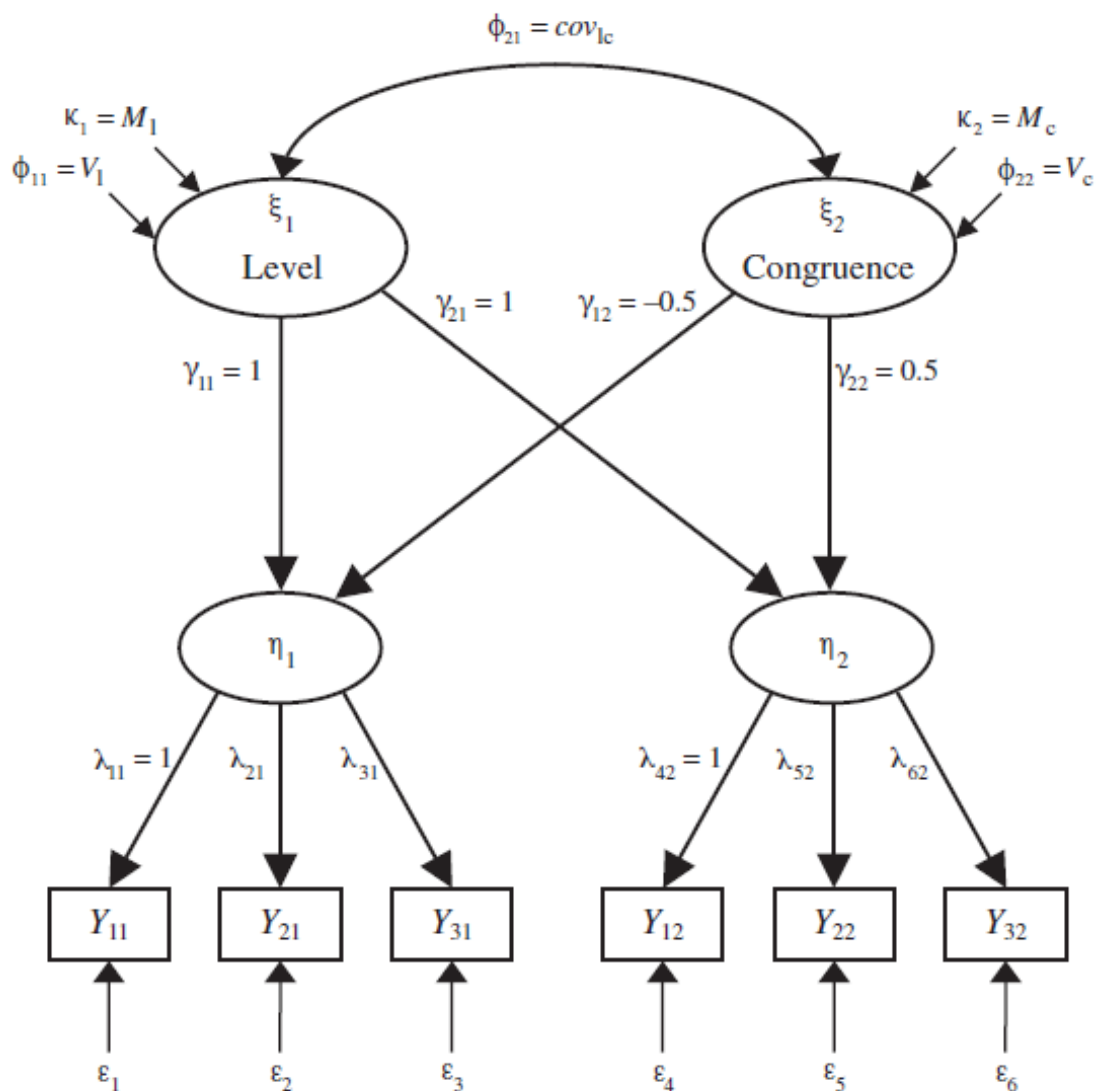


Figure 2.2: Example of an item-level LCM involving two latent variables,  $\eta_1$  and  $\eta_2$  (e.g., parent and teacher aspirations), each with multiple observed indicators,  $Y_n$  (e.g. questionnaire items).

(adapted from Cheung, 2009)



## CHAPTER 3

SHIFTING FOCUS TO SCHOOL-FAMILY PARTNERSHIPS: AN EXAMINATION OF  
EXPECTATION CONGRUENCE AND STUDENT OUTCOMES<sup>2</sup>

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<sup>2</sup> Glueck, C. L., and A. L. Reschly. To be submitted to *Journal of Educational and Psychological Consultation*.

### **Abstract**

Recent literature on student engagement and educational outcomes has called for an increase in focus on the development of collaborative school-family partnerships. Furthermore, researchers have posited congruence between home and school as a key principle underlying the formation of these partnerships and an important factor in bringing about positive outcomes for students; however, little empirical literature exists examining these hypotheses. The purpose of this study was to examine the impact of parent and teacher expectations and congruence in expectations on student achievement and other outcomes, using data from the Educational Longitudinal Study of 2002 (ELS:2002). As expected, parent and teacher expectations were significant predictors of student achievement and future outcomes, whereas findings related to congruence yielded mixed results. Conclusions and implications for families, practitioners, and researchers are discussed.

## Introduction

Bronfenbrenner's (1977, 1986) ecological systems theory, with its emphasis on contextual influence (e.g., microsystem, mesosystem, exosystem, macrosystem), has revolutionized our understanding of child development and education since its inception. Based on this theory, researchers and practitioners seeking to improve student outcomes have shifted from a nearly exclusive focus on within-student variables that enable academic success (e.g., DiPerna & Elliott, 2002; Ysseldyke & Christenson, 1987), to also investigating the context in which learning occurs, and more specifically "how the learning context facilitates or impedes child adaptation to challenges and demands of schooling." (Christenson & Anderson, 2002, p. 379). Much of the contextually focused research has centered on parent and family involvement (e.g., Epstein & Dauber, 1991; Fantuzzo, Tighe, & Childs, 2000; Fishel & Ramirez, 2005; Ginsburg-Block, Manz, & Mcwayne, 2010; Reynolds & Clements, 2005). Furthermore, legislation such as the No Child Left Behind Act (NCLB, 2002) has echoed this focus by recognizing that parent involvement is integral to children's success, highlighting the need for schools to increase efforts to facilitate involvement of all families, and mandating regular, bi-directional communication between schools and families (Downer & Myers, 2010).

There is currently little to no dispute regarding the importance of family involvement in education and the positive effects to be gained from such involvement; however, as authors will discuss below, more recent literature (e.g., Reschly & Christenson, 2009) has called for a shift from simply focusing on family involvement to instead endeavoring to establish positive relationships and, more importantly, collaborative *partnerships* with families. Researchers are no longer plagued with the question of *why* involve families, but rather the more process-

oriented question of *how* schools and families should work together to most effectively bring about student success (Reschly & Christenson, 2009).

### **Paradigm Shift: Moving from *Relationships* to *Partnerships***

The shift in focus alluded to above represents a shift from emphasizing microsystemic influences (e.g., home, school) to considering more mesosystemic factors (i.e., interactions or relationships between the mesosystems) of Bronfenbrenner's (1977, 1986) ecological systems theory. This is in line with the related principle of nonsummativity, which states that relationships between systems can be seen as greater than the sum of their parts (Christenson, Abery, & Weinberg, 1986). Using the example of school-family partnerships, while the quantity and quality of interactions between families and educators contribute to the formation of these relationships, the relationship itself actually becomes a new system which is superordinate to the previous two systems and is therefore worthy of attention and emphasis its own right (Downer & Myers, 2010).

While this reasoning supports the importance and influence of school-family *relationships* in general, researchers and practitioners are increasingly advocating for the establishment of *partnerships* between schools and families. As Reschly and Christenson (2012) noted, partnerships require a special type of relationship between families and schools; an engaged relationship focused on supporting students and families with the goal of optimizing outcomes. Those in educational practice and research agree on several key aspects of these partnerships, including two-way communication, shared goals and contribution, collaborative decision-making and problem-solving (Christenson, 2004; Fantuzzo et al., 2000; Reschly & Christenson, 2009). Christenson and Sheridan (2001) also emphasized that school-family partnerships should involve ongoing positive interactions between schools and families, maintain

a student-focused philosophy, and aim to provide preventative solutions to allow for optimal outcomes.

In addition to the theoretical support for school-family partnerships, some empirical evidence exists as well, although to a much lesser degree. For example, some research has found promising effects as a result of implementing individual interventions or school-wide programs involving active collaboration between school and home (e.g., Cox, 2005; Ollendick, 2005; Scribner, Young & Pedroza, 1999). Furthermore, Sheridan and Kratochwill's (2007) Conjoint Behavioral Consultation (CBC) model has provided strong evidence, in many cases stronger than other models of consultation, in terms of producing significant improvement in academic, social, and behavioral functioning (Colton & Sheridan, 1998; Guli, 2005; Sheridan, Clarke, Knoche & Edwards, 2006; Sheridan, Eagle, Cowan & Mikelson, 2001; Sheridan, Eagle, & Doll, 2006; Sheridan, Kratochwill, & Elliott, 1990; Weiner, Sheridan, & Jenson, 1998).

Also of particular importance is the empirical support for school-family partnerships as protective factors for students with high levels of academic, behavioral, and emotional risk (e.g., Stormshak, Dishion, & Falkenstein, 2010; Webster-Stratton & Reid, 2010). As Pianta and Walsh (1996, 1998) posited, risk does not exist within children themselves, but rather exists in the interactions, transactions, and relationships among the multiple systems that surround them. Consequently, numerous researchers have argued that the quality of school-family relationships serves as a primary contributing factor to students' level of risk (e.g., Bempechat, 1998; Phelan, Davidson, & Yu, 1998; Reschly & Christenson, 2009). Of most consequence in these cases is the continuity or congruence between the two socializing systems involved. For example, Pianta and Walsh (1996) suggested that children are at lower risk when their family and school systems are functional, communicative, and *provide congruent messages about learning and its*

*importance*. Below, authors discuss the concept of congruence and its importance in further detail.

### **Role of Congruence in Facilitation of School-Family Partnerships**

Along with the rise of educational research and practice initiatives related to the establishment and maintenance of effective school-family partnerships comes the discussion of key principles which underlie and characterize the partnership process; *congruence* is among the most cited of these (e.g., Bempechat, 1998; Christenson, 2004; Christenson & Anderson, 2002; Christenson & Sheridan, 2001; Clarke, Sheridan, & Woods, 2010; Lohman & Matjasko, 2010; Reschly & Christenson, 2009; Webster-Stratton & Reid, 2010). In discussing the underlying principles of healthy school-family relationships, Clarke and colleagues (2010) stressed the importance of a common approach across home and school in promoting consistent learning opportunities, as well as the necessity for consistent goals and common messages about the value of learning and education. Speara and Matto (2007) further posited that children are more likely to behaviorally and socially commit to social contexts when they are receiving congruent messages about values, goals, expectations and aspirations from both contexts. Conversely, many researchers have noted the dangers of incongruence in school-family relationships, stating that students within these systems often receive conflicting messages about the importance of learning, producing higher levels of risk for poor school performance or adverse mental health outcomes for those students (Phelan, Davidson, & Yu, 1998; Pianta & Walsh, 1996, 1998).

Despite the evident importance of congruence between home and school environments, few studies have investigated this concept empirically. Those that have, in general, found positive effects (e.g., gains in achievement) when home and school environments were congruent in terms of rule systems (Hansen, 1986) and perceptions of student ability (Peet, Powell, &

O'Donnel, 1997). In addition, Hess and Holloway (1984) found that congruence between school and family views on education was important in terms of countering information from competing sources such as students' peers or media. Overall, however, additional research is needed to investigate what aspects of school-family congruence are essential for positive student outcomes.

### **Influence of Shared Parent and Teacher Expectations**

Several key factors have been identified in terms of promoting cross-setting success for students, including shared expectations, consistent structure, cross-setting opportunities to learn, presence of positive and respectful youth-adult relationships, and mutual support (Christenson & Peterson, 1998). Unfortunately, little empirical research investigated the influence of each of these factors more specifically. For the purposes of this study, authors have chosen to focus on parent and teacher expectations, as they have been commonly cited in theoretical discussions and literature reviews (e.g., Fan & Chen, 2001; Fantuzzo et al., 2000) as key factors that may influence student achievement.

The process by which teacher, parent, and even student expectations may influence student outcomes has been discussed from a theoretical standpoint throughout the literature. Theories of motivation provide an excellent basis from which to conceptualize the relationship between expectations and achievement, as students who are motivated to complete an academic task tend to engage in that task more often, thus increasing practice opportunities and consequently skill (Kelley & Decker, 2009). One theory of motivation that is often applied to student achievement is the expectancy-value theory, posited and researched by Eccles and colleagues (e.g., Neuenchwander, Vida, Garrett, & Eccles, 2007; Wigfield & Eccles, 2000). This theory argues that an individual's choice, persistence, and performance on any given task can be explained by that individual's beliefs about how he or she will perform on the activity and

the extent to which the individual values the activity. These individual beliefs and values that determine motivation are heavily influenced not only by the individual's perceptions of previous similar experiences, but also by various socializing agents (e.g., school, family) (Wigfield & Eccles, 2000; Tollefson, 2000). Downer and Myers (2010) argued that, as the chief socializing agents during students' school-age years, families and schools provide experiences and set up educational expectations that are consistently and often powerfully linked to students' early and later schooling outcomes.

Empirical research supports this claim. For example, with regard to parent expectations, several studies have found reciprocal relationships between parent beliefs and expectations and student self-efficacy, expectations, and achievement (e.g., Neuenschwander et al., 2007; Parsons, Adler, & Kaczala, 1982; Phillipson & Phillipson, 2007; Zhang, Haddad, Torres, & Chen, 2011). Several studies have also investigated the importance of teacher expectations in facilitating high student achievement (Hallinan, 2008; Hinnant, O'Brien, & Ghazarian, 2009; Mistry, White, Benner, & Huynh, 2009, etc.). Furthermore, some researchers have suggested that expectations may play a mediating role between circumstances of risk (e.g., social class effects) and achievement outcomes (Hinnant et al., 2009; Neuenschwanger et al., 2007).

It is important to note here, however, that the exact relationship between parent and teacher expectations and student achievement remains unclear. Although associations are consistently found between realistic, high expectations and high levels of achievement, the direction of influence cannot necessarily be determined; that is, do high expectations encourage high achievement, or vice versa. In addition, scholars have suggested that expectations may indirectly impact student achievement via any of several possible mediating variables (e.g., student self-efficacy, student expectations, parent/teacher behaviors) (Christenson, Rounds, &



Gorney, 1992). More research incorporating these variables is called for to clarify this relationship.

### **Challenges and Limitations within School-Family Partnership Research**

It is important to note that several limitations exist when attempting research on school-family partnerships. Most evident are the inconsistencies and methodological flaws in this body of literature which greatly limit the conclusions that can be drawn. For example, several studies investigating the success of interventions which involve students' families in some way (e.g., home component, collaborative approach) have cited methodological weaknesses including the use of outcome measures with insufficient reliability and validity, failure to isolate effects of specific components or report participant data and effect sizes, and a general lack of replication studies, sufficient follow-up data, and between-group design studies in certain areas (Bates, 2005; Fishel & Ramirez, 2005; Guli, 2005; Hoard & Shepard, 2005; Valdez, Carlson, & Zanger, 2005; etc.). Furthermore, within this research it difficult to establish the direction of influence from school-family collaboration to child outcomes (Reynolds & Schlafer, 2010). These limitations impede the determination of the precise process by which parent involvement and school-family partnerships contribute to improved student outcomes, and therefore should be considered when selecting the most appropriate methodology with which to answer the questions posed by the previously discussed theoretical discussions and research.

### **Purpose of the Current Study**

Literature reviewed above not only highlights the importance of family involvement and positive school-family relationships (Epstein & Dauber, 1991; Christenson & Anderson, 2002, Fantuzzo et al., 2000; Reynolds & Clements, 2005, etc.), but also, and perhaps more importantly, the need for collaborative school-family partnerships, characterized by continuity in

expectations, structure, opportunities to learn, and support provided, among other things (Christenson & Peterson, 1998; Christenson & Sheridan, 2001; Reschly & Christenson, 2009). However, as previously mentioned, the characteristics listed above have rarely been examined empirically to determine their relationship with various positive and negative student outcomes. As Downer and Myers (2010) stated, "...research that indicates a key facilitative role of the family-school link for students' educational success, has set the stage for the next wave of empirical inquiry into family-school partnerships." (p.4). Based on this call for additional research and the abundant theoretical and empirical support presented above emphasizing the role expectations play in motivating students to achieve to the highest level possible (Christenson & Peterson, 1998; Fan & Chen, 2001; Fantuzzo et al., 2000; Kelley & Decker, 2009; Wigfield & Eccles, 2000; Tollefson, 2000; etc.), authors of the current study aim to increase understanding of the specific relationships between parent and teacher expectations, expectation congruence, and various student outcomes. Potential research questions to be addressed fall into two major categories and include the following:

1. Do parent and/or teacher expectations explain unique variance in current or future student achievement and other outcomes (e.g., postsecondary enrollment) above and beyond demographic variables? Does one account for more variance than the other?
2. Does *congruence* between parent and teacher expectations explain unique variance in current or future student achievement or other outcomes (e.g., postsecondary enrollment), above and beyond demographic variables and parent/teacher expectations individually?

## Methods

### Participants

Data from the Educational Longitudinal Study of 2002 (ELS:2002, U.S. Department of Education) were used for the current study. Using a national sample of over 17,000 members of the 2002 sophomore cohort selected from over 750 schools, base year student questionnaire data were collected for 15,362 of the students and achievement test data were collected for 14,543 of the students. In addition, questionnaire data were also collected from 13,488 parents, and 7,135 teachers (some reporting on multiple students). Slightly more than half of the total sample of students was male (50.5%). The vast majority of the sample attended public schools (92.4%); students attending Catholic schools (4.3%) or other private schools (3.4%) accounted for a small portion of the participants. Approximately half of the schools were located in suburban areas of the United States, while the rest were split between urban areas (30%) and rural areas (20%). The ethnic distribution of student participants was as follows: White (60.4%), Hispanic (16.0%), Black (14.4%), Multiracial (4.3%), Asian/Pacific Islander (4.2%), and American Indian/Alaska Native (0.9%). The sample also included a fair number of students who did not speak English as a native language (14.0%). Notably, 41.1 % of mother respondents and 44% of father respondents had only a high school degree, equivalent (e.g., GED), or less. Complete demographic data for the ELS:2002 national sample are presented in Table 1. Participants in the overall sample were representative of national demographics for high school sophomores in 2002; therefore the generalizability of results is valid for the 2002 sophomore cohort throughout the United States. Further generalizations must be made with caution and are limited to populations similar to that of the sampled cohort of students (Ingels, Pratt, Wilson, Burns, Currivan, Rogers, & Hubbard-Bednasz, 2007).

It is important to note that although the above-mentioned demographic information pertains to the national sample of ELS:2002 participants, the sample used in the current analyses is limited in several ways as necessitated by proposed analytic method and variables of interest. First, cases were excluded if parent *or* teacher questionnaire data were not available due to the necessity of these measures in determining expectation and congruence levels. Second, cases in which outcome data were not available (i.e., base-year or follow-up test scores, follow-up indicator of educational attainment) were excluded, leading to varying samples for separate analyses. Demographic data for the samples specific to the current study are also presented in Table 1 and do not appear to differ significantly from the national sample.

### **Data and Procedure**

Data from the Educational Longitudinal Study of 2002 (ELS:2002), sponsored by the U.S. Department of Education National Center for Education Statistics (NCES) and Institute of Education Sciences (IES), were collected in order to provide information about critical transitions undergone by students as they proceed through high school, post-secondary education, and their careers. Beginning with a nationally-representative sophomore cohort of 2002, policy-relevant data pertaining to student learning, predictors of dropping out, and high school correlates of post-secondary educational and occupational outcomes were collected every two years from 2002-2006 via student, parent, teacher, administrator, and librarian surveys as well as normative student assessments of academic achievement (Ingels et al., 2007).

ELS:2002 used a two-stage sample selection process. First, schools were selected with probability proportionate to their size, determined based on school enrollment by race/ethnicity, resulting in 1,221 eligible public, Catholic, and other private schools, of which 752 elected to participate. Second, approximately 26 students were selected from those schools' sophomore

enrollment lists. From the sample selected school- and student-level data were collected, although most emphasis has been placed on the student as the basic unit of analysis. School-level data included administrator and librarian questionnaires and a facilities checklist. Student-level data included administrator and librarian questionnaires and a facilities checklist. Student-level data included student questionnaire and assessment data along with parent and teacher reports for each student. High school transcripts were also collected in the first follow-up (Ingels et al., 2007).

The longitudinal nature and multi-level focus of the ELS:2002 design make these data highly useful when examining relationships such as those of interest in the current study. Longitudinal data collection allows for within-cohort comparisons to be made over time, permitting researchers to make connections between antecedent conditions and positive outcomes such as achievement gains and high school completion. Furthermore, with the addition of postsecondary data in the 2006 follow-up, ELS:2002 greatly increased its ability to connect high school experiences with later outcomes (e.g., access to postsecondary institutions, degree attainment, entry into the labor force). As well, the multilevel focus of ELS:2002 provides researchers with a comprehensive view of home, community, and school environments and their influence on the student (Ingels et al., 2007).

## **Measures**

For the purposes of the present study, information from student, parent, and teacher questionnaires was used along with student assessment data. Content specification documents were commissioned for each of the planned achievement tests (i.e., math and reading) as well as for the parent, teacher, and student questionnaires. Borrowing heavily from existing item pools (e.g., National Assessment of Educational Progress [NAEP], National Education Longitudinal Study of 1988 [NELS:88], and Program for International Student Assessment [PISA]), these

documents identified ELS:2002 research questions and constructs to be considered in order to guide instrument development (Ingels, Pratt, Rogers, Siegel, & Stutts, 2004).

Following instrument development, field testing was conducted on assessments and questionnaires, involving such analyses as evaluation of item nonresponse, examination of test-retest reliabilities, calculation of scale reliabilities, and examination of correlations between theoretically related measures. Item parameters were estimated for both mathematics and reading achievement tests using classical and Item Response Theory, in order to determine the most appropriate items for inclusion in the final forms of the two tests. In addition, psychometric analyses were conducted to examine item difficulty and discrimination, reliability and factor structure, and differential item functioning. Instruments developed through these procedures and other measures used in the current study are described in detail below (Ingels et al., 2004).

**Student questionnaires.** Student questionnaires were administered during all three phases of data collection. Base-year questionnaires were typically self-administered, most often during in-school survey sessions, and addressed items relevant to each student's locating information, school experiences and activities, plans for the future, non-English language use, money and work, family, and beliefs and opinions about self (Ingels et al., 2007).

During the first follow-up, questionnaires were given to students who remained enrolled in the same school from base-year to first follow-up, as well as students who had dropped out, graduated early, transferred, or begun homeschooling. These generally focused on many of the same areas as the base year questionnaire, with more focus placed on current use of time and plans and expectations for the student's educational and occupational future; although, dropouts and early graduates were asked more about their reasons for leaving high school in the ways they

chose, as well as their work history and/or educational experiences since leaving (Ingels et al., 2007).

Finally, a single web-based instrument was developed for the second follow-up which respondents could complete alone or assisted by a telephone or field interviewer. The interview was comprised of a section in which they provided contact information along with the following four substantive sections: high school (e.g., retrospective report of details about high school completion/exit and performance, most of which were pre-loaded based on previous reports), postsecondary education (e.g., application process, admissions, financial aid offers, attendance, experiences, and expectations), employment (e.g., details about jobs held concurrent or nonconcurrent with postsecondary education, income/finances information, and future occupational expectations), and community (e.g., family formation, living arrangements, community involvement, and other experiences that may influence the life course) (Ingels et al., 2007).

For the purposes of the current study, base year questionnaires provided information regarding student demographic information. More specifically, gender and race composites were developed based on students' base-year report or, in lieu of student response, data from sampling rosters, parent questionnaires or other student questionnaire items (e.g., race/ethnicity sometimes logically imputed from surname or native language item responses), grouping students into the demographic categories discussed previously in the discussion of participants. The current study also used data from the second follow-up questionnaires to gain information regarding each student's educational attainment. More specifically, highest level of education attempted is provided based on second follow-up interview responses with the following answer choices

given: (1) some high school, (2) GED, (3) high school diploma, (4) enrolled in less-than-2-year school, (5) enrolled in 2-year college, and (6) enrolled in 4-year college.

**Parent and teacher questionnaires.** Parent and teacher questionnaires were administered only during the base-year data collection. Parent questionnaires were available in English or Spanish and were completed by the self-selected parent or guardian most familiar with the sophomore's school situation and experience. Items addressed a wide variety of topics including family background, child's school life, child's family life, parent opinions about child's school, and parent aspirations for the child's future. Teacher questionnaires were completed by each student's English and mathematics teachers and, in general, addressed questions in the following two areas: *teacher evaluations of students* (e.g., assessment of student's school-related behavior, academic performance, and educational/career plans and goals) and *teacher background* (e.g., information about teacher's academic training, subject areas of instruction, years of teaching experience, and participation in professional growth activities) (Ingels et al., 2007). Only math teacher data were used in the current study due to the fact that only data pertaining to math achievement were provided during the 2004 follow-up data collection.

For the purposes of the current study, authors will use parent and math teacher questionnaire data primarily to gain information regarding educational expectations for students. This will be determined by parents' and teachers' responses to the following question, posed on their respective questionnaires: "How far in school do you expect this student to go?" Answer options were given including, (1) less than high school graduation, (2) high school graduation or GED only, (3) attend or complete a 2-year school course in community or vocational school, (4) attend college but not complete a 4-year degree, (5) graduate from college, (6) obtain a Master's



degree or equivalent, and (7) obtain a Ph.D., M.D., or other advanced degree. Authors also used data provided by the ELS:2002 composite for socioeconomic status, developed from the following five equally weighted, standardized components: (1) father's/guardian's education, (2) mother's/guardian's education, (3) family income, (4) father's/guardian's occupation, and (5) mother's/guardian's occupation.

**Achievement tests (mathematics).** The ELS:2002 assessment battery was developed and included in data collection to provide measures of student achievement in reading and mathematics that may then be related to student background variables and educational processes. Test specifications were adapted from frameworks used for NELS:88. As such, math tests contained items in arithmetic, algebra, geometry, data/probability, and advanced topics, while reading tests consisted of reading passages between one paragraph and one page in length with three to six related questions following (Ingels et al., 2004). It should be noted that only math test data were collected during 2004 follow-up testing, necessitating the use of only math achievement data for all analyses (concurrent and predictive) in the current study.

Psychometric data collected through field testing indicated high internal consistency for math and reading assessments (i.e., coefficient alphas of approximately .90). Furthermore classical item analysis yielded high average r-biserials for math and reading assessment items (i.e., average r-biserials of approximately .60 for both tests) and substantial differences in average number of items correct between 10<sup>th</sup> and 12<sup>th</sup> grade. Following analysis of field test data, item selection took place in which items with r-biserials below .40 and IRT discrimination parameters of 1.0 or higher were retained. In addition, items with Differential Item Functioning (DIF) found to be both sizeable and significant were reviewed and revised or deleted (Burns et al., 2003).

**Measuring Congruence.** In the current study, the congruence score was developed by obtaining an absolute difference score between parent and teacher responses regarding their expectations for how far a student would go in school. Resulting congruence scores ranged from 0 (highly congruent) to 6 (highly incongruent). It is important to note that, although several methodological problems exist with the use of difference scores to represent congruence (Edwards, 1994, 2001), the nature of the parent and teacher expectation data (i.e., single indicator) used for this study necessitate this approach to measuring congruence. Resulting limitations to interpretation are discussed in later sections.

### **Analytic Method**

**Data screening.** Prior to conducting analyses to address the research questions outlined above, data were screened for missing values with regard to parent and teacher expectation ratings as well as student outcome measures (e.g., achievement, education attainment, etc.), and participants with missing values in these areas were excluded from certain analyses. In addition, predictor variables of interest were screened to address multicollinearity concerns.

**Analysis of concurrent and predictive effects.** In order to answer the research questions of interest, a hierarchical linear modeling (HLM) approach was used to examine the effects of school- and student-level predictors on student achievement and level of education attempted. All analyses were run using a two-level HLM in order to account for non-independence within groups (schools) and to provide improved estimation of models, standard errors, and between- and within-group variance (Cano, Johansen, & Franz, 2005).

A series of HLMs were run for each of three dependent variables (i.e., base-year math achievement, math achievement at the first follow-up, and highest level of education attempted at the second follow-up). Specifically, as a preliminary step, an unrestricted HLM was run to

indicate the variance in each outcome accounted for by the level 1 effect (i.e., specific school membership). Second, an HLM containing only demographic predictor variables was run to investigate, and control for, the effect of student- and school- level demographic variables on each outcome (i.e., student gender and SES, school type). In addition, interactions between school- and student-level variables thought to be of significance were included in the demographic model. Third, separate models including demographic variables as well as *either* expectation or congruence variables were created. This allowed authors to compare fit and investigate significance of expectations and congruence within their respective model. Finally, a full model with all independent variables was run (i.e., demographic variables, expectations, and congruence). For each model, the relative significance of each variable in the model was examined and fit statistics (i.e., Bayesian Information Criterion [BIC]) were obtained to provide a measure of the overall predictive value gained or lost with the addition of each group of variables. Reductions in BIC of at least 10 between models were taken to indicate strong evidence of improved fit (Kass & Raftery, 1995).

## **Results**

Descriptive data (weighted and unweighted) for variables of interest is presented in Table 3.2. In addition, multicollinearity tests produced insignificant results (i.e., all Tolerance values > .430, all VIF values < 2.324). Results of HLM analyses are reported below in relation to each of the three dependent variables listed above.

### **Concurrent Achievement Analyses**

In the first set of HLMs (summarized in Tables 3.3 and 3.4), while controlling for school- and student-level demographic variables, parent and math teacher expectations and expectation congruence were used to predict student math achievement within the same school year.

Demographic variables in this set of analyses, as well as those to be discussed, included student gender and socioeconomic status (SES) and school type (i.e., public vs. private). Although all demographics were found to be significant in the demographics-only model, only student demographics were found to be significant in later models ( $p < .001$ ). Additionally, an interaction term between student SES and school type was included in the model, which was not found to be a significant predictor in relation to base-year math achievement. In terms of fit, the model including demographics provided significantly better fit compared to the unrestricted model (change in BIC = -1428).

The third and fourth models added parent and teacher expectations and congruence respectively, allowing researchers to investigate the change in fit provided by each individually. Both parent and teacher expectations as well as congruence were found to be significant predictors in their respective models, as well as the final model ( $p < .001$ ). Furthermore, the addition of each resulted in improved fit of their respective models (reduction in BIC > 10); however, the addition of expectations resulted in a more substantial improvement in model fit (change in BIC = -3183) than did the addition of congruence (change in BIC = -217).

Finally, a full model was created in which both expectations variables as well as congruence were investigated as predictors of base-year math achievement. Improvement in fit of this model over all previous models was significant (reduction in BIC > 10), suggesting that congruence offers additional predictive power above and beyond parent and teacher expectations individually. It is important to note that random effects associated with student SES and school membership were significant in all models ( $p < .001$ ), indicating that both mean base-year math achievement as well as the relationship between student SES and base-year math achievement vary significantly across schools.

### **Predictive Achievement Analyses**

In the second set of HLMs (summarized in Tables 3.5 and 3.6), while controlling for school- and student-level demographic variables, parent and math teacher expectations and expectation congruence were used to predict student math achievement at the time of the first follow-up data collection two years later. As with the previously discussed analyses, student gender, student SES, and school type were all found to be significant in the demographics-only model, whereas only student gender and SES were significant in later models ( $p < .001$ ). The interaction term between student SES and school type was not found to be a significant predictor in relation to follow-up math achievement. In terms of fit, the model including demographics again provided significantly better fit compared to the unrestricted model (change in BIC = -1266).

As with previous analyses, the third and fourth models added parent and teacher expectations and congruence respectively, allowing researchers to investigate each variable's individual effect on model fit. Both expectations and congruence were again found to be significant predictors in their respective models ( $p < .001$ ). In addition, both expectations ( $p < .001$ ) and congruence ( $p < .01$ ) were significant in the full model. Furthermore, there were similar findings in terms of change in model fit. That is, the addition of each resulted in improved fit of their respective models (reduction in BIC  $> 10$ ), although the addition of expectations resulted in a more substantial improvement in model fit (change in BIC = -3553) than did the addition of congruence (change in BIC = -253).

A full model was again created including both expectations variables as well as congruence as predictors of follow-up math achievement. This model provided significant improvement in fit over the model including congruence only (change in BIC = -3305), but did

not provide significant improvement in fit over the model including expectations only (change in BIC = -6). This finding suggests that congruence does not offer additional predictive power above and beyond parent and teacher expectations individually in terms of future math achievement. It should also be noted that random effects associated with student SES and school membership were again significant in all models ( $p < .001$ ), indicating that both mean follow-up math achievement as well as the relationship between student SES and follow-up math achievement vary significantly between schools.

### **Predictive Education Level Analyses**

The third and final set of analyses involved a categorical outcome variable (i.e., highest level of education attempted at the second follow-up) and thus was run using a generalized linear modeling approach which allows for the extension of standard regression models to include categorical variables with non-normal distributions (Heck, Thomas, & Tabata, 2012). It is important to note that results for categorical predictor variables are presented as probabilities of belonging to the reference category (i.e., enrolled in a 4-year college or university). Probabilities which differ significantly for different levels of a predictor variable indicate that that variable is a significant predictor in the overall model.

Based on the results (summarized in Tables 3.7 and 3.8), we see similar patterns in terms of relationships between our predictor variables and the highest level of education students attempted as we did with previously discussed models; however, a few important differences were found. More specifically, student gender and (SES) and school type (i.e., public vs. private) were all found to be significant in the final model ( $p < .001$ ), while the interaction between student SES and school control was not significant. Furthermore, parent and teacher expectations were both found to be significant predictors overall, indicating that lower levels of

expectations tend to produce significantly lower probabilities of being enrolled in a 4-year college or university at the time of the second follow-up. However, expectations of obtaining a master's degree or equivalent did not result in significantly lower probably of being enrolled in a 4-year college compared to the reference category (i.e., expectations of obtaining a Ph.D., M.D., or other advanced degree) for both parents and teachers. In this set of analyses, however, we find that congruence is not a significant predictor of highest level of education attempted.

Improvements in fit between these models must be determined somewhat differently from previous models presented. This is due to the fact that information criteria (e.g., BIC statistics) are based on real likelihood values, while generalized linear models are estimated using quasilielihood estimation procedures (Heck et al., 2012). For this reason, the fit of these models is examined using a percent accuracy value, which for categorical models indicates the percentage of records for which the predicted value matches the observed value. It should be noted that no criteria exist for "significant" increases in model accuracy. However, results indicate substantial improvements in model accuracy can be seen when demographics are added (+4.3%) as well as when parent and teacher expectations are added (+6.8%). In contrast, congruence in expectations alone only modestly adds to the level of accuracy when added to the demographics-only model (+0.7%) or when included in the full model (+0.2%).

### **Discussion**

The importance of family involvement in education and the positive effects to be gained from such involvement has been well established (e.g., Bronfenbrenner, 1986; Christenson & Anderson, 2002; Downer & Myers, 2010; Fantuzzo et al., 2000; Fishel & Ramirez, 2005; Ginsburg-Block et al., 2010; Reynolds & Clements, 2005); however, more recent literature has challenged practitioners and researchers to shift their focus. That is, instead of emphasizing

changes in family and school characteristics individually, priority should instead be placed on establishing collaborative *partnerships* with families (Reschly & Christenson, 2009).

Furthermore, these partnerships should be characterized by positive interactions between schools and families, two-way communication, shared goals, shared contribution, and collaborative decision-making and problem-solving, with the primary goal of optimizing student outcomes (Christenson, 2004; Christenson & Sheridan, 2001; Fantuzzo et al., 2000; Reschly & Christenson, 2012). Although some research has found promising results in implementing programs which involve some form of school-family collaboration (e.g., Cox, 2005; Guli, 2005; Ollendick, 2005; Scribner et al., 1999; Sheridan, Clarke et al., 2006; Sheridan et al., 2001; Sheridan, Eagle et al., 2006), and there has been some support for school-family partnerships as protective factors for at-risk students (e.g., Pianta & Walsh, 1998; Stormshak, Dishion, & Falkenstein, 2010; Webster-Stratton & Reid, 2010), the empirical literature base in this area is still lacking.

With renewed focus on school-family partnerships comes focus on the key principles which characterize the partnership process, the most-cited of which is congruence across home and school contexts (e.g., Bempechat, 1998; Christenson, 2004; Christenson & Anderson, 2002; Christenson & Sheridan, 2001; Clarke et al., 2010; Lohman & Matjasko, 2010; Reschly & Christenson, 2009; Speara & Motto, 2007; Webster-Stratton & Reid, 2010). However, although much theoretical literature exists discussing the importance of congruence or continuity across the home and school settings (e.g., Clarke et al., 2010; Speara & Motto, 2007), and positing incongruence in school-family partnerships as one of the key factors in producing higher levels of risk for students (Pianta & Walsh, 1996, 1998; Phelan et al., 1998), few studies have



investigated this concept empirically (e.g., Hansen, 1986; Hess & Holloway, 1984; Peet et al., 1997).

Authors of the current study endeavored to add to the empirical literature base by investigating congruence in school-family partnerships and its influence on later student outcomes. Specifically, authors chose to focus on congruence in parent and teacher expectations, as they have been hypothesized to strongly influence student effort and achievement (e.g., Christenson & Peterson, 1998; Fan & Chen, 2001; Fantuzzo et al., 2000; Neuenschwander et al., 2007; Wigfield & Eccles, 2000). Below the relative contributions of these variables are discussed.

### **Importance of Expectations and Congruence**

As mentioned above, the current study ventured to examine congruence in school-family partnerships, specifically in terms of parent and teacher expectations for educational attainment. In general, findings pertaining to expectations supported existing literature (e.g., Neuenschwander et al., 2007; Wigfield & Eccles, 2000). That is, higher parent and teacher expectations were found to be significantly related to higher levels of student achievement and educational attainment. Furthermore, this effect was found to be significant above and beyond student- and school-level demographic variables such as school control, student gender, and student socioeconomic status.

In terms of congruence, results were mixed. More specifically, higher levels of congruence was found to be a significant *predictor* in models investigating levels of current and future math achievement for students, but was not found to be a significant predictor in models investigating level of educational attainment. Furthermore, although congruence was found to improve the *fit* of models above and beyond parent and teacher expectations alone when looking

at current student achievement, this was not the case for other outcomes investigated (i.e., future student achievement and educational attainment). However, despite somewhat inconsistent findings in terms of congruence and its contribution to models predicting student outcomes, it is still evident that congruence is associated with higher student achievement. Based on the fact that congruence in parent and teacher expectations was found to be significantly related to current and future measures of student achievement in the direction one would expect, according to theory (Christenson & Sheridan, 2001; Fantuzzo et al., 2000; Pianta & Walsh, 1996, etc.), as well as the fact that the addition of a congruence variable always resulted in *some* level of improvement in model fit, authors maintain that the concept of congruence is one that warrants further exploration.

### **Implications**

There are a few important implications that can be drawn from the results of the present study, both for families and school practitioners working with children as well as educational researchers. The first is the evident importance of expectations in bringing about positive outcomes for students. Although the current study did not address the specific relationships between expectations, student perceptions, and student achievement, nor can the direction of influence between expectations and achievement be determined from the evidence presented here, results discussed above make clear the fact that both parent and teacher expectations are important in some way. Specifically, results support previous empirical and theoretical literature (e.g. Kelley & Decker, 2009; Neuenschwander et al., 2007; Wigfield & Eccles, 2000; Tollefson, 2000), implying that maintaining high expectations for students may provide the best opportunity for optimal educational outcomes. Furthermore, as congruence appears to offer some level of influence on student success, it is recommended that families and schools establish and maintain

continuity in expectations and moreover, that they communicate these expectations clearly to students (e.g., Christenson & Peterson, 1998; Fan & Chen, 2001).

In addition, findings of the current study highlight the need for further research looking into the concept of congruence and the role it plays in promoting positive student outcomes. As discussed previously, literature focusing on congruence has primarily been theoretical in nature (e.g., Bempechat, 1998; Christenson, 2004; Christenson & Anderson, 2002; Christenson & Sheridan, 2001; Clarke et al., 2010; Lohman & Matjasko, 2010; Pianta & Walsh, 1996, 1998; Reschly & Christenson, 2009; Speara & Motto, 2007; Webster-Stratton & Reid, 2010), in large part due to the inherent methodological challenges involved in congruence research (Bates, 2005; Fishel & Ramirez, 2005; Guli, 2005; Hoard & Shepard, 2005; Reynolds & Schlafer, 2010; Valdez et al., 2005, etc.). While the current study employs advanced methodological techniques to investigate this concept, adding to the sparse empirical literature base that exists on this topic, there are still limitations to the congruence variable used here which limit interpretations that can be made based on the results. However, as findings discussed above related to congruence suggest some level of importance above and beyond its component measures (i.e., parent and teacher expectations), some rationale exists for further research on the topic. For example, future studies may involve different methods of congruence measurement, investigation of different outcome variables, focus on congruence in different aspects of the school-family partnership, etc.

### **Limitations and Future Directions**

As previously alluded to, several challenges exist in researching school-family partnerships. Although the current study contributes to the empirical literature base investigating congruence in school and family expectations, a necessary component of partnerships, there are several limitations worth mentioning. Perhaps the most problematic is the congruence measure

used in the current study. Using the information available through the ELS:2002 dataset, authors of this study developed a measure of congruence from the absolute difference score in parent and teacher responses to identical questions, as is common practice in what little research exists. This approach is problematic for two reasons. First, the use of a difference score is a limitation in and of itself, based on the commonly cited methodological issues with difference scores (e.g., Edwards 1994, 2001). Furthermore, the measures of parent and teacher expectations are also problematic in this case, as their reliability is unknown, since they were determined based on a single item taken from a broader questionnaire. Future research in this area should aim to develop improved measures of congruence, based on valid and reliable measures of congruence components. In addition, the congruence measure used in the current study did not consider the level of parent and teacher expectations. Though findings above suggest that these concepts are both of importance in optimizing student outcomes, it is not clear as of yet whether there is a way to interpret both level of congruence *and* actual level of expectations meaningfully in a single model.

It is also important to note that student perceptions may mediate the effect parent and teacher expectations have on student outcomes; a consideration that was not investigated as part of the current study, due to the fact that no measure of student perceptions of parent and teacher expectations is provided within the ELS:2002 data. That is, to what extent do congruent expectations benefit a student if the student is not made aware of these expectations? Future studies in this area should investigate the relationship between these variables more closely. The nature of the data available posed other limitations as well. Specifically, no information on student achievement or parent and teacher expectations prior to 10<sup>th</sup> grade was available;

therefore, relationships between early expectations and congruence in expectations throughout schooling and various student outcomes could not be investigated.

In general, results and limitations of the current study point to many future directions for research in this area. With the development of improved measures of congruence between home and school, longitudinal investigations should examine the processes and practices that lead to and maintain high levels of congruence, as well as the positive outcomes to be gained from these processes. Furthermore, congruence in several aspects of the school-family partnership should be explored (e.g., views/emphasis on education, structure of the learning environment) and specific populations should be investigated (e.g., at-risk students) to determine whether differences exist in the development and impact of congruence among these families and schools. Additionally, as previously mentioned, student views and perceptions should be examined in future studies as a potential mediator or moderator between school and family characteristics and positive student outcomes.

Although research in the area of congruence and school-family partnerships is rife with challenges, the potential benefits for such research make it necessary. That is, with the increasing importance placed upon post-secondary educational attainment, practitioners are endeavoring for ways to engage students and their families in the educational process. Though theoretical support for the development and maintenance of collaborative partnerships between families and schools abounds, further research into the importance of congruence in these partnerships and ways to develop and establish that congruence is necessary to help translate theory into practice.

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Table 3.1: *Demographic Distribution of ELS:2002 Base-year Sophomore Cohort and Samples Used in Current Study (weighted)*

Characteristic	ELS National Sample % (Base-Year)	Current Study Sample % (Base-Year)	Current Study Sample % (BY to F1)	Current Study Sample % (BY to F2)
Total	100	100	100	100
Sex				
Male	50.5	49.7	49.2	49.2
Female	49.5	50.3	50.8	50.8
Race/ethnicity				
Asian/Pacific Islander	4.2	3.2	3.1	3.0
Hispanic/Latino	15.9	13.5	12.1	12.9
Black	14.4	11.1	10.3	10.9
White	60.3	67.4	69.9	68.0
American Indian/ Alaskan Native	0.9	0.7	0.7	0.7
Multiracial	4.3	4.1	3.8	4.3
Region				
Northeast	18.5	18.1	18.3	17.9
Midwest	24.1	25.7	26.3	26.2
South	34.3	34.9	34.8	35.1
West	23.0	21.3	20.7	20.8
Location				
Rural	19.6	21.8	22.0	21.9
Urban	30.2	26.1	24.7	25.6
Suburban	50.3	52.1	53.2	52.4
School				
Public	92.4	90.8	90.3	90.6
Private	7.7	9.2	9.7	9.4
Mother's Education				
Less than high school	13.2	10.4	8.9	10.3
High school or GED	27.9	26.6	26.0	26.9
Some college	34.6	36.6	36.6	36.3
4-year degree	16.6	17.9	19.1	18.0
Graduate/professional degree	7.8	8.5	9.4	8.6

Table 3.1 (cont.): *Demographic Distribution of ELS:2002 Base-year Sophomore Cohort and Samples Used in Current Study (weighted)*

Characteristic	ELS National Sample % (Base-Year)	Current Study Sample % (Base-Year)	Current Study Sample % (BY to F1)	Current Study Sample % (BY to F2)
Father's Education				
Less than high school	13.9	11.6	10.2	11.2
High school or GED	30.1	29.3	28.7	29.5
Some college	27.4	28.5	28.7	28.6
4-year degree	16.7	17.6	18.4	17.8
Graduate/professional degree	11.8	13.1	14.0	13.0



Table 3.2: *Descriptive Statistics for Base-Year Sample – Variables of Interest*

Variable	N (weighted)	Mean	SE Mean	Standard Deviation	Min	Max
Student Gender	9617 (2100690)	.49 (.50)	.005 (.000)	.500 (.500)	0	1
SES Score	9617 (2100690)	.139 (.066)	.008 (.001)	.753 (.731)	-1.97	1.98
School Control (i.e., public vs. private)	9617 (2100690)	1.25 (1.09)	.004 (.000)	.436 (.289)	1	2
Parent Expectations	9617 (2100690)	5.02 (4.89)	.014 (.001)	1.384 (1.420)	1	7
Math Teacher Expectations	9617 (2100690)	4.26 (4.11)	.015 (.001)	1.432 (1.440)	1	7
Parent-Math Teacher Congruence (Absolute Value)	9617 (2100690)	1.16 (1.19)	.012 (.001)	1.150 (1.177)	0	6
Base-year Math Composite Standard Score	9617 (2100690)	52.192 (51.515)	.100 (.007)	9.803 (8.890)	19.38	86.68
Follow-up Math Composite Standard Score	8512 (1827860)	52.040 (51.280)	.107 (.007)	9.917 (9.939)	22.49	79.85
Highest Education Level Attempted	8733 (1898989)	5.02 (4.88)	.015 (.001)	1.391 (1.453)	1	6

Table 3.3: *Result of HLM, Base-Year Math Achievement Outcome*

Fixed Effects	Estimate	Standard Error	<i>P</i>
Intercept	33.169	0.593	0.000
Gender	2.259	0.15	0.000
SES	2.382	0.516	0.000
School Control	-0.141	0.433	0.745
SES * School Control	-0.166	0.442	0.708
Parent Expectations	1.221	0.076	0.000
Teacher Expectations	2.815	0.079	0.000
Expectation Congruence	-0.463	0.088	0.000
Random Effects	Estimate	Standard Error	<i>p</i>
Intercept	9.201	0.772	0.000
SES	3.770	0.653	0.000

a. Residual is weighted by Base Year Student Weight

Table 3.4: *Model Fit, Base-Year Math Achievement Outcome*

Model	Fit Statistic (BIC)
Null Model (Intercept Only)	72751.55
Demographics Only Model	71323.30
Demographics + Expectations Model	68140.27
Demographics + Congruence Model	71106.53
Full Model	68115.57

Table 3.5: *Results of HLM, Follow-Up Math Achievement Outcome*

Fixed Effects	Estimate	Standard Error	Significance
Intercept	28.774	0.605	0.000
Gender	2.62	0.155	0.000
SES	2.269	0.521	0.000
School Control	0.689	0.433	0.112
SES * School Control	-0.200	0.446	0.654
Parent Expectations	1.099	0.079	0.000
Teacher Expectations ()	3.468	0.082	0.000
Expectation Congruence	-0.279	0.091	0.002
Random Effects	Estimate	Standard Error	Significance
Intercept	8.368	0.732	0.000
SES	3.445	0.651	0.000

a. Residual is weighted by Panel Weight, BY and F1 (2002 and 2004)

Table 3.6: *Model Fit, Follow-Up Math Achievement Outcome*

Model	Fit Statistic (BIC)
Null Model (Intercept Only)	64700.28
Demographics Only Model	63433.95
Demographics + Expectations Model	59880.86
Demographics + Congruence Model	63180.01
Full Model	59874.51

Table 3.7: *Results of HLM, Follow-Up Highest Education Level Attempted Outcome*  
 (Reference Category: *Enrolled in 4-year College or University*)

Fixed Effects	Estimate	Standard Error	Significance
Intercept 1 (some high school)	-6.664	1.449	0.000
Intercept 2 (GED)	-6.173	1.448	0.000
Intercept 3 (high school diploma)	-3.726	1.454	0.010
Intercept 4 (enrolled in less than a 2-year school)	-3.579	1.454	0.014
Intercept 5 (enrolled in 2-year college)	-1.499	1.451	0.302
Gender (female)	0.403	0.072	0.000
Gender (male)	0 <sup>b</sup>	--	--
SES	1.612	0.393	0.000
School Control (public)	1.135	0.243	0.000
School Control (private)	0 <sup>b</sup>	--	--
SES * School Control (public)	-0.243	0.429	0.571
SES * School Control (private)	0 <sup>b</sup>	--	--
Parent Expectations (less than high school graduation)	-4.256	0.611	0.000
Parent Expectations (high school graduation or GED only)	-2.786	0.221	0.000
Parent Expectations (attend or complete 2-year college/school)	-1.982	0.193	0.000
Parent Expectations (attend college, 4-year degree incomplete)	-2.026	0.225	0.000
Parent Expectations (graduate from college)	-0.953	0.145	0.000
Parent Expectations (obtain master's degree or equivalent)	-0.329	0.16	0.041
Parent Expectations (obtain PhD, MD, or other advanced degree)	0 <sup>b</sup>	--	--
Teacher Expectations (less than high school graduation)	-4.563	0.450	0.000
Teacher Expectations (high school graduation or GED only)	-3.397	0.361	0.000
Teacher Expectations (attend or complete 2-year college/school)	-2.851	0.339	0.000
Teacher Expectations (attend college, 4-year degree incomplete)	-2.280	0.344	0.000
Teacher Expectations (graduate from college)	-1.546	0.325	0.000
Teacher Expectations (obtain master's degree or equivalent)	-0.439	0.361	0.224
Teacher Expectations (obtain PhD, MD, or other advanced degree)	0 <sup>b</sup>	--	--
Expectation Congruence = 0 (Highly Congruent)	2.718	1.397	0.052
Expectation Congruence = 1	2.746	1.392	0.049
Expectation Congruence = 2	2.182	1.391	0.117
Expectation Congruence = 3	2.084	1.375	0.130
Expectation Congruence = 4	1.378	1.361	0.311

Table 3.7 (cont.): *Results of HLM, Follow-Up Highest Education Level Attempted Outcome*  
*(Reference Category: Enrolled in 4-year College or University)*

Expectation Congruence = 5	1.083	1.383	0.434
Expectation Congruence = 6 (Highly Incongruent)	0 <sup>b</sup>	--	--
Random Effects	Estimate	Standard Error	Significance
Var(Intercept)	5.540	0.325	0.000
SES	17.515	1.077	0.000

a. Residual is weighted by Panel Weight, BY and F2 (2002 and 2006)

b. This coefficient is set to zero because it is redundant

Table 3.8: *Model Fit, Follow-Up Highest Education Level Attempted Outcome*

Model	% Accuracy
Null Model (Intercept Only)	57.50%
Demographics Only Model	61.80%
Demographics + Expectations Model	67.00%
Demographics + Congruence Model	62.50%
Full Model	67.20%



## CHAPTER 4

### CONCLUSION

While the importance and positive influence of family involvement in education is well-known (e.g., Christenson & Anderson, 2002; Downer & Myers, 2010; Fantuzzo, Tighe, & Childs, 2000; Ginsburg-Block, Manz, & McWayne, 2010), researchers are increasingly calling for priority to be placed on establishing collaborative partnerships with families, characterized by positive interactions, two-way communication, shared goals and decision making, and a student-focused philosophy (Christenson & Sheridan, 2001; Reschly & Christenson, 2012).

Consequently, the concept of *congruence* is becoming increasingly relevant, as congruence in home and school environments, values, and other characteristics has been discussed as a key factor in providing for optimal student performance and developing and maintaining partnerships between families and schools (e.g., Christenson & Peterson, 1998; Clarke, Sheridan, & Woods, 2010; Finn & Rock, 1997; Reschly & Christenson, 2009). However, as very few studies have investigated this relationship empirically, the concept of home-school congruence has rarely been operationalized explicitly and measurement of the construct remains largely flawed. The present study endeavored to explore the construct of congruence and methodological challenges it presents, as well as empirically investigate the concept of congruence in parent and teacher expectations as it relates to various outcomes for students. General findings, implications, and future directions for research are presented below.

#### **Measuring Congruence**

In terms of congruence measurement, authors found that modern statistical procedures generally offer many advantages over approaches which have historically been used to measure

congruence or similar concepts (e.g., difference scores). Furthermore, two approaches reviewed seem to be most applicable to the investigation of congruence within school-family partnerships. First, Cheung's (2009) latent congruence model (LCM), a form of structural equation modeling specific to the investigation of congruence, provides a comprehensive approach to measuring both effects of congruence as well as the effects of latent components of congruence on outcome variables of interest. In addition, multi-level modeling (MLM) has also been widely used in educational research and offers particular advantages when analyzing clustered data (Beretvas, Keith, & Carlson, 2010; Gelman & Hill, 2007). Although, as previously mentioned, few empirical studies employing these methodologies have been done to this point, both approaches offer promise as ways of measuring and investigating congruence between home and school environments.

### **Congruence and Expectations**

In order to investigate congruence empirically, authors of the current study looked specifically at the effect of parent and teacher expectations and expectation congruence on various student outcomes. A few important findings warrant discussion here. First, parent and teacher expectations were found to have a significant, positive relationship with student achievement and educational attainment, which supports existing literature in the field (e.g., Neuenschwander, Vida, Garrett, & Eccles, 2007; Wigfield & Eccles, 2000). Furthermore, this relationship was found to be significant above and beyond student- and school-level demographic variables (i.e., school type, family socioeconomic status, student gender). In contrast, results pertaining to the significance of congruence were mixed. That is, while congruence was found to be a significant predictor in models investigating current and future levels of student math achievement, it was not found to be significantly related to level of

educational attainment. In addition, expectation congruence was only found to significantly improve model fit, above and beyond parent and teacher expectations alone, in the case of current student achievement. While these findings suggest that congruence offers little additional predictive capacity beyond its component measures (i.e., parent and teacher expectations), authors maintain that congruence is a concept worthy of further exploration, particularly as improvements are made in the type of data collected and methodology used.

### **Implications and Future Directions**

Several implications and directions for future research can be drawn from the findings discussed above. For example, as increasing emphasis is being placed on collaboration and congruence between home and school, it is imperative that educational practitioners carefully consider their approach to working with families. As professionals in the field, much of the onus for creating and maintaining these partnerships falls on school personnel, and educators must stay up-to-date with the literature related to school-family partnerships and congruence as this field of study continues to grow. In addition, expectations for students' achievement and educational attainment clearly play an important role in facilitating positive student outcomes. Moreover, congruence in these expectations appears to offer some level of influence on student success. Thus, it is recommended that parents and teachers establish and maintain continuity in their expectations for students and further, that they communicate the expectations clearly to students.

With regard to research in the field of school-family partnerships, results and limitations of the current study point to many potential areas for investigation. First, future research should focus on further comparing and contrasting various approaches to measuring congruence. Through this process, a clearer picture may be gleaned of which procedures offer the most

practical and methodological advantages while imposing the fewest limitations. Further, development of instruments (i.e., questionnaires) specifically aimed at measuring home-school congruence may very well be called for. With the development of improved measures of congruence, researchers may then conduct longitudinal investigations to continue to examine the processes and practices that foster high levels of congruence, as well as the related benefits to be gained. Investigations may also then look at congruence with respect to several aspects of the school family partnership (e.g., educational beliefs, structure of learning environment) and within specific populations of students (e.g., those at risk for dropout). Finally, researchers should also investigate the role student perceptions of congruence play; that is, are the benefits of home-school congruence contingent on students being made aware of that congruence?

Although school-family partnership research poses numerous challenges, the potential benefits of such research make it worth pursuing. As increasing importance is placed on post-secondary educational attainment, educators are consistently searching for ways to engage students and their families in the educational process, and research in the areas noted above will lead to a better understanding of the role played by congruence and its contributions to various student outcomes.

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