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Examination of The Psychometric Properties of an International School Survey of Parent Experience

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EXAMINATION OF THE PSYCHOMETRIC PROPERTIES
OF AN INTERNATIONAL SCHOOL SURVEY OF PARENT EXPERIENCE

by

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EXAMINATION OF INTL SCHOOL PARENT SURVEY

Abstract

Given the stakes regarding parent involvement, satisfaction, and choice in international schools, information regarding the measurement of parent perception and experience is highly desirable. Though International Schools of China (ISC) collected data from parents annually, little was known about the survey instrument. Therefore, this study examined the psychometric properties—the underlying latent structure and internal reliability—of the ISC Parent Survey. Using existing data obtained from the 2014 collection cycle ($N=309$), an exploratory factor analysis was conducted on 72 likert-scale items. Results from this study identified 13 (including 11 well-defined and internally consistent) factors that measure various concepts of parent experience in an international school community. Each of the factors aligned well with previous literature on parent involvement, satisfaction, and choice, and the results of this study may indeed be the first of its kind. In addition, ISC leadership now has specific steps to improve the further development and use of their parent survey. Furthermore, the findings of this study reveal a need for international schools to reevaluate the way that they engage parents. With so many additional overlapping spheres of influence in the international school setting, schools must focus on examining parent experience through each parents' cultural lens. The identified constructs, such as school respect for parents, academics, leadership, and communication, that were discovered in this study may aid international schools in learning how to build better parent and school partnerships.

Keywords: exploratory factor analysis, international schools, K12 education, parent choice, parent experience, parent involvement, parent perception, parent satisfaction, parent-school partnerships, survey

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I would like to dedicate this dissertation to my Texas family for being my first and most influential teachers, and my China family, who championed me in both word and deed to achieve this goal from start to finish. I am blessed beyond measure and give praise to Him from whom all blessings flow!

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List of Abbreviations

Advanced Placement (AP)

English Language Learners (ELL)

Exploratory Factor Analysis (EFA)

Harvard Family Research Project (HFRP)

Internal Review Board (IRB)

International Baccalaureate (IB)

International School of Qingdao (ISQ)

International Schools of China (ISC)

Kaiser-Meyer-Olkin test of sampling adequacy (KMO)

Maximum Likelihood (ML)

Missing at Random (MAR)

Missing Completely at Random (MCAR)

Multiple Imputations (MI)

Organization for Economic Co-operation and Development (OECD)

Parent-Teacher Association (PTA)

Parent-Teacher Organization (PTO)

Principal Axis Factors (PAF)

Program for International Student Assessment (PISA)

Root Mean Squared Residual (RMSR)

Statistical Package for the Social Sciences (SPSS)

Western Association of Schools and Colleges (WASC)

Chapter 1

Introduction

“A child educated only at school is an uneducated child.”

– George Santayana

When a child enters the world, every new encounter is a first. From the first taste of green peas and first wet tongue of a friendly dog to the first screaming ambulance siren and first salty taste of ocean waves, everything is new. In all this newness, children look to their parents to help them make sense of each new experience, establishing their parents as their first and most important teachers. Working as these essential teachers, parents assist their children in understanding the complexities of daily life, as well as introduce their children to foundational family, national, and religious traditions.

Before children ever enter school, they spend countless hours learning language, cultural customs, and family values just by interacting with their parents. While teachers understand grade-level content and practice good pedagogy, parents act as the gatekeepers to their children's world outside the classroom. Wise teachers trust that parents best understand their children's past and present and rely on parent insight to better educate their students. While parents are not always acknowledged for their contributions, successful schools recognize the important role that parents play in their children's education.

Before the days of formal schooling, young children gathered at their elders' knees while older children often worked alongside their parents, learning the family trade. Historically, private education was only for the wealthy, so most parents were responsible for any formal learning that took place in the lives of their children. In the earliest days of American public education, parents still controlled the school board, ruling over the content and supervision that

their children received each day (Webb, 2006). After World War II, parent involvement in schools was most often minimized to serving as a classroom volunteer, “room mom,” or in the school’s Parent-Teacher Organization (PTO) (Epstein & Sheldon, 2006). However, since the turn of the century and the emergence of school vouchers, charter schools, and school choice, parent influence in education has regained ground, as parent satisfaction in the choice of their children’s school is becoming increasingly more important (Kena et al., 2015; Noel, Stark, Redford, & Zuckerberg, 2013).

International schools have also seen this gradual shift in parent influence. Yamato and Bray (2006) contended that the first one or two international schools in a given city are a direct result of the emerging schooling needs of an expatriate community, with subsequent schools entering the arena primed with marketing strategies to offer competition. This competition rightly causes original schools not only to seek out and maintain accreditation and maximize on their niches, but also to amplify their marketing tactics (Bunnell, 2008; MacDonald, 2009a).

Since the reality of school choice is now global (MacKenzie, 2010), in their research of educational marketing, Li and Hung (2009) found that in Taiwan, “the higher the parents’ perception of marketing efforts, the more favorable the school image” (p. 485). A favorable school image further influences parents’ positive word-of-mouth, school choice, and retention (Li & Hung, 2009). Research also indicates that parents choose schools primarily from their interpersonal networks of family, friends, and co-workers (Goldring & Phillips, 2008; ter Avest, Bertram-Troost, & Miedema, 2015). Therefore, in today’s competitive school market, maintaining a pulse on parent perception is vital to the health of the international school.

It is important to note that while current research favors the term *families* over the term *parents*, the current study will use *parents* for two important contextual reasons. First, Chinese

law requires all international school students to be foreign passport holders, and student enrollment is contingent on appropriate documentation and approved visas (Ministry of Education of the People's Republic of China, 2015). Consequently, in order for students to receive appropriate documentation from the local government, a minimum of one parent must have a valid work visa. Secondly, the International Schools of China (ISC) handbook further establishes the requirement of parent residency in section 4.021, "Presence of Parent(s) in the City" (Leadership Development International, 2013). Therefore, though family-related research will be considered, I will use *parent* in deference to the situation.

Related Studies

The following section will outline the relationships between parents and schools and highlight the tools created for measuring parent experience with schools.

Parents and schools. Research has identified several factors which motivate schools to reach out to parents. Since the mid-1990s, numerous studies have indicated that parent involvement is associated with multiple benefits to students, such as increased student achievement (Fan & Chen, 2001; Green, Walker, Hoover-Dempsey, & Sandler, 2007; Henderson & Mapp, 2002) and increased student motivation (Kraft & Dougherty, 2013). However, parent involvement is good for schools, too. Research further indicates that stronger schools are built by giving families tools and resources to aid student learning (Ferguson, Ramos, Rudo, & Wood, 2008; Henderson & Mapp, 2002; Kraft & Dougherty, 2013).

Parents and schools are inextricably linked, especially when forced to thrive in a foreign land. For most international educators and expatriate families, the school provides a source of needed community (McNulty, 2012; Patterson, 2014; Shah & Lund, 2007). School activities offer necessary social outlets for both new arrivals and seasoned veterans. Relationships are

interconnected in such a tight community, and the staff and students fully benefit when parents are actively engaged in sharing their culture, heritage, and perspectives with the entire school.

Furthermore, research consistently shows that most parents want to support their children's education. In their meta-analysis of parent involvement and student achievement, Fan and Chen (2001) reported that the strongest relationship existed between parental aspirations and expectations, and children's educational achievement ($r = .44$). Others conclude that these high aspirations for their children's success exist regardless of race/ethnicity, culture, or income (Boethel, 2003; E. Kim, 2002; Ule, Zivoder, & du Bois-Reymond, 2015). On the other hand, it seems that parent expectations are inversely related to family income in Kim's (2002) study of Korean family involvement and Ule, Zivoder, and du Bois-Reymond's (2015) study of family involvement in several European nations. At the same time, according to Goldring and Phillips (2008), parents with higher family income are more likely to set academics as a higher priority.

Parents also have other more cultural reasons for being involved in their child's education. Goodall and Ghent (2013) report that for some faith backgrounds in the United Kingdom, "engaging with their children's learning is a part of their expected role as a parent" (p. 20). Still other parents feel the heavy burden of peer pressure in their social and societal circles. Parents in Europe report that "good parenting" is measured by cooperation between the home and school (Ule et al., 2015), while Asian mothers feel a responsibility to insure their children's success to bring honor to the family (MacKenzie, 2009).

Measuring parent experience. But how does one measure these motivations and continue the conversations between parents and school? A large body of research has emerged in the last 40 years measuring parent involvement in schools. The most cited framework belongs to Dr. Joyce Epstein and her work regarding school, family, and community partnerships

(Epstein, 2005, 2010; Epstein et al., 2009). However, another popular model and set of scales was developed by Kathleen Hoover-Dempsey and Howard Sandler to more deeply examine parent involvement (Green et al., 2007; Hoover-Dempsey & Sandler, 1997; Hoover-Dempsey, Walker, et al., 2005). Additionally, the Harvard Family Research Project has gathered and collated numerous resources, as well as verified scales for collecting data.

A smaller, but growing, body of research explores parent satisfaction with their child's school around the globe. Tuck (1995) and Griffith (1997) began this early work in the era of school choice in the United States. Further studies in New York City and Chicago continued research on parent satisfaction while more closely focusing on elements of school climate (Cooper & Letts, 2002; National Center for Education Statistics, 2003). In more recent years, Skallerud (2011) and Badri and Mohaidat (2014) looked at parent satisfaction in Norway and the United Arab Emirates, respectively. Most recently, Schueler, Capotosto, Bahena, McIntyre, and Gehlbach (2014) developed a seven-question scale to assess parent perceptions of climate in their child's school, while Friedman, Bobrowski, and Geraci (2015) examined factors associated with parent satisfaction across ethnicities. Sadly, research has yet to fully catch up with the rapidly growing field of school marketing, and few studies have been devoted to examining the parent perceptions in international schools (MacKenzie, 2010).

Problem Statement

The organization International Schools of China (ISC) has been in existence since 1986, with the opening of Tianjin International School. All six schools are legally recognized as international schools in the People's Republic of China. Only non-Chinese passport holders are able to apply for admission into international schools, so the student body is comprised of expatriate students from various nations around the world. Americans and South Koreans make

up the largest portion of the student population. In September of 2015, enrollment included 1,861 students, ranging from age two to grade twelve (minutes from the September 11, 2015 principal meeting).

According to the handbook, International Schools of China believes that “parents are ultimately responsible for the education of their children” and “cooperation between the school and the home is necessary to ensure that students reach their fullest potential” (Leadership Development International, 2013, p. 46). Because students are daily impacted by cultures very different from their own, parents must be partners in learning, so that every child is able to succeed in such a unique cross-cultural environment. Furthermore, the ISC schools genuinely believe in a continuous cycle of school improvement where parents are valued stakeholders, as demonstrated by their accreditation self-studies (International School of Qingdao (mti), 2011, 2014; Qingdao MTI International School, 2005, 2008). The schools eagerly solicit parents’ opinion on ways that they can improve. Finally, ISC schools want to retain current students and appeal to incoming students, and in the competitive international school market, parents are the primary decision makers.

Each of the six ISC schools are accredited through either the Western Association of Schools and Colleges (WASC) or AdvancED, and throughout the years, they have conducted internal surveys of parents regarding various aspects of parent perception, parent experience, and parent involvement. However, in 2013, in a combined effort to become better researchers and keep better data systems, the superintendent directed the creation of a single system-wide survey to consolidate the information gathered from parents. Unfortunately, the final survey is quite lengthy in an attempt to address requirements from all six schools and consists of predominantly individual items rather than groups of existing measures.

The results of this survey are available to the administrators of each school in raw data form, but as in similar situations at other schools, the sheer amount of raw data and the limited time of the individual principals causes much of this data to remain underutilized (Englert, Fries, Goodwin, Martin-Glenn, & Michael, 2004).

Purpose of the Study

The purpose of this study is to refine an existing instrument that investigates aspects of parent choice, satisfaction, and involvement in their children's schooling in an international school system in China. I have conducted an examination of the psychometric properties in order to determine the internal reliability and underlying structure of the current instrument. This study has the potential to improve a tool which will also be able to influence the school decision-makers in working with parents of international school children. Additionally, this study may provide the schools with a valid and reliable instrument for future use within the international school community. The research questions include:

1. Does the ISC Parent Survey demonstrate internal reliability?
2. What is the underlying structure of the ISC Parent Survey instrument?

Significance of the Study

Fantuzzo, Perry, and Childs (2006) found that "school, principal, and teacher practices are more important than parent characteristics (e.g. poverty level, minority status, education level) in getting families involved at school" (p. 143). More recently, Whitaker and Hoover-Dempsey (2013) concluded that "parents' current experiences with schools were more powerful than their prior experiences" (p. 90). This finding is especially good news indicating that schools, rather than other, more uncontrollable factors, actually have the power to cultivate better relationships with parents and to change parents' views of their experiences with a school. If a school is able

to foster a positive parent-school relationship with parents, students will benefit from a healthy home-school connection.

The findings of this study will directly benefit the International Schools of China. If the current tool proves itself to be valid and reliable, not only will ISC schools benefit, but also other international schools hoping to measure parent perception within international schools. If exploratory factor analysis demonstrates that the tool is unreliable with no consistent structure, the ISC personnel can take appropriate steps to further develop a more reliable and valid measure. Furthermore, parent-reported studies of parent experience are limited (Stacer & Perrucci, 2013); the results of this study will add to the inadequate body of literature.

Variables

There are 96 items on the parent survey. A list of survey items can be found in Appendix A. Each survey likert-scale item served as a variable for this study. As seen in Table 1, there are 11 demographic items, 72 items based on a likert-scale for disagree/agree, 3 yes/no items, 3 multiple answer items, and 7 open-ended items.

Table 1

Types of Items in the ISC Parent Survey

Type of Items	Count of Type	Survey Items
Demographic	11	U01, E02-E11
Likert-scale	72	E12-E41, E44-E73, E75-E85, E96
Yes/No	3	E42-43, E74
Multiple Answer	3	E86, E94-E95
Open-ended	7	E87-E93

As with other factor analysis studies, dependent and independent variables are not identified separately and no specific hypothesis can be made as to the various dimensions found in the ISC Parent Survey (Beavers et al., 2013).

Key Terms

International School – In the context of this study, as in Harrington (2007), international schools meet the following criteria: they identify themselves as *international schools*, they are non-national overseas schools, and they are recognized by a school accrediting agency.

Culture – A set of learned beliefs, values, or routines shared by a distinct ethnic, religious, or social group (Van Der Westhuizen, Pacheco, & Webber, 2012); in the case of this study, the term culture most often references *national culture*, *expatriate culture*, or *international school culture*.

Parent Involvement – The opportunity for parents to take an active role in the education of their children, whether in the physical school environment or extending learning into the home through homework support. In the case of this study, parent involvement is the broad, umbrella-like term used to encompass multiple concepts and applies to:

- (a) both parents' involvement in their children's education (benefitting the individual) and parents' involvement in their children's schools (benefitting the community);
- (b) the term *family involvement* (Boethel, 2003);
- (c) the term *parent engagement* (Goodall & Montgomery, 2014; Hoover-Dempsey & Sandler, 1997); and
- (d) the term *family, school and community partnerships* (Epstein, 2010).

Parent Satisfaction – The level of confidence and contentment that parents place in the school their children attend.

Parent Choice – The opportunity for parents to choose where their children will attend school.

School Reputation – The public, perceived image of a school.

Limitations and Delimitations

The use of existing data sets always comes with inherent limitations, and this study is no exception. While the ISC Parent Survey 2014 data are quite extensive, it is by no means exhaustive. Possible demographic or key parent experience factors may be omitted, but only the collected data was available for analysis. The survey did not utilize any known scales or pre-coding, and therefore there are a variety of unknown factors/dimensions.

In order to examine these unknown dimensions, I chose exploratory factor analysis (EFA) as the chosen research methodology, adding limitations regarding the subjectivity of the many methodological decisions required for a single analysis in EFA. This is the most restrictive delimitation in the study. Other limitations in the data set include a limited sample size (this important issue will be further discussed in Chapter 3), including a limited sample size of English language responses, an imbalance in the representation of the parent body, and potentially missing data or culturally-skewed response sets in the sample.

Further limitations regarding the survey items include issues of translation and bias towards the school. The survey was written in English, but translated into Chinese, Korean, and French; there is little known about the quality of the translation. Because the survey was written by school representatives, it may contain biased statements benefitting the school over the parents, such as E43 (*I have read our school's expectations for student conduct*). Finally, I hold a paid position in the office of the ISC superintendent. Though I made every effort to engage with the data in a non-biased way, my regular involvement with the schools and relationships with the administration is a potential limitation to this study.

Summary

Given the stakes regarding parent involvement, satisfaction, and choice in international schools, information regarding the measurement of parent perception and experience is highly desirable. The purpose of this study is to explore the internal reliability and underlying structure of one such tool. Specifically, using existing data derived from the ISC Parent Survey 2014, this research uses various EFA strategies to examine the ISC Parent Survey for like-factors in regards to parent involvement, satisfaction, and choice in an international school setting. The findings of this study will provide both the ISC and the broader international school community with a possible tool to measure parent perceptions, in addition to contributing to the literature on parent experience in a unique multicultural context.

Chapter 2

Review of the Literature

Introduction

The present study has been advised by a focused review of the existing literature on parent involvement, satisfaction, and choice. An in-depth analysis and synthesis of the research related to these aspects of parent interaction with schools provides the foundation needed to explore the underlying structure of the instrument. The following review highlights the current understanding of parent involvement, satisfaction, and choice, as well as presenting how this study extends existing knowledge in the international school context.

Numerous studies found that parent involvement benefits not only the children and their parents, but the entire school community (Arias & Morillo-Campbell, 2008; Boethel, 2003; Henderson & Mapp, 2002; Schaps, 2007; Stacer & Perrucci, 2013). Various models of parent involvement, engagement, and partnership have been developed over the last 40 years, with none more cited than Epstein's framework of parent involvement (Boethel, 2003; Deslandes, 2011; Goodall & Montgomery, 2014). Elements such as volunteering, learning at home, parent-teacher contact, and communication from school exist in several models, demonstrating their importance in parent involvement research (Epstein & Sheldon, 2006; Epstein, n.d., 2005, 2010; Hoover-Dempsey & Sandler, 1997; Hoover-Dempsey, Walker, et al., 2005). Criticism of the traditional models has encouraged schools to focus more on celebrating cultural differences and building authentic relationships (Arias & Morillo-Campbell, 2008; Boethel, 2003).

Parent satisfaction research has demonstrated that satisfied parents remain connected to and promote the school (Badri & Mohaidat, 2014; Goldring & Phillips, 2008; Li & Hung, 2009; Skallerud, 2011; ter Avest et al., 2015; Wherry, n.d.). Several measures exist to explore various

factors of parent satisfaction. These measures primarily examine classroom support for learning, parent involvement opportunities, and staff effectiveness, along with other important elements of school climate (Cooper & Letts, 2002; Friedman et al., 2015; Schueler et al., 2014; Skallerud, 2011; Tuck, 1995).

Parent choice of school for their children has grown globally in importance (Li & Hung, 2009; MacKenzie, 2010; Ng, 2012; Velliaris & Willis, 2014). Now that parents have the opportunity to choose their child's school, they have high expectations of teachers and schools (Friedman et al., 2015; Li & Hung, 2009; Skallerud, 2011). Discovering the motivating factors of parent choice is especially important in the competitive international school market (MacDonald, 2009a; MacKenzie, 2010).

Parent Involvement

Parent involvement is important to schools for a variety of reasons. Involved parents build connections to an educational part of their children's lives. The following section examines the available literature for the benefits of parent involvement, theoretical models of parent involvement, and the common elements found in those models, as well as other important considerations regarding parent involvement studies. While the primary focus on this section is parent involvement, parent engagement is briefly addressed as a related field of inquiry in current research around the globe.

Benefits of parent involvement. Research has demonstrated that parent involvement is beneficial to the entire school community (Arias & Morillo-Campbell, 2008; Boethel, 2003; Henderson & Mapp, 2002; Schaps, 2007; Stacer & Perrucci, 2013). Regardless of the school community's socioeconomic levels and cultural backgrounds, schools with active parents benefit the children, the parents, and the school team (Boethel, 2003; Ferguson et al., 2008; Mapp, 2012).

Benefits to children. Students benefit when their parents are involved and engaged in education. Fan and Chen (2001) determined that a practically meaningful relationship between student academic achievement and parent involvement exists, though they also indicate that some dimensions of involvement are more effective than others. In the 51 studies that Henderson and Mapp (2002) examined regarding the influence of school-family-community relationships on academic achievement, their work indicated that parent involvement in schools is associated with higher rates of attendance, graduation, and the pursuit of higher education. Students were able to transition more easily to the classroom and teachers “when family members commonly engage[d] with teachers or other school staff” (Ferguson et al., 2008, p. 1). According to other specific studies, parent involvement is related to higher test scores for both the school as a whole (Schaps, 2005) and individual children whose parents are involved (Wilder, 2014). Additionally, parent involvement is related to the completion of homework assignments (Froiland, Peterson, & Davison, 2012; Hoover-Dempsey, Bassler, & Burow, 1995; Kraft & Dougherty, 2013). Jeynes (2012) reported in his meta-analysis of family and school partnership programs that parents checking homework had a small, positive effect ($d = 0.27$) on students’ overall achievement. In their study of 18 elementary, middle, and high schools spread across the United States, Sheldon and Epstein (2005) found that when controlling for prior achievement, children who were assigned math homework which required them to show and discuss math skills with a family member scored at or above proficiency on standardized math achievement tests ($r = 0.60$). Additionally, in studies of English language learning (ELL) parents and parents in high poverty areas, involved parents are more connected and have better access to information about programs and opportunities for students; therefore, they are more prepared to be better

advocates for their children (Arias & Morillo-Campbell, 2008; Curry & Adams, 2014; Ferguson et al., 2008).

Children also benefit from parent involvement in their education in other non-academic ways. When parents are invested in their schooling and school activities, students learn the importance of education; this is especially important in the case of minority or ELL families that desire further education for their children (Jeynes, 2012; E. Kim, 2002). A case study of a middle school in Texas (Wood, Rogers, & Yancey, 2006) reported that when children see their parents attending parent ESL classes in the evening and school meetings with their teachers, students gain a new respect for their own learning.

Furthermore, children of involved parents demonstrate better social skills and improved behavior (Van Voorhis, Maier, Lloyd, & Leung, 2013), in addition to a more positive attitude towards school (Epstein, n.d.; Goodall & Montgomery, 2014). According to Olsen and Fuller (2008), relationships between children and their parents have the potential to be strengthened when children see their parents take interest in their lives and what they are doing at school.

Benefits to parents. Parents benefit from involvement and engagement in education as they are able to better understand and connect with their children. Involvement in school offers parents and children opportunities for quality time together (Jeynes, 2014). For example, in her study of 45 international school parents in the United Kingdom, McLachlan (2008) found that parents who worked with their students to complete home assignments for guidance class indicated that the time spent together helped them to build communication between their adolescents and themselves, specifically in dealing with difficult situations and topics that their children were facing. When parents are engaged with the school, they build understanding of the

way the school operates and what curricular and extracurricular programs are available (Curry & Adams, 2014; Harrington, 2007).

Research has demonstrated that parent involvement also helps parents to build confidence in just being at school; parents become more comfortable when they have a designated place and a reason to be on campus (Hoover-Dempsey, Walker, et al., 2005). Parent involvement also builds confidence in their parenting skills and their ability to help their children learn (Whitaker & Hoover-Dempsey, 2013). Additionally, parent involvement allows parents to be held in higher regard by the teachers, and subsequently, teachers expect more from involved parents' children (Vickers & Minke, 1995). For example, as part of a parent involvement program in Chicago, Hurtig (2004) developed the "Parents Write Their World" project. This opportunity allowed parents from different cultures and backgrounds to write about their experiences and publish their work. As a result, parents reported an increase in their personal self-confidence and self-perception. Hurtig (2004) additionally found that their children developed "a greater interest in reading and writing, as they witness[ed] their parents do their own writing" (para. 10), and "the writing project has enhanced teacher-parent relationships and understanding" (para. 15).

Benefits to teachers and the school. Teachers and schools also profit from regular parent involvement, especially the benefit of better morale among teachers (Feuerstein, 2000; Holmes, 2011). In their study of Taiwanese elementary school teachers, Li and Hung (2012) found a "strong positive association between perceived parental involvement and teacher satisfaction" (p. 511). These Taiwanese teachers' workplace satisfaction was most strongly influenced when they felt that parents were involved with their children's schooling at home, then influenced by the teacher-parent relationship, and lastly, influenced by parent involvement at the school (Li & Hung, 2012). Working with involved parents, teachers are able to extend

student learning beyond the school day; for example, Sheldon and Epstein (2005) determined that offering parents or students math games or lending-library activities was strongly associated ($r = 0.59$) with a higher percentage of students who scored at or above proficiency on standardized math tests.

Furthermore, teachers who actively engage parents receive higher ratings than their peers (Ginsberg & Hermann-Ginsberg, 2005). Proactive partnerships mean that parents and teachers can work together to better understand individual student needs; in fact, Kohl et al. (1994, as cited in Kohl, Lengua, & McMahon, 2000) found that “the quality of the parent–teacher relationship was more strongly associated with positive child outcomes than...the amount of [parent] involvement” (p. 517). Additionally, positive parent involvement programs garner more support for the school from families, and better school reputation in the community (Shillady, 2014; Skallerud, 2011).

Benefits specific to international schools. While no studies have specifically outlined the benefits of parent involvement in the international school context, other human resource and marketing research regarding expatriate living proposes that parent involvement is especially valuable in the international school. In such “a world of clashing traditions and collective identities” (Y. Y. Kim, 2008, p. 359), parents in these settings deal with significant transition and often rely on the school to connect themselves to other parents with similar experiences. According to several studies, the international school is one of the few environments where expatriate parents are able to socially connect and build relationships (Harrington, 2007; McNulty, 2012; Rosenbusch & Cseh, 2012).

Additionally, when parents of various backgrounds are able to share their own funds of knowledge and cultural capital with the students and faculty, parents are affirmed and the entire

community benefits from their instruction (Cheatham & Santos, 2005). When multiple languages are present in the school, the international school often turns to bilingual parents for support. Children, parents, and teachers in these highly cross-cultural settings all benefit when parents are connected to the school.

Models of parent involvement. There are several models of parent involvement that can be found in the research; the Epstein (2006; 2009; 2010) and Hoover-Dempsey and Sandler (1997; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005) models are the most referenced. Other models now extend beyond these two traditional models to include even more collaborative and community approaches.

The Epstein model. Epstein's framework is one of the most cited in regards to parent involvement. Through her years of research, she has adjusted her terminology and now calls her emphasis of study – *school, family, and community partnerships*; she noted that this new term better encompasses and conveys the shared responsibility for student learning and development (Epstein & Sheldon, 2006; Epstein et al., 2009). Evolving from a historical research approach, Epstein has focused primarily on a school-initiated approach to parent involvement.

Focusing both on research and program development, Epstein (2006; 2010; 2009) proposed an overlapping spheres of influence theory in the lives of students. As all students have families, and these students and families live in community with others, she suggested that student learning is influenced not only by the school, but also by family and community. When the experiences, philosophies, and practices of the school, family, and community overlap more closely, students are able to make stronger and deeper connections with their learning. Therefore, this theory underpins the structure for Epstein's framework for the six types of involvement which includes (a) parenting, (b) communicating, (c) volunteering, (d) learning at home, (e)

decision making, and (f) collaborating with the community (Epstein, n.d., 2010; Epstein et al., 2009). Figure 1 expands on the definitions of Epstein's six types. However, while certainly the most popular model for parent involvement, Epstein is not the only model found in the research.

Type	Definition	Redefinitions (clarifying key terms)
Parenting	Help all families establish home environments to support children as students.	<ul style="list-style-type: none"> • "Workshop" to mean more than a meeting about a topic held at the school building at a particular time. "Workshop" may also mean making information about a topic available in a variety of forms that can be viewed, heard, or read anywhere, anytime, in varied forms
Communicating	Design effective forms of school-to-home and home-to-school communications about school programs and children's progress.	<ul style="list-style-type: none"> • "Communications about school programs and student progress" to mean two-way, three-way, and many-way channels of communication that connect schools, families, students, and the community.
Volunteering	Recruit and organize parent help and support.	<ul style="list-style-type: none"> • "Volunteer" to mean anyone who supports school goals and children's learning or development in any way, at any place, and at any time -- not just during the school day and at the school building.
Learning at home	Provide information and ideas to families about how to help students at home with homework and other curriculum-related activities, decisions, and planning.	<ul style="list-style-type: none"> • "Homework" to mean not only work done alone, but also interactive activities shared with others at home or in the community, linking schoolwork to real life. • "Help" at home to mean encouraging, listening, reacting, praising, guiding, monitoring, and discussing -- not "teaching" school subjects.
Decision making	Include parents in school decisions, developing parent leaders and representatives.	<ul style="list-style-type: none"> • "Decision making" to mean a process of partnership, of shared views and actions toward shared goals, not just a power struggle between conflicting ideas. • Parent "leader" to mean a real representative, with opportunities and support to hear from and communicate with other families.
Collaborating with the community	Identify and integrate resources and services from the community to strengthen school programs, family practices, and student learning and development.	<ul style="list-style-type: none"> • "Community" to mean not only the neighborhoods where students' homes and schools are located, but also any neighborhoods that influence their learning and development. • "Community" rated not only by low or high social or economic qualities, but by strengths and talents to support students, families, and schools. • "Community" means all who are interested in and affected by the quality of education, not just those with children in the schools.

Note: Adapted from Epstein, J. L. (n.d.). Epstein's framework of six types of involvement. Baltimore, MD: Partnership Center for the Social Organization of Schools. Retrieved from http://www.unicef.org/lac/Joyce_L_Epstein_s_Framework_of_Six_Types_of_Involvement%282%29.pdf

Figure 1. Epstein six types of involvement framework with definitions and redefinitions

The Hoover-Dempsey and Sandler model. Grounded in psychological literature, the Hoover-Dempsey and Sandler (1997) model and later revision (Walker et al., 2005) provided an alternative to exploring parent involvement. By exploring a first-person account of parent involvement, this model focuses more on parent motivational beliefs, perceptions, and perceived life context in approaching the school environment.

In the Hoover-Dempsey and Sandler revised model (as seen in Figure 2), parent motivational beliefs are defined as self-efficacy and parent role construction. Parent perceptions of invitation for involvement is defined as perceptions of general invitations from the school, invitations from their child, and invitations from the teacher. Finally, parents' perceived life context is defined as self-perceived time and energy, as well as self-perceived skills and knowledge (Walker et al., 2005). All of these factors contribute to parent involvement in both home involvement and school involvement. Follow-up studies using the Hoover-Dempsey and Sandler (1997) model included measuring the influence of child age-related differences on parent involvement practices, as well as developing specific scales to measure self-efficacy and role construction (Whitaker & Hoover-Dempsey, 2013).

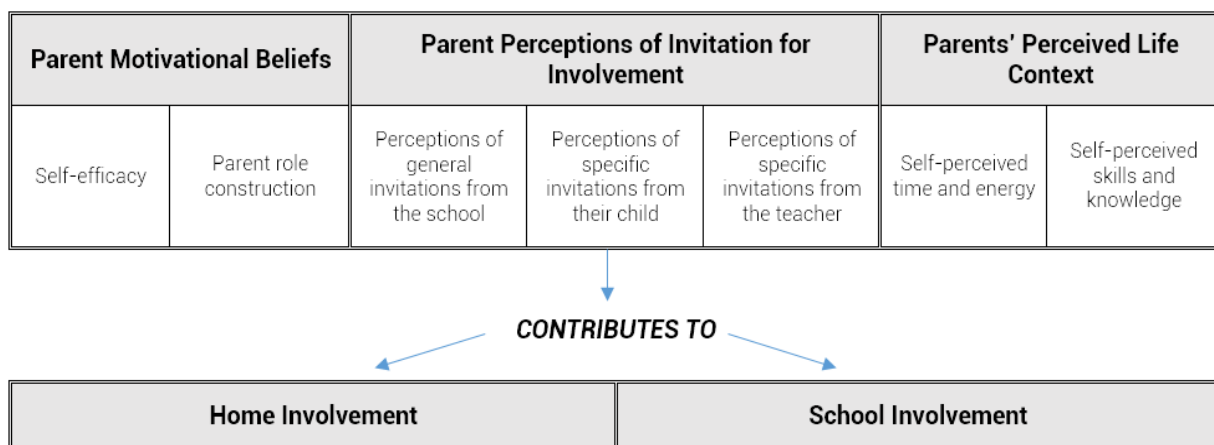


Figure 2. Hoover-Dempsey and Sandler framework (2005 revision)

Other American models. Harris and Wilkes (2013), in conjunction with the Harvard Family Research Project (HFRP), developed a *community schools* model to outline the planning, implementation, and ongoing steps for partnerships between schools, families, and communities. This model requires (a) a shared vision for learning, (b) shared leadership and governance, (c)

complementary partnerships, (d) effective communication, (e) regular and consistent sharing of information about youth progress, (f) family engagement, and (g) collaborative staffing models.

Global models. The desire for shared responsibility for student learning is not limited to U.S. research. In the U.K., Goodall and Montgomery (2014) proposed a continuum to move parents from involvement with the school to more parent-devised and led engagement in their child's learning. They concluded that engagement is more than an activity and requires greater commitment, and therefore should no longer be classified as simple involvement. Goodall and Montgomery (2014) argued that "to be most effective, parental engagement needs to be rooted in the home" (p. 402). Research also demonstrated that parents tend to take a wider view of learning to include sports, religious teachings, and family outings, while schools traditionally tend to hold a very narrow view of what qualifies as educational, and "underestimate the amount of engagement parents have with their children's learning" (Goodall & Ghent, 2013, p. 18).

However, studies in Asia contradict this wider view of learning where most parents believe that learning should focus on academics and career success. Tucker and Fail (2007) reported that Thai parents expressly believe that school is for study. Asian parents are even known to extend the school day by "hir[ing] tutors for their children and demand[ing] they devote long hours to study" (Yu, 2012, p. 714).

Common elements across the models. While there are some common elements that exist across the models, even the broad terms used to describe parent involvement tend to be used interchangeably and are often difficult to define. Some researchers used the terms *family* or *family involvement* (Boethel, 2003), while others prefer *parent engagement* (Goodall & Montgomery, 2014; Hoover-Dempsey & Sandler, 1997); even Epstein (2010) shifted from using *parent involvement* to using *family, school and community partnerships*. Meta-analysis

researchers confirmed that no one truly agrees on what the terms even mean (Curry & Adams, 2014; Fan & Chen, 2001; Jordan, Orozco, & Averett, 2001). Fortunately, as seen in Figure 3,

	Hoover-Dempsey & Sandler (1997; 2005)	personal motivators for involvement	parental role construction	self-efficacy	perceptions of invitations to be involved	general school invitations	specific teacher invitations	child specific invitations	perceived life context	skills and knowledge	time and energy	home-based involvement	homework support	school-based involvement	volunteering	governance
Epstein (2005)																
parenting - home environment about learning		+	+	+					+	+	+					
communicating - home-school communication about child's academic issues					+	+	+	+								
volunteering - activities in the school and classroom														+	+	
learning at home - help and encouragement with school work		+	+	+					+	+	+	+	+			
decision making - involvement with governance and shaping policies/practices at school									+	+	+			+		+
collaborating with the community - parent knowledge and use of community resources for learning									+	+	+					

there is evident overlap in the factors or elements used to measure these key models.

Figure 3. Overlap in Epstein and Hoover-Dempsey & Sandler models

One benefit of the traditional models of parent involvement is that those models have produced many well-developed measurement tools. The HFRP maintains and makes available several valid and reliable, public-use subscales to measure parent involvement or engagement, school fit, barriers to involvement, school climate (from Schueler et al., 2014), and roles and

responsibilities (<http://isites.harvard.edu/icb/>), as well as compiling a published list of 17 data collection instruments for evaluating family involvement (Westmoreland, Bouffard, O'Carroll, & Rosenberg, 2009).

In review of ten parent-based measurements compiled by the HFRP (Westmoreland, Bouffard, O'Carroll, & Rosenberg, 2009), several elements of parent involvement are found in multiple measurement tools. The measurement tools included representatives from both Epstein's and Hoover-Dempsey and Sandler's frameworks and consisted of broad battery surveys, as well as specific scales. To determine the most common elements, I studied the factors measured by each tool and sorted the similar factors into groups; Appendix B includes a summary chart of the factors measured in the research. Many of the tools included aspects specific to a particular study, but these common elements emerged:

- volunteering – 6 cases;
- learning at home – 5 cases;
- parent-teacher contact – 4 cases;
- communication from school – 3 cases;
- parent efficacy – 2 cases;
- parent skills and knowledge – 2 cases;
- parental role – 2 cases;
- governance – 2 cases; and
- parent time and energy – 2 cases.

All other aspects of parent involvement did not overlap. For this review, I limit the discussion to only those elements with three (3) or more cases.

Volunteering. Volunteering measures are most common throughout the sample, represented in six of the ten instruments – The Family–School Partnership Lab Scales (Hoover-Dempsey, Sandler, & Co-investigator, 2005); Parent And School Survey (PASS) (Ringenberg, Funk, Mullen, Wilford, & Kramer, 2005); School and Family Partnership: Surveys and Summaries (Epstein & Salinas, 1993); Parent and Family Involvement in Education Survey of the 2003 National Household Education Surveys Program (National Center for Education Statistics, 2003); Parent–Teacher Involvement Questionnaire: Parent (PTIQ-P) (Miller-Johnson & Maumary-Gremaud, 1995); and Parent Involvement at School (PISC) (Patrikakou & Weissberg, 2000). Volunteering includes volunteering both in the broader school community, in such ways as serving on the PTO committee or organizing a fundraising event, and in the child’s classroom, in ways like reading to the class or helping prepare for a science experiment.

Learning from home. Learning at home measures elements such as parent involvement in homework and other learning activities and is represented in four measurement tools, two of which are based on Epstein’s framework - Parent and School Survey (PASS) (Ringenberg et al., 2005); School and Family Partnership: Surveys and Summaries (Epstein & Salinas, 1993); Parent and Family Involvement in Education Survey of the 2003 National Household Education Surveys Program (National Center for Education Statistics, 2003); and Parent Involvement at Home (PIH) (Patrikakou & Weissberg, 2000). Learning at home can be evidenced by parents and children reading together in the evenings, playing mathematics games together, or keeping a family journal, as well as working together on regularly assigned homework.

Parent-teacher contact. Parent-teacher contact is visible in four measurement tools – The Family-School Partnership Lab Scales (Hoover-Dempsey, Sandler, et al., 2005); Parent And School Survey (PASS) (Ringenberg et al., 2005); Parent Perceived Teacher Outreach (PPTO)

(Patrikakou & Weissberg, 2000); and Parent-Teacher Involvement Questionnaire: Parent (PTIQ-P) (Miller-Johnson & Maumary-Gremaud, 1995). Parent-teacher contact includes communication between the home and school regarding a child's academic issues, and the climate that the teacher creates for the parents and specific invitations from the teacher to be involved. This important element also includes the frequency of parent-teacher contact and the quality of the parent-teacher relationship. New technology developments have expanded ways that parents and teachers communicate. While some ISC parents and teachers still communicate through handwritten notes, daily log books, and printed newsletters, most ISC parents and teachers commonly communicate via text messages, emails, WeChat groups, and social media such as Instagram, Edmodo postings, and Powerschool (L. Williams, personal communication, November 20, 2015). Furthermore, like volunteering, parent-teacher contact is present in both Epstein and Hoover-Dempsey and Sandler frameworks.

Communication from school. Communication from school is closely related to parent-teacher contact and includes general school invitations for involvement, as well as other types of information sharing. In the past, weekly newsletters, lunch menus, reenrollment information, and bake sale item requests went home on printed copies carried by the students. Now, parents can access school information directly through websites, text messages, and email, as well as view their child's current grades from online grade books. Only three instances of communication from school were represented in this sample – The Family-School Partnership Lab Scales (Hoover-Dempsey, Sandler, et al., 2005); Parent and Family Involvement in Education Survey of the 2003 National Household Education Surveys Program (National Center for Education Statistics, 2003); and Parent Perceived Teacher Outreach (PPTO) (Patrikakou & Weissberg, 2000).

Other considerations regarding parent involvement. There exists a great deal of criticism regarding the traditional models of parent involvement. Some researchers have complained that the traditional frameworks are too school-based or “school-centered” (Boethel, 2003) and don’t always work at the secondary education level (Jeynes, 2014; Rodriguez & Elbaum, 2013). Furthermore, the traditional models tend to be too middle-class biased; Boethel (2003) argued that school success and achievement are used as relative, culturally defined terms, and Ule et al. (2015) proposed that most teachers and administrators that make up schools represent middle-class education and expect the same from their students’ parents and families.

Arias and Morillo-Campbell (2008) called for a dual-model approach, blending traditional and non-traditional models of parent involvement to meet the specific needs of the school community, especially in schools which serve a community with a large number of non-English speaking parents (Stacer & Perrucci, 2013; Wentworth, 2006). These non-traditional models of involvement “focus on family integration into [and understanding of] the school culture” (Arias & Morillo-Campbell, 2008, p. 19). Schools following this model aim to tap into the cultural capital or funds of knowledge of the parent community (Cheatham & Santos, 2005), while at the same time offering parent education opportunities to help them better understand the language of instruction, the unfamiliar education structure, and the available support services.

Furthermore, these non-traditional frameworks emphasize positive relationship building. To combat the lack of relational trust that can exist between parents and teachers (Goodall & Montgomery, 2014), teachers and administrators must engage parents in authentic relationships: “the attitudes of teachers and administrators can have a significant impact on parental involvement” (Arias & Morillo-Campbell, 2008, p. 18), and “parents’ interpersonal relationships with children and teachers emerge as the driving force behind their involvement in children’s

education” (Green et al., 2007, p. 541). Other critics have argued that schools cannot only focus on building parent-school partnerships, but also need to work to foster relationships amongst the parents to capitalize on parent involvement and networking (Curry & Adams, 2014; Henderson & Whipple, 2013; Schaps, 2007; Shillady, 2014). Waanders, Mendez, and Downer (2007) found in their study of two Head Start programs that a strong local network of relationships in their neighborhoods was the only significant predictor which accounted for parent involvement ($r = 0.22$). Connecting parents is especially important when juggling multiple cultures and languages in a foreign land (McNulty, 2012; Rosenbusch & Cseh, 2012).

Parent Satisfaction

Parent satisfaction is important to schools because satisfied parents remain involved and promote the school. The following section examines the available research regarding the value of parent satisfaction to school, measures of parent satisfaction, and the common elements found in these tools.

Value of parent satisfaction. Once students are attending a chosen school, the school ideally hopes to retain them. However, doing so partially depends upon continued parent satisfaction with the school. Such parent satisfaction is based on parents’ perception of such factors as what is happening in the classroom, the effectiveness of the staff, and the overall school environment. Research has noted impressions of these factors can influence whether and how parents engage with the school (Hoover-Dempsey, Walker, et al., 2005), and positive experiences with the school ultimately keep parents returning to the school (Badri & Mohaidat, 2014; Li & Hung, 2009; Skallerud, 2011; Wherry, n.d.). Satisfied parents also promoted the school to other parents and the broader community (Goldring & Phillips, 2008; ter Avest et al., 2015), a very important factor in the era of school choice. Furthermore, when parent opinions

and concerns are solicited from schools, parents feel heard and validated (Ferguson, 2005; Wherry, n.d.). While few, if any, existing studies currently explore parent satisfaction in international schools, several studies have addressed parent satisfaction in cross-cultural contexts (Friedman et al., 2015) and on the global stage (Badri & Mohaidat, 2014; Li & Hung, 2009; Skallerud, 2011).

Measures of parent satisfaction. Tuck (1995) first recorded parents' perceptions of their children's school and school experiences in order for the District of Columbia public schools to obtain an index of customer satisfaction from its parents in response to some of the earliest school choice initiatives. She measured five areas to determine parent satisfaction: (a) quality of staff, (b) school climate, (c) academic program, (d) social development and extracurricular activities, and (e) parent involvement with a 35-question survey titled "Bringing Educational Services to STudents" or BESST (p. 55-57). However, the letter from the superintendent to the parents titled the survey as "Survey of Parent Satisfaction and Information." While terms like perception, experience, and satisfaction are closely tied to one another in this early study, the terms were never truly defined.

Skallerud (2011) investigated the direction and strength of relationships between school reputation, parent satisfaction, and parent loyalty using a new measure for school reputation based on previous studies examining corporate reputation. Recognizing a need to evaluate reputation from the parent perspective, his four-dimensional scale for the assessment of parent-based reputation measured (a) parental orientation (or their perception of the school's willingness to meet their needs), (b) learning quality, (c) safe environment, and (d) good teachers. Skallerud's (2011) survey was completed by 325 parents from three primary schools across Norway. The findings indicated that parent satisfaction in their child's school significantly

affected all four reputation-dimensions, while parent loyalty was affected only by the school's parental orientation and good teachers. Using Skallerud's scale (2011) in a similar study in Abu Dhabi, Badri and Mohaidat (2014) confirmed a strong link between parent-based school reputation and parents' loyalty intentions.

To provide administrators with important parent-based perception "in the age of school choice," Friedman, Bobrowski, and Geraci (2015) collaborated with Harris Interactive Poll Organization, a market research firm in Rochester, New York, to develop a measure of parent satisfaction for the purpose of predicting school choice. Working under a conceptual model of parent-based school satisfaction, Friedman et al. (2015) proposed that parents' experiences with the school alongside their unique ethnicity, gender, and education impact their perceptions of a number of factors associated with parent satisfaction. Their survey measures these twelve factors (school safety, school budget, teacher effectiveness, administrators, quality of curriculum, computer technology, facilities, bus transportation, communication with parents, parent involvement, classroom support for learning, and student achievement), along with an overall parent satisfaction rating, to predict if parents will offer word-of-mouth referrals of the current school or search for a new school.

Cooper and Letts (2002) conducted research specifically regarding school climate related to parent satisfaction in early childhood classrooms in New York City. They examined student population, school structural characteristics, parent involvement, classroom support in learning, and achievement as predictors of parent satisfaction.

Common elements of parent satisfaction. As seen in Figure 4, identifying these common elements in parent satisfaction research is problematic, primarily because a number of terms are used interchangeably. For example, in some studies *academic program* is used as a

factor, while in other studies, similar questions are subdivided into *classroom support for learning*, *student achievement*, and *quality of curriculum* factors. Nevertheless, there are still several overlapping factors that emerge:

- classroom support for learning;
- parent involvement;
- staff effectiveness; and
- school climate factors.

Study Measures... (Study Author, Year)	Parent Satisfaction Elements								
	Parental Involvement	Classroom Support for Learning	Staff Effectiveness	School Climate Factors	Student Population	Overall Satisfaction	Operations	Social Development	Parent Orientation
"perceptions of their children's school and school experiences" (Tuck, 1995)	Parent involvement	Academic program	Quality of staff	School climate				Social development and extracurricular activities	
"study of school climate related to satisfaction" (Cooper & Letts, 2002)	Parental involvement	Classroom support for learning AND Achievement			Student population		School structural characteristics		
"School Reputation/ Parent Satisfaction/ Parental Loyalty" (Skallerud, 2011)		Learning quality	Good teachers	Safe environment		Overall parents' school satisfaction			Parent orientation - parents' perception of the school employee's willingness to satisfy their needs
"parent satisfaction to anticipate school choice" (Friedman et al., 2015)	Parental involvement	Classroom support for learning AND Student achievement AND Quality of curriculum	Teacher effectiveness AND Administrators	School safety AND Communication with parents			School budget AND Computer Technology AND Facilities AND Bus transportation		

Figure 4. Comparison of common elements in parent satisfaction measurement tools

Classroom support for learning. Classroom support for learning appears to be the most consistent element across studies of parent satisfaction. This broad title encompasses terms such

as *academic program, student achievement, learning quality, and quality of the curriculum.*

Ultimately, classroom support for learning includes all the learning that happens during the school day, especially in regards to student academic growth.

Parent involvement. Parent involvement factors are listed in the previous section of this literature review; these factors make up an essential element of determining parent satisfaction.

Staff effectiveness. Staff effectiveness factors include such terms as *good teachers, quality of staff, administrators, and teacher effectiveness.*

School climate factors. While school climate does consist of terms like *school safety* and *safe environment* as seen in Figure 4, school climate actually encompasses a much broader scope of study. School climate most often focuses on the perceptions of students and staff, but reports from the National Council of Educational Statistics (2003) and Chicago Public Schools (Osher, Kendziora, & Chinen, 2008) indicated that parent-based school climate studies can provide valuable insights into the school community. These studies of parent-based perceptions are important because parents' perceptions may influence the children's perceptions of school and parents' impression of school climate can influence how families engage with the school (Schueler et al., 2014).

In their review of school climate research, Thapa, Cohen, Guffey, and Higgins-D'Alessandro (2013) revealed a need for more parent involvement in measuring parent perception of school climate in the areas of safety, relationships, teaching and learning, and the institutional environment. Researchers quickly set to work to develop a condensed survey scale to assess parent perceptions of the climate of their child's school, noting that "existing tools that are designed for parents are often lengthy or focus on a particular facet of climate such as safety" (Schueler et al., 2014, p. 315). Unsure of what to focus on measuring, Schueler et al. (2014)

used interviews and focus groups to ask parents how they conceptualized school climate; surprisingly, parents rarely mentioned safety and physical environment, instead focusing on teaching, learning, and other social dimensions. As a result, their scale used only seven questions to measure parent perceptions of (a) the extent of their children's enjoyment attending the school, (b) the respect of the staff for the children, (c) the respect of the children for the staff, (d) the school's value for diversity of the students' backgrounds, (e) the administrators insure a learning environment, (f) student lessons are motivating, and (g) the school's evaluation system is fair (Schueler et al., 2014, p. 317).

Parent Choice

Parent choice is important to schools because schools rely on parents to determine the schooling for their children. The following section will review literature based on parent choice by means of school choice research, examining the importance of parent choice, highlighting studies of parent choice, and outlining the most common elements of parent choice.

Importance of parent choice. Parent choice is closely tied to school marketing research. The goal of school marketing is the promotion of a school to attract and maintain a targeted student body, but due to their youth, the students are ultimately controlled by their parents' choices for schooling. Li and Hung (2009) reported that "the higher the parents' perception of marketing efforts, the more favorable the school image will be" (p. 485), and a more favorable school image influences parents' positive word-of-mouth, school choice, and retention.

Parent choice is linked closely with parent satisfaction; for instance, Ham et al. (2003) confirmed that "parent satisfaction with the quality of the school's service [is] an effective predictor of their school choice decision" (as cited in Friedman et al., 2015, p. 472). In 2010, Peter Robert utilized the 2006 PISA data to compare school choice in 23 OECD countries,

finding that “competition, quality, selection, and choice” are most often used in the discussion of education markets (2010, p. 107). Schools involved in competition and dependent upon parents’ choice and good-favor are best served when they are able to strategize based on data gathered directly from parents (Li & Hung, 2009).

Studies in international schools indicate similar conclusions. Mackenzie, Hayden, and Thompson (2003) discovered that while *internationalism* in an international school was important, it wasn’t quite as important as a school’s reputation and the impression gained while visiting the school. So with growing competition and increased international school accessibility, international schools are turning toward a more business-style outlook on providing education, including marketing “their product” (Canterford, 2003; MacDonald, 2009b). Ultimately, these schools want to attract families to their schools through marketing and become the family’s chosen school, but at the same time, schools want to satisfy the families that have come so that they have no reason to look for educational alternatives. Unfortunately, for many of these schools, they only begin to focus on marketing when student numbers are falling and have little time to “catch-up” (Bunnell, 2005).

In order to maintain a competitive advantage, each international school must identify the attributes that allow it to outperform its competitors. For example, some schools choose to expand their extracurricular programming, while other schools adopt recognized curricula like IB (International Baccalaureate) or AP (Advanced Placement). Well-known British schools, such as Harrow and Dulwich, have opened campuses throughout Asia, capitalizing on their famous names as a form of competitive advantage (Machin, 2014).

Studies of parent choice. Much of the available parent choice research focuses on the way that parents choose from various types of schools, such as public, private, charter, magnet,

faith-based, etc. based on key demographic indicators (Butler, Carr, Toma, & Zimmer, 2013; Reichard, 2014; Tice, Chapman, Princiotta, & Bielick, 2006). A smaller number of studies indicate the priorities in parent choice of schooling.

In their qualitative study of African-American parents, Diamond and Gomez (2004) discovered that access to school information and geographic location were determining factors in school choice. The Goldring and Phillips (2008) study of public-private school choice in Nashville is often cited in parent choice literature; they examined relationships between demographics, parent satisfaction with their child's previous school, parent social network (or how they heard about educational options for their children), and the Hoover-Dempsey and Sandler model of parent involvement. Parents indicated that academics, convenience, school characteristics, and safety were all important in choosing their child's school (Goldring & Phillips, 2008). Other studies indicated that religious factors strongly influence parents' choice in the schooling for their children (Bertram-Troost, de Roos, & Miedema, 2007; Reichard, 2014; Taub & Ronen, 1999).

Outside of the United States, the Independent Schools Council of Australia (2008) indicated that the most significant factors that parents considered in choosing their child's school was good facilities, good teachers, and a supportive and caring environment (p. 10). A study in Turkey indicated that qualified teachers and small class size rank highly for parents' choice of school (Şahan, 2014). In bilingual South Africa, school reputation and the medium of instruction mitigated choice (Evans & Cleghorn, 2014). Peter Robert's (2010) study of 23 OECD countries found that differing curricular options, such as vocational training or college preparation, factored into parents' considerations; he also determined that schools who are selective in their admittance policies can attract parents who value exclusivity. These studies of parents from

around the world identified several varying priorities in choosing schooling for their children; therefore, parents' countries of origin and cultural backgrounds may greatly affect their expectations of an international school.

Studies of “international school” parent choice. Partnering with Hayden and Thompson, MacKenzie (2001) asked why parents chose a specific European international school for their children. From studying that single school, they determined that the English-language learning environment was the most important reason that parents' chose an international school. The three researchers later conducted a similar study amongst parents involved with three international schools in Switzerland, using survey questionnaires and follow-up interviews (MacKenzie et al., 2003). It was here that they first recognized the two distinct groups of parents described by Lowe (2000, as cited in Mackenzie et al., 2003):

...a mixture of expatriate professional parents (who in many, though not all, cases may be in the advantageous position of having school fees paid by their employer) and that section of the local community who are able to pay the fees levied and who perceive the education offered to be prestigious: the “local elites.” (p. 300).

While both groups chose the schools based on the English-medium and opportunities for matriculation, expatriates were looking for the familiar and host-country nationals were looking for prestige and exclusivity (Hayden, 2011).

Two later studies of local Japanese parents' choice of international school revealed a different side of host-country parents (MacKenzie, 2009; Velliaris & Willis, 2014). In Japan, local parents enrolled their children in international schools because they were looking for alternatives to national schools. Because of the cultural pride and collective-society pressure, Japanese parents felt that the stakes were higher for themselves and their children because they

were choosing to burn bridges with the local culture by sending their children to an international school (MacKenzie, 2009; Velliaris & Willis, 2014). Ng (2012) confirmed that the same is happening amongst Hong Kong Chinese families.

Common priorities in parent choice of school. Studies of parent choice appear to reveal several common priorities. These are:

- academic and curricular emphases;
- qualified teachers;
- safety;
- supportive and caring environment;
- religious values; and
- geographic location, convenience, or proximity.

While individual parents rank these priorities in varying order, these six concerns consistently appear.

Elements specific to international schools. MacKenzie (2010) summarized the five published studies of school choice in international schools. He comes to several important conclusions. First, since international schools now provide an alternative to national school systems, noting “who is ‘local’ and who is ‘expatriate’ then becomes more than a matter of which passport they carry” (MacKenzie, 2010, p. 108). While there are many positive aspects to children of the host country attending international schools, researchers are worried that the cost of this private schooling segregates children of families with different social backgrounds (Robert, 2010) and creates members of a “transnational elite” (Hayden, 2011). Second, MacKenzie (2010) further confirmed that though there are clearly different cultural and

contextual factors, there are similar parental aspirations. The strongest indicators of parent choice in all five studies were:

- English-language medium;
- *the affective dimension*, or an overall good impression of the school where children are happy and cared for;
- curriculum that included high academic standards and international assessments; and
- an international education that included cultural and national diversity in the student body, internationally-minded staff, and a non-national curriculum (MacKenzie, 2010).

These priorities regarding parent choice in international schools closely align with other studies of parent-school choice (Butler et al., 2013; Goldring & Phillips, 2008; Robert, 2010).

Conclusion

Both parents and teachers want students to succeed. The literature demonstrates over and over again that parent involvement positively impacts student success and achievement, but research additionally indicates that parent involvement produces numerous other fringe benefits. Through involvement in their child's education, parents can build stronger relationships with their children and confidence in their own skills, as well as important support networks. Schools also increase their influence and reputation by proactively partnering with parents. While various authors disagree on the best ways to involve parents, they consistently agree that elements such as volunteering, learning from home, communication from school, and parent-teacher contact are valuable indicators of parent involvement experiences.

However, involving parents and meeting their needs is a difficult task, made even more complicated in today's school choice market. These problems are further exacerbated in foreign countries with transnational parents. The literature reveals that while international schools have

some unique challenges in supporting and satisfying parents, much can be learned from national schools dealing with similar issues. One such way is to gather important information regarding parent perceptions and experiences through the use of parent-based measurement tools. This study explores the reliability of such a tool, and attempts to discover what areas of parent perception and experience are being measured in an international schooling context.

Chapter 3

Methods

Introduction

The following chapter discusses the methodology used to examine the psychometric properties of the ISC Parent Survey. Using existing data obtained from the 2014 collection cycle, this study explored the internal reliability and underlying structure of the survey in order to answer these two questions:

1. Does the ISC Parent Survey demonstrate internal reliability?
2. What is the underlying structure of the ISC Parent Survey instrument?

Design

Because there is little information about the structure of the instrument in question, each of the 72 likert-scale survey items served as a variable and was subjected to a series of statistical practices in hopes that a number of survey items would stick together to create some arrangement of related dimension(s) in the areas of parent involvement, parent satisfaction, and parent choice. The following discussion outlines the process for exploring the issues regarding this existing data set.

I chose to conduct an exploratory factor analysis (EFA) on the 2014 ISC Parent Survey in order to explore the underlying latent structure of the variables. While it is clear that there is no intentional underlying structure of the variables (and therefore, no hypotheses or claims of represented dimensions being made), the parent survey was designed with a specific audience, specific context, and specific questions in mind. Therefore, it was expected that some related dimensions would emerge through the exploratory analysis of the data. However, what those dimensions might happen to be was truly unknown, so factor analysis would be essential to

perform prior to examining any possible construct validity (Schönrock-Adema, Heijne-Penninga, van Hell, & Cohen-Schotanus, 2009). Consequently, exploratory factor analysis was the best choice for this study.

Exploratory factor analysis is a cyclical process which allows for the flexibility to explore variations of possible factors within the given data set and to return to any given point to try additional or multiple psychometric or statistical analyses to determine a “best fit” (Beavers et al., 2013; Osborne, 2014). Factor analysis should ultimately reveal shared variance across the scaled survey items, while avoiding “inflated values of variance” (Costello & Osborne, 2005).

Factor analyses are not a single statistical method, but a group of statistical analyses. Additionally, there are many statistical processes to choose from in regards to factor analysis; therefore, I needed to carefully decide from among several statistical strategies to improve the accuracy and result of the factor analysis (Beavers et al., 2013; Osborne, 2014). Both Henson and Roberts (2006) and Tabachnick and Fidell (2001) noted that the quality of these decisions and the subsequent level of subjectivity are the most commonly cited limitations for EFA (as cited in Beavers et al., 2013, p. 1). Because the theoretical basis of factor analysis in this study was possibly compromised due to the ratio of the number of respondents to the number of survey items, I intended to run multiple psychometric criteria tests and to make comparisons to verify the results (Schönrock-Adema et al., 2009). Using EFA, I could make no claims to any hypothesis, yet I would still be able to determine if a possible latent underlying structure existed.

Variables

In 2014, the International Schools of China (ISC) coordinated a set of three internal surveys (one staff survey, one parent survey, and one student survey) to gather data regarding perceptions of the educational experience in the six ISC schools. Surveys were delivered by

SurveyMonkey weblink and each school administration team determined the dates that the survey would be conducted for their campus. All of the 2014 surveys were completed between November 2014 and May 2015.

The ISC Parent Survey 2014 takes approximately 20 minutes to complete and is available in English, Chinese, Korean, and French. The survey contains 11 demographic questions, 72 questions based on a likert-scale for disagree/agree, three yes/no questions, three multiple answer questions, and seven open-ended questions. Response options for the likert-scale range from 1 (*strongly disagree*) to 4 (*strongly agree*), and include 5 (*don't know*). Once the survey was written in English, it was locally translated into Korean and Chinese. The French translation was completed later at an alternate site.

The introduction to the ISC Parent Survey 2014 is appropriately ambiguous, as it does not claim to measure any key factors or dimensions, and reads as follows:

Welcome to our second annual parent survey, and thank you for your willingness to help our school by completing it. Your honest feedback is important to us as we partner with you and work to continually improve your child's educational experience. (p. 1)

However, because the survey is quite comprehensive and lengthy, parents have commonly expressed a desire to better understand what is being measured with the tool, as well as a desire for a shorter version of the survey.

Survey development. The ISC Parent Survey 2014 instrument used in this study was developed by the assistant superintendent at the request of the superintendent. The assistant superintendent solicited previously utilized parent-based surveys from each school that had primarily been used for WASC accreditation studies. WASC accreditation requires that all school stakeholders participate in the accreditation process, and parent-based surveys are a

common way to gather information from parents (Accrediting Commission for Schools, 2014). To create these parent-based surveys, ISC schools most commonly borrowed survey questions used by other schools and available on their websites or developed items based on their own queries specific to their school community. I previously served as an accreditation self-study coordinator and contributed sample survey questions to the assistant superintendent in the initial development process.

I supplied the assistant superintendent with a Word document appearing to combine two separate surveys from Marion County Public Schools in Florida, as well as additional resources from Chicago Public Schools. A comparison of the document and the ISC Parent Survey revealed that 66 of the 96 survey items were submitted by me; these items are asterisked (*) in Appendix A. An interview with the assistant superintendent revealed that pilot testing took place on the initial survey in 2013 using a select group of International School of Qingdao parents (D. Pattison, personal communication, November 6, 2015). The wording of four questions (6-9) was changed for the 2014 collection to solicit the actual year rather than number of years, but no other changes were made. Culled together from various sources, the survey consisted of predominantly individual items rather than groups of existing measures.

Data clean. Survey data must be cleaned before performing analytical procedures; data cleaning involves examining each individual response in a data set for item completion and patterns. Sometimes when a respondent completes a survey through digital method, such as the survey in this study, the internet or digital device may be slow to load or fail in the midst of completion, leaving a large portion of items incomplete. (This is especially true behind the Chinese firewall.) Other times, a respondent unintentionally skips items or intentionally leaves

them blank. In either circumstance, I would have to make difficult choices regarding what data cases to include and exclude in the data set.

Fortunately, the original data set was available and could be visually examined for odd patterns. In the case of this study, item-level missingness and person-level missingness initially appeared to be more prevalent than construct-level missingness. Unfortunately, person-level missingness tends to be most problematic, as there is little data regarding “the nonrespondent that could be used to improve estimation and reduce missing data bias and error” (Newman, 2014, p. 375).

While SurveyMonkey indicated that the ISC Parent Survey 2014 was accessed 316 times, 7 responses were excluded from this study because respondents opened the survey but did not complete any likert-scale items. Four respondents opened the survey, but did not enter any data; three respondents completed demographic questions, but no survey items. Therefore, this study included 309 usable entries.

Of these 309 usable cases, a visual review of the data indicated that item-level missingness still remained; this result would require careful consideration in regards to how to handle the incomplete data. While I assumed that parents of ISC students want to complete the survey accurately, there still would exist the possibility of random responses, falsifying answers, and appealing to social desirability (Osborne, 2014). Osborne (2014) has further recommended checking the data manually to either correct the problem or remove the problem and utilize missing data techniques, such as estimation or imputation methods.

With regard to the data clean, first, the case outliers would need to be identified. While the easiest and most reported method of data cleaning includes a complete removal of all cases with any missing data (called listwise exclusion), this is not the best strategy, primarily because

this blanket-type of data cleaning can actually remove helpful variable data (Osborne, 2014; Schönrock-Adema et al., 2009). Maximum Likelihood (ML) and Multiple Imputation (MI) are preferred over listwise or pairwise deletion, because ML and MI are unbiased and reflect accurate standard errors in both “missing at random” (MAR) and “missing completely at random” (MCAR) missingness mechanisms (Newman, 2014). Regression imputation was especially recommended as it creates a regression equation to predict missing values based on variables with valid data (Osborne, 2014).

Additionally, the data would need to be cleaned for variable outliers (Osborne, 2014). Specifically using the chosen items, variable outliers would be determined by examining the frequency distributions for the variables to be analyzed. Furthermore, if a variable loaded on itself as a single-item factor, then it would be removed, and the process run again.

Sample Characteristics and Demographics

Three-hundred nine (309) parent and/or primary care-providers of 502 students were participants in this study. The students were enrolled in one of six of the participating international schools. However, not all schools were equally represented. For example, International School of Qingdao (ISQ) is the second largest school of the participating schools, but only represents 9.4% of the response sample.

The sample was selected from a consortium of six international schools that serve approximately 1,800 children each year. China classifies its cities into tiers with Beijing, Shanghai, and Guangzhou falling into the first tier. Each of the six international schools is situated in second-tier city—cities well known inside China, but less known in the global community. Each of these cities has been targeted by the Chinese government as focus cities for growing industry and attracting foreign business (Frase, 2007). Most of the schools were the

first international schools in these cities. However, with the growing expatriate market, they now all face competition from at least one other school in their cities.

All divisions of the schools were well represented in the sample (see Table 2), with 13.7% of children in an early childhood program, 35.7% in elementary school, 25.1% in middle school, and 25.5% in high school. These percentages indicate a sufficient spread of *educational experiences* reported in the sample. Seventy-eight percent of the respondents were mothers of students, 21.7% were fathers, and 0.6% classified themselves as guardians. This is not uncommon in parent involvement and engagement literature. With such a high percentage of primary care-providers identified as parents, for ease in communication, I will continue to use the term parents as inclusive.

Similar to the overall demographics of each school's population, Korean, English, and Chinese (both Mandarin and Cantonese) are the most represented languages in the sample. Not surprisingly, Korean language was chosen as the most common primary language spoken in the students' homes, representing 40.1% of the sample; English was the primary language in 30.4% of the homes; and Chinese was the primary language in 14.2% of the homes. Japanese (7.4%) and French (2.6%) speakers are a growing population within several schools, while other European languages (Dutch, 0.6%, Spanish, 0.6%, and Romanian, 0.3%) represent minority languages in the schools. Also of note is the number of languages spoken in each home. Most parents (86.1%) indicated that only one language was spoken in the home, 9.4% of students are exposed to two languages in the home, and 1.3% of students are exposed to three or more languages. Three percent (3%) of the parents chose not to identify any language.

Table 2

Demographic Characteristics of Participating Parents (N=309)^a

Demographic characteristic	Count of sample	Percent of sample
Relationship to child		
Mother	240	77.7
Father	67	21.7
Guardian	2	0.6
School		
Chengdu International School	52	18.1
International School of Qingdao	27	9.4
International School of Wuxi	27	9.7
Shenyang International School	17	5.8
Tianjin International School	115	39.5
Wuhan Yangtze International School	51	17.5
Children in each program ^a		
Early childhood program	69	13.7
Elementary school	179	35.7
Middle school	126	25.1
High school	128	25.5
Number of children in an ISC school		
1 child	149	48.2
2 children	133	43.0
3 children	21	6.8
4 children	6	1.9
Primary language spoken at home		
Korean	124	40.1
English	94	30.4
Chinese (Mandarin)	39	12.6
Japanese	23	7.4
French	8	2.6
Chinese (Cantonese)	5	1.6
Dutch	2	0.6
Spanish	2	0.6
Bengali	1	0.3
Romanian	1	0.3
(blank)	10	3.2
Number of languages spoken at home		
One language	266	86.1
Two languages	29	9.4
Three or more languages	4	1.3
(blank)	10	3.2

^a Multiple students per household.

Assessing Data Assumptions

In order to conduct an EFA, there are certain assumptions regarding the data set that must be considered. First, sample size must be taken into consideration. Best practices regarding EFA and sample size vary (Osborne, 2014; Zhao, 2009). While Costello and Osborne (2005) noted that, “strict rules regarding sample size for exploratory factor analysis have mostly disappeared” and “studies have revealed that adequate sample size is partly determined by the nature of the data” (p. 4), there are still good rules of thumb to follow.

Zhao (2009) found two major categories of recommendation for sample size for factor analysis procedures: the absolute number of cases (N) and subject-to-variable ratio (p). However, experts greatly disagree on the absolute number of cases; some propose that sample size can be as small as 100 cases, while others require a minimum of 500 cases (Zhao, 2009). Most practitioners settle on $N = 300$ as a general rule. Furthermore, experts vary on the appropriate subject-to-variable ratio, proposing 20:1, 10:1, 5:1, 3:1, and 2:1. However, Costello and Osborne (2005) found in a test of the effects of subject to item ratio that the percent of samples with correct factor structure increased and the average number of items misclassified on a wrong factor decreased with each subsequent raise in ratio (Costello & Osborne, 2005). Most real-life studies range between a 2:1 and 10:1 ratio (Costello & Osborne, 2005).

The current data set consisted of a total of 72 variables and just over 300 usable cases, translating into an acceptable 4:1 ratio. While this ratio is accepted in the literature, Zhao (2009) proposed that researchers consider the further factors of sample size: (1) the communality of the variables; (2) the degree of overdetermination of the factor (or the number of factors to number of variables), averaging six or seven indicators per factor and a minimum of three variables per factor); (3) size of loading, ideally looking for loadings that are above 0.60; and (4) model fit (f),

looking for a population root mean squared residual (RMSR) approaching 0.00. Unfortunately, these tests of sample size can only be conducted once the EFA is in progress. Therefore, regardless of sample size rules, the factor loadings may demonstrate latent variables.

Additionally, the model fitted to the data must demonstrate linearity and a lack of extreme multicollinearity. I assumed that there would be moderate to strong inter-item correlations in the current data set based on the actual survey items and their obvious similarities to the Epstein and other frameworks outlined in Chapter 2. However, too many items loading on the same factor would be redundant for both the researcher and survey respondents, so I needed to choose a model that would demonstrate a balance between the two.

To find this model, I intended to first run a correlation matrix of Pearson's r correlational values to determine the strength of the relationships and linear relationships. Tabachnick and Fidell (as cited in Beavers et al., 2013) noted that correlations exceeding .30 indicate enough commonality to conduct further factor analysis. The determinant of the correlation matrix would also be identified in the SPSS output, ideally measuring greater than .00001; a non-zero determinate would indicate if factor loading would even be mathematically possible (Beavers et al., 2013).

Finally, I planned to run the Bartlett's Test of Sphericity to examine the factorability of the matrices, followed by the Kaiser-Meyer-Olkin (KMO) Test of Sampling Adequacy. If Bartlett's Test produced a significant test result ($p < .01$), then linear combinations in the data set would exist (Beavers et al., 2013). The Kaiser-Meyer-Olkin Test would measure the shared variance in the items – the closer the value to 1.00, the higher the shared variance in the items, and the closer the value to 0.00, the less likely the values will factor (Beavers et al., 2013).

If two or more of the above assumptions were not met, then I would consider dropping perceived-to-be problematic items (variables) from the analysis. To do this, I would consult with survey experts prior to deleting such items. Possible criteria to consider for deletion would include poorly-worded items or inappropriate response scales (Messick, 1989). Once the data set and variables were clarified, then the real exploring could begin.

Factor Extraction

Exploratory factor analysis can be similar to other types of exploring, for example spelunking in dark, subterranean caverns (Huck, 2012). Huck suggested that while cave-divers have no idea of the shape or depth of the cave, they must carefully prepare their tools for the known factors and trust their ability to adapt to what they find. Embarking into unknown darkness, the divers need a light to find their way; extraction is much like deciding what type of light to take into the cave. There are flashlights, helmet lights, and other options; and each has its advantages. Helmet lights might be better for the actual dive itself, when both hands should be firmly placed on the rope; but a hand-held flashlight might be better when they actually enter the cave since the hand has more torque and range of motion than the neck.

Factor extraction would be the process in which I intend to pull, or extract, factors from the correlation matrix. The extracted factors and the way items cluster together would be the beginnings of identifying the underlying structure of a given measurement tool. Once the factors were extracted, I would then need to determine how many of the factors to preserve for the later analysis of the tool; these chosen factors would be made up of individual items that form the subscales within the survey.

In order to determine the extraction method and the number of factors to retain, several measures would be utilized. While multiple tests exist to determine variance measures, recent

research agreed that Maximum Likelihood (ML) and Principal Axis Factors (PAF) provide the strongest results (Beavers et al., 2013; Costello & Osborne, 2005; Osborne, 2014). ML looks for multivariate normality and gives the best results if the data is “generally normally-distributed,” while the test of PAF requires no distributional assumptions and is best for “significantly non-normal data” (Costello & Osborne, 2005, p. 2). Huck (2012) recommended that PAF fared better when sample size assumptions are broken, therefore I planned to first run a PAF test due to the smaller sample size in the current study. The ML test would provide appropriate secondary support. By running both the ML and PAF, I would be able to perform a side-by-side comparison of the results to best determine the number of factors to retain, ultimately giving our cave-divers the right flashlight for exploring the cave.

Factor Rotation

However, caves are often large and dark, with hidden twists and corners. The cave doesn't change once the cave-divers are inside, but some vantage points are better than others based on a diver's positional choices. Rotation helps a cave-diver find the best position once inside the cave, and most significantly, where to shine the flashlight for the best overall view. “While the results of a factor analysis may produce a good fitting solution, [the result] is not necessarily susceptible to a meaningful interpretation” (Pedhazur & Schmelkin, as cited in Rennie, 1997, p. 7); therefore, I needed to next determine the appropriate factor rotation method. Factor rotation is beneficial because it makes factor loading patterns more visible (Beavers et al., 2013; Osborne, 2014). Through this algebraic rotation, “the items fall closer to the axis lines... as one of the two pairs of coordinates fall closer to 0.00” (Osborne, 2014, Chapter 2). By rotating the items closer and closer to zero, Thurgood (as cited in Rennie, 1997) reasoned that the

results of a factor rotation should contain only a small number of variables with nonzero coefficients so that the findings would be more replicable across studies.

While there are several options in this matter, the choice for this study was an oblique rotation method. Oblique rotations are recommended for educational and psychological scale data where, like this data set, reasonable expectations for medium to high inter-item correlations exist (Steinberg, 2010). Orthogonal rotations limit the opportunity for these desired and probable inter-item correlations. Furthermore, recent research pointed to a higher efficacy of oblique rotations in comparison to orthogonal rotations, because oblique rotations tend to create clearer result patterns (Beavers et al., 2013; Osborne, 2014). Based on availability within the SPSS software, because there is no single best method recommended for oblique rotation (Beavers et al., 2013), Direct Oblimin was the method of choice for this study.

Factor Retention

Once the best vantage point is determined, the cave-divers are able to land in a location and make some decisions regarding the best way to further explore the cave. In a similar way, factor retention uses various tests to determine which path to choose and how many factors to keep. To determine which factors to retain, most researchers recommend a combination of the scree test, the Kaiser criterion (eigenvalues measure greater than 1.0), and the proportion of variance that a factor explains (Osborne, 2014; Schönrock-Adema et al., 2009). An eigenvalue is the amount of variance present in the factor as it is represented in the base of the number of original variables. For example, in a 20-item survey, an eigenvalue of 2 represents 10% of the variance. Fortunately, the Cattell's Scree Plot and Kaiser criterion would be gathered easily by running the tests through SPSS.

From the results of these tests, I would be able to determine the initial starting point of analysis; for example, the analysis might begin with a 3-factor solution if tests demonstrated at least three variables with a loading of >0.40 per factor (Schönrock-Adema et al., 2009, p. e228). Several other factor solutions would be considered based on what the data set revealed through these tests, but it is a very “acceptable practice to vary the number of factors retained and compare the solutions” (Beavers et al., 2013, p. 9). Because this study was truly exploratory in nature with a low subject-to-variable ratio (4:1), there was always the possibility that the assumptions would fail and render the data set unworthy of factor analysis. But when the cave potentially looks obstructed, the cave-divers must approach exploration with more ingenuity, strategy, and creativity.

In anticipation that the cave would reveal some pathways and the data set would reveal some factors, resulting factor loadings and communalities would be further addressed in the results and discussion chapters. Factor loadings are the Pearson correlations between the original item score and the factor score after rotation. Communalities are similar to factor loading, but are always measured with relative values. Specifically, I intended to look for the larger communalities which would indicate the more useful and therefore more retainable variables. These variables would then be examined with the literature on parent involvement, satisfaction, and choice in mind.

Underlying Structure

If the data set proved itself worthy of analysis, the final underlying structure would be need to be determined. To do this, once the best fit factor solution is identified, the consistency of each factor would need to be confirmed. This factor consistency, also referred to as internal consistency, is measured by using SPSS to determine Cronbach’s alpha for the combined items

in each factor. Osborne (2014) noted that while many authors proclaim that alphas falling in the .70 range are “adequate” and in the .80 range are “good,” factor consistency is ultimately sample dependent. Further confirmatory analysis in a new sample and across multiple groups would be needed before ultimately concluding the reliability of a specific scale. So in the context of this study, the initial alphas discovered for each factor would be similar to the flags or markers to indicate the probable path for other spelunkers to follow.

Research Ethics

I bear two roles in regards to this study. The first role is that of a doctoral student using this research study to complete dissertational research. The second role is that of an ISC employee. I have been employed as a teacher, coordinator, and administrator by ISC schools for 13 years, and currently work as a director in the office of the superintendent. Though I provide no direct supervision over any ISC employees, I serve as an advisor to the head principals. The results of this study will be used to inform the participating schools, hopefully providing direction for future parent-based research.

In accordance with the American Educational Research Association Code of Ethics (2011), I have no other relationship (e.g., teacher, supervisor, mentor, or employer) with any of the research participants (14.02 Dual Relationship), however I do live in the community and know many of the parents. As a paid employee of the ISC schools, I made every attempt to engage with the data in a non-biased way, but acknowledge the difficulty of this task due to my relationship with the schools and administration. In order to protect the parents’ anonymity, I removed any personal demographics and open-ended comments from the data set prior to working with the likert-scale items. Because I used preexisting data and acquired appropriate

approval from the ISC Superintendent (see Appendix C), George Fox University Institutional Review Board (IRB) approval was not required for this study.

Chapter 4

Findings

Introduction

The following chapter discusses the findings of the psychometric properties of the 2014 collection of the ISC Parent Survey. An exploratory factor analysis (EFA) utilizing principal axis factoring (PAF) was run on 64 likert-scale questions included in a questionnaire that measured various elements of parent experience on 309 parent/guardians of students attending International Schools of China (ISC). The suitability of factor analysis was assessed prior to analysis. Inspection of the correlation matrix showed that all 64 variables had at least one correlation coefficient greater than 0.4 (Costello & Osborne, 2005). The overall Kaiser-Meyer-Olkin (KMO) measure was .918 with individual KMO measures all greater than .810, classifications of 'meritorious' to 'marvellous' according to Hutcheson and Sofroniou (1999, as cited in Field, 2013). Bartlett's Test of Sphericity was statistically significant (χ^2 (2016) = 8732.72, $p < .000$), indicating that the data was likely factor-worthy.

EFA revealed 14 factors that had eigenvalues greater than one and which explained 33.7%, 7.2%, 4.2%, 3.5%, 3.0%, 2.5%, 2.3%, 2.2%, 2.0%, 1.9%, 1.8%, 1.7%, 1.7%, and 1.6% of the total variance, respectively. Visual inspection of the scree plot indicated that a number of factors could be retained (Cattell, 1966). Though 14 factors were revealed, only the first 13 factors met the interpretability criterion that “the items and the factors should make sense conceptually” (Beavers et al., 2013, p. 11). As such, 13 factors were retained.

The 13-factor solution explained 67.58% of the total variance. An oblique rotation (Direct Oblimin) was employed to aid interpretability. The rotated factor solution exhibited “complex structure” (Sass & Schmitt, 2010). The interpretation of the data was consistent with

the parent experience attributes the questionnaire was designed to measure with strong loadings of:

- school respect for parent-child relationship items on factor F1,
- school respect for parent skills and knowledge items on factor F2,
- faith-based school items on factor F3,
- classroom support for learning items on factor F4,
- school respect for cultural and linguistic diversity items on factor F5,
- volunteering at the school items on factor F6,
- safe school environment items on factor F7,
- active and accessible administrator items on factor F8,
- parent-teacher contact items on factor F9,
- communication from school items on factor F10,
- communicating student expectations on factor F11,
- parent voice in the school items on factor F12, and
- parent participation at school meetings items for factor F13.

Factor loadings and communalities of the rotated solution are presented in Table 3.

Summary of the Instrument and Collection

The following section briefly reviews the participants, materials, and collection methods previously outlined in Chapter 3.

Participants. ISC parents reported on their current parent experience in ISC schools. A total of 309 participants (221 mothers; 66 fathers; 2 guardians) of 469 students participated in this study.

Table 3

Communalities, Factor Loadings, and Sampling Adequacy (N=208)

Item (N=64)	Communalities		Factors ^b							KMO ^c
	Init.	Ext. ^a	F1	F2	F3	F4	F5	F6	F7	
E41	.734	.700	.679							.927
E40	.795	.766	.556							.934
E48	.692	.646	.420							.953
E46	.729	.647	.394						.353	.910
E75	.703	.649	.320							.959
E62	.553	.425	.304							.937
E55	.741	.617								.923
E72	.618	.509		.609						.888
E70	.647	.551		.579						.910
E68	.649	.603		.535						.854
E67	.635	.526		.515						.872
E71	.608	.546		.499						.928
E69	.670	.624		.474						.909
E29	.646	.544		.380						.921
E54	.608	.513		.333						.937
E81	.603	.514		.332						.915
E33	.704	.740			.843					.906
E18	.705	.741			.725					.944
E34	.657	.555			.524					.902
E96	.733	.695								.932
E31	.699	.610								.941
E23	.712	.754				.864				.914
E21	.754	.737				.678				.919
E22	.741	.690				.568				.930
E20	.646	.550				.540				.942
E27	.689	.580				.532				.921
E26	.704	.646				.525				.964
E25	.675	.583				.460				.941
E19	.752	.736				.433				.931
E24	.549	.489				.320	.308			.918
E64	.712	.728					.877			.840
E65	.711	.679					.826			.810
E80	.617	.562					.339			.950
E84	.614	.675						.821		.865
E83	.652	.603						.553		.844
E82	.614	.675						.507		.905
E38	.731	.816							.812	.926
E37	.691	.592							.598	.912
E35	.637	.543							.449	.923
Reliability ^d			.868	.873	.810	.893	.722	.691	.804	
% Variance ^e			33.09	6.56	3.60	2.94	2.41	1.92	1.76	

Note. Rotated loading with values < .3 suppressed. ^aExtraction: Principal Axis Factoring. ^bMatrix: Pearson correlations, Retention: Scree plot, Rotation: Oblimin with Kaiser Normalization, converged in 50 iterations. ^cSampling adequacy for each item obtained from Anti-Image Matrix. ^dSPSS: Cronbach's α . ^ePercentage of common variance on extracted sums.

Table 3, cont.

Communalities, Factor Loadings, and Sampling Adequacy (N=208)

Item (<i>N</i> =64)	Communalities		Factors ^b							KMO ^c
	Init.	Ext. ^a	F8	F9	F10	F11	F12	F13	F14	
E19	.752	.736							.406	.931
E24	.549	.489								.918
E64	.712	.728								.840
E65	.711	.679								.810
E80	.617	.562								.950
E84	.614	.675								.865
E83	.652	.603					-.317			.844
E82	.614	.675								.905
E38	.731	.816								.926
E37	.691	.592								.912
E35	.637	.543								.923
E17	.720	.652	.596							.921
E13	.662	.633	.551							.916
E15	.559	.439	.528							.883
E12	.689	.680	.513							.937
E14	.711	.597	.475							.920
E60	.662	.627		.598						.914
E53	.678	.627		.541						.919
E63	.697	.634		.541						.914
E59	.635	.572		.396	.316					.917
E73	.591	.521		.329			-.302			.908
E36	.695	.637		.320						.935
E51	.721	.641			.530					.910
E49	.685	.628		.353	.407					.922
E28	.643	.467			.397					.885
E50	.698	.629		.303	.317					.910
E61	.688	.534			.304					.882
E47	.551	.411			.302					.928
E45	.635	.635				.672				.915
E52	.668	.628				.417				.914
E76	.689	.711					-.612			.917
E77	.699	.635					-.347		-.341	.923
E78	.648	.586					-.327			.910
E79	.565	.425					-.303			.927
E58	.701	.631						.382		.911
E57	.505	.475						.338		.903
Reliability ^d			.828	.829	.815	.647	.795	.395		
% Variance ^e			1.61	1.40	1.26	1.18	1.10	1.02		

Note. Rotated loading with values < .3 suppressed. ^aExtraction: Principal Axis Factoring. ^bMatrix: Pearson correlations, Retention: Scree plot, Rotation: Oblimin with Kaiser Normalization, converged in 50 iterations. ^cSampling adequacy for each item obtained from Anti-Image Matrix. ^dSPSS: Cronbach's α . ^ePercentage of common variance on extracted sums.

Materials. The ISC Parent Survey 2014 instrument contains 96 items, though only the 72 likert-scale items were examined in this study.

Collection. Respondents completed the ISC Parent Survey on the SurveyMonkey website. A web link was distributed by each school's head principal. All survey collection took place between November 2014 and May 2015.

Data Screening

Once the survey was closed, the original data was downloaded and first examined in Microsoft Excel. As highlighted in Chapter 3, missingness was an important concern to examine in the current study. In Excel, the data set was scanned for person-level missingness; seven responses were omitted from this study because respondents did not complete any of the likert-scale questions. The data set was then imported into SPSS. In SPSS, the item names were manually truncated to their variable number for ease in processing, and the likert-scale items were all recoded into numeric data – 1 (*strongly disagree*), 2 (*disagree*), 3 (*don't know*), 4 (*agree*), and 5 (*strongly agree*).

While person-level missingness was addressed before the import, item-level missingness remained throughout the data set. First, descriptive statistics examining missingness, minimum and maximums were run on all of the likert-scale items (see Appendix D). These descriptives revealed that questions asked earlier in the survey possessed fewer missing responses (question E85 was the first likert-scale item) and the number of missing items progressively increased to the end of the survey.

While the missing data visually appeared to be “missing completely at random,” Little's MCAR Test was run to determine if this assumption is met. Ultimately, data “missing completely at random” is cleaner and more desirable than data “missing at random,” because

with MCAR the missingness in an individual item is dependent upon only that item and not associated with other items in the data set. The Little's MCAR test obtained for this study's data resulted in a $\chi^2 = 4102$ (df = 4106; $p < .478$), indicating that the data is most likely "missing completely at random" and no identifiable missingness pattern exists in the missing data. Upon further investigation of the survey items, no items were reverse-coded; this is unfortunate because reverse-coding is a good technique for eliminating response bias and decreasing "the possibility of respondents providing answers that are ... perceived to be culturally acceptable and positive" (Nardi, 2014, p. 82).

Data Assumptions

Initially, the factorability of all 72 likert-scale items were examined. Several well-recognized criteria for the factorability of a correlation were used. First, it was observed that all items possessed a correlation of at least .3 with a minimum of one other item; this suggested that factorability was reasonable (see Appendix E). Second, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .912 ("marvelous" according to Field, 2013), and Bartlett's Test of Sphericity was also significant ($\chi^2 (2556) = 9863.57$, $p < .000$). The diagonals of the anti-image correlation matrix were all greater than .828, which is well above the acceptable limit of .5 (Field, 2013). Finally, the communalities were all above .3 (Appendix E), further confirming that each item shared some common variance, or relationship, with other items. Given these overall indicators, factor analysis was deemed suitable for all 72 items.

However, before specific factors could be identified, a baseline analysis needed to be performed on the entire 72-item data set. Principal axis factoring (PAF) analysis, with a Maximum Likelihood (ML) analysis used as comparison, was performed to determine the initial starting point, identifying 15 factors and many interrelated variables. Initial eigenvalues (Table 4)

Table 4

Eigenvalues from EFA Extracted using Principal Axis Factoring (72 items)

Factor	Initial Eigenvalues			Extraction Loadings			Rotation Loadings
	Total	% Variance	Cumulative %	Total	% Variance	Cumulative %	Total
1	23.755	32.993	32.993	9.474	13.158	13.158	10.859
2	4.879	6.776	39.769	14.875	20.659	33.817	9.432
3	2.919	4.055	43.824	4.506	6.259	40.076	5.567
4	2.370	3.292	47.115	2.443	3.393	43.469	6.481
5	2.094	2.909	50.024	1.991	2.766	46.235	9.658
6	1.665	2.312	52.337	1.681	2.335	48.570	8.815
7	1.602	2.225	54.562	1.231	1.710	50.280	9.087
8	1.498	2.081	56.643	1.239	1.721	52.001	7.677
9	1.397	1.940	58.582	1.110	1.542	53.543	7.131
10	1.330	1.847	60.429	.936	1.299	54.842	6.104
11	1.258	1.747	62.176	.896	1.245	56.087	5.723
12	1.212	1.684	63.860	.869	1.207	57.294	5.282
13	1.169	1.624	65.484	.759	1.054	58.349	8.478
14	1.053	1.463	66.947	.666	.925	59.274	4.965
15	1.007	1.399	68.346	.642	.892	60.166	3.669
16	.969	1.347	69.693				

indicated that the first eight factors explained 33.0%, 6.8%, 4.1%, 3.3%, 2.9%, 2.3%, 2.2%, and 2.1% of the variance respectively. The ninth through fifteenth factors had eigenvalues just over 1, and each explained around 1% of the variance. The scree plot (Figure 5) was ambiguous and showed inflexions that would justify retaining a number of factors. Additionally, there was little difference between the 15-factor principal axis factoring (PAF) and multiple likelihood (ML) solutions, indicating that the underlying structure of the ISC Parent Survey maintained general consistency regardless of which EFA test was used.

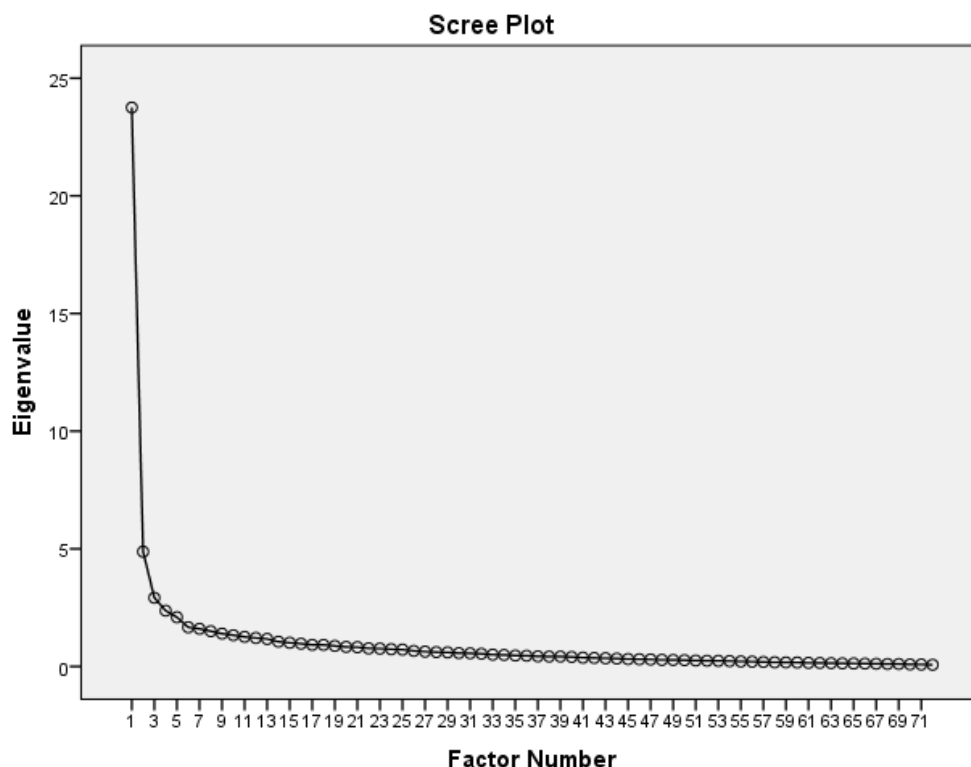


Figure 5. Scree plot of factors for 72 items

Forced factor solutions for twelve, thirteen, fourteen, and fifteen factors were each examined using Direct Oblimin rotations of the factor loading matrix in order to further identify problematic items. As listed in Table 5, a total of eight items were eliminated due to low inter-item correlation on the initial matrix or failing to load above .3 on any factor in either the ML or PAF tests. Six items were removed due to low inter-item correlation on the initial correlation matrix. Both E16 and E85 possessed some item correlation, but failed to load on any factor in either the ML or PAF tests.

Table 5

List of Problematic Variables Removed

#	Item	Reason for exclusion
E16.	Our school's administration supports and attends extra-curricular activities (parent nights, sports, plays, SAC/PTO meetings, etc.).	Did not load on either ML or PAF
E30.	School staff receive training about the cultures of the families in our school.	Low inter-item correlations
E32.	I believe that the annual standardized tests are an important part of my child's academic success.	Low inter-item correlations
E39.	Our school takes action against bullying.	Low inter-item correlations
E44.	The expectations for student conduct are strictly enforced across our school.	Low inter-item correlations
E56.	The school communicates its policies to parents.	Low inter-item correlations
E66.	Parent advocates or liaisons are available to help parents meet with school staff.	Low inter-item correlations
E85.	Overall, I am satisfied with our school's educational program.	Did not load on either ML or PAF

Note. ML = Maximum Likelihood, PAF = Principal Axis Factoring

The best fit for the final factor model was a PAF analysis using Direct Oblimin rotation of the remaining 64 items and resulting in 14 factors explaining 69.16% of the variance (Table 6). The corresponding scree plot was inconclusive and revealed that a number of factors could be retained (Figure 6). Factor F14 was dropped from further analysis because it was difficult to interpret and made up of only two primary loading items, E19 (*The teachers communicate and demonstrate that they believe all students can learn*) and E77 (*Policies promote family involvement in school*). However, these two items were retained and coupled with their secondary loadings in examining scale reliability; all other items fared well when paired with their primary loadings.

Table 6

Eigenvalues from EFA Extracted using Principal Axis Factoring (64 items)

Factor	Initial Eigenvalues			Extraction Loadings			Rotation Loadings
	Total	% Variance	Cumulative %	Total	% Variance	Cumulative %	Total
1	21.563	33.691	33.691	21.180	33.094	33.094	9.511
2	4.593	7.177	40.869	4.197	6.558	39.652	6.113
3	2.689	4.201	45.070	2.306	3.603	43.255	8.432
4	2.246	3.509	48.578	1.880	2.938	46.193	10.422
5	1.902	2.973	51.551	1.545	2.414	48.607	8.353
6	1.610	2.515	54.066	1.230	1.922	50.530	6.309
7	1.489	2.327	56.394	1.123	1.755	52.285	9.128
8	1.401	2.189	58.583	1.029	1.609	53.894	8.071
9	1.258	1.966	60.548	.895	1.399	55.293	6.991
10	1.193	1.864	62.412	.808	1.262	56.555	6.266
11	1.156	1.807	64.219	.758	1.184	57.739	7.070
12	1.095	1.711	65.930	.702	1.097	58.836	4.240
13	1.056	1.651	67.581	.652	1.019	59.855	1.612
14	1.007	1.574	69.155	.617	.963	60.818	1.664
15	.940	1.469	70.623				
16	.895	1.399	72.022				

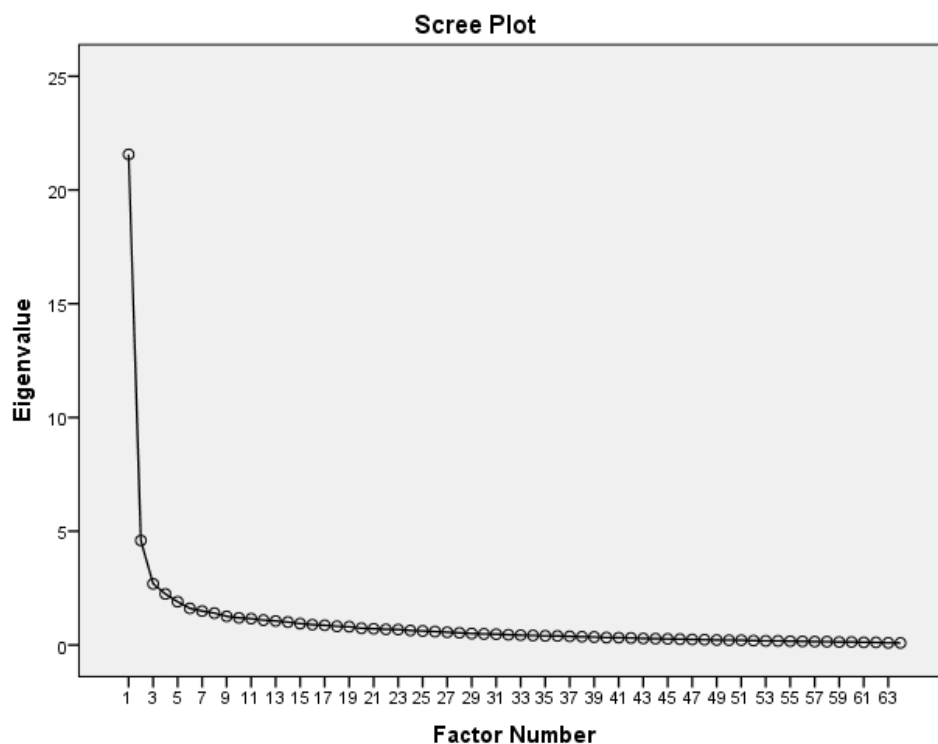
*Figure 6. Scree plot of factors for 64 items*

Table 7 presents the correlation between the final 13 factors. Overall, the correlations between factors were relatively low, though there were several factors that correlated with other factors over .3. The highest correlation among the factors was between F3–Faith-based School and F5–School Respect for Cultural and Linguistic Diversity at .381.

Table 7

Final Factor Correlation Matrix

Factor	1	2	3	4	5	6	7	8	9	10	11	12	13
1		.155	.325	.344	.332	.209	.370	.314	.256	.281	.306	-.159	.154
2			.123	.123	.090	.288	.112	.100	.224	.226	.197	-.298	.017
3				.366	.381	.290	.347	.294	.088	.151	.235	-.076	.111
4					.353	.164	.342	.365	.248	.226	.279	-.146	-.035
5						.275	.354	.229	.168	.213	.291	-.058	.093
6							.245	.211	.168	.139	.222	-.240	.117
7								.306	.271	.258	.284	-.118	.094
8									.272	.218	.234	-.077	.129
9										.313	.288	-.216	.041
10											.258	-.172	.077
11												-.145	.050
12													-.059
13													

Note. Extraction: Principal Axis Factoring, Rotation: Oblimin with Kaiser Normalization. Correlations >.3 bolded.

Reliability

Reliability was determined by examining the internal consistency of each factor using Cronbach's alpha. The following section outlines the reliability scale for each factor.

Factor naming and structure. In order to determine factor labels, both the individual items in the factor and the previous literature were carefully considered. The items for each factor were first examined for similarities to one another. Key words were extracted from each item in the factor and examined for relationships, in order to determine a common theme. The

theme was then inspected for similarity to established factors or element names in the literature, before deciding on a final factor name.

As seen in Table 8, the alphas were primarily sufficient. Occasionally, factors can increase in alpha by eliminating certain items. In this study, only School Respect for Cultural and Linguistic Diversity would increase in alpha from .72 to .81, if item E80 was eliminated. However, by dropping item E80, F5 would only include items that deal with linguistic diversity and omit the item representing cultural diversity. Furthermore, an alpha of .72 still falls in the acceptable range for reliability analysis. Therefore, item E80 is retained in this study for discussion purposes. All other factors would not substantially benefit from dropping items.

Table 8

Final 13 Factors

#	Factor Labels	Items	α =	Aligns with Parent...
F1	School Respect for Parent-Child Relationship	7	.87	Involvement
F2	School Respect for Parent Skills and Knowledge	9	.87	Involvement
F3	Faith-based School	5	.81	Choice
F4	Classroom Support for Learning	9	.89	Satisfaction and Choice
F5	School Respect for Cultural and Linguistic Diversity	3	.72	Involvement
F6	Volunteering at the School	3	.69	Involvement
F7	Safe School Environment	3	.80	Satisfaction and Choice
F8	Active and Accessible Administrators	5	.83	Satisfaction
F9	Parent-Teacher Contact	6	.83	Involvement
F10	Communication from School	6	.82	Involvement
F11	Communicating Student Expectations	2	.65	
F12	Parent Voice in the School	4	.80	Involvement
F13	Parent Participation at School Meetings	2	.40	Involvement
Total		64		

F1–School Respect for Parent-Child Relationship. As seen in Table 9, the school respect for parent-child relationship subscale of the ISC Parent Survey appeared to have good internal consistency, $\alpha = .87$.

Table 9

Reliability Scale for F1–School Respect for Parent-Child Relationship

Internal Consistency ($\alpha=.868$)	
Item ($N=7$)	α , if Item Deleted
E40. I feel our school personnel respect me in my role as parent to my child.	.843
E41. Our school demonstrates respect for parents as the ones with primary responsibility for the education of their children.	.841
E46. I am confident that our school protects my confidential information.	.846
E48. Our school's communication is open and honest.	.841
E55. I can share my concerns with school personnel without worry about it causing problems for my child or me.	.856
E62. Parents know which staff members to contact about matters concerning their children.	.872
E75. I feel welcome in my child's school.	.851

F2–School Respect for Parent Skills and Knowledge. As seen in Table 10, the school respect for parent skills and knowledge subscale of the ISC Parent Survey appeared to have good internal consistency, $\alpha = .87$.

Table 10

Reliability Scale for F2–School Respect for Parent Skills and Knowledge

Internal Consistency ($\alpha=.873$)	
Item ($N=9$)	α , if Item Deleted
E29. Teachers and counselors ask parents about their children's strengths and how they can best learn.	.870
E54. My child's school provides resources and/or training to help me work with my child.	.859
E67. Our school distributes information about community programs for families.	.854
E68. Our school sponsors family learning workshops at times and places accessible to all.	.857
E69. Our school provides families with information on child development.	.853
E70. Our school provides families with information on parenting.	.852
E71. Our school has a space for parents to use and obtain resources.	.857
E72. At least one school staff member is responsible for linking parents with resources in the community.	.856
E81. Our school invites parents of all backgrounds to help plan activities for parents.	.870

F3–Faith-based School. As seen in Table 11, the faith-based school subscale of the ISC Parent Survey appeared to have good internal consistency, $\alpha = .81$.

Table 11

Reliability Scale for F3–Faith-based School

Internal Consistency ($\alpha=.810$)	
Item ($N=5$)	α , if Item Deleted
E18. Our school is a faith-based school. I can see how that makes a positive difference in how our school is operated.	.735
E31. I know that our school has an ongoing action plan for school improvement.	.788
E33. For my child, I can see that it makes a positive difference that our school is faith-based.	.741
E34. Though our school is a faith-based school, I never feel my child is being forced to believe a certain way.	.807
E96. Teachers in my child's school are focused on character excellence.	.787

F4–Classroom Support for Learning. As seen in Table 12, the classroom support for learning subscale of the ISC Parent Survey appeared to have good internal consistency, $\alpha = .89$.

Table 12

Reliability Scale for F4–Classroom Support for Learning

Internal Consistency ($\alpha=.893$)	
Item ($N=9$)	α , if Item Deleted
E19. The teachers communicate and demonstrate that they believe all students can learn.	.878
E20. My child's school offers a variety of programs to assist students with different kinds of needs to meet high academic standards.	.884
E21. Our school staff encourages me to set high expectations for my child's overall achievement.	.877
E22. My child's teachers expect and promote academic excellence.	.877
E23. Teachers in my child's school are focused on academic excellence.	.881
E24. My child is actively engaged in teacher-planned learning activities during the school day.	.891
E25. At my child's school, teaching is focused on academic standards for which all students are held accountable.	.883
E26. My child's teachers are focused on teaching and learning.	.878
E27. Students in my child's school have the opportunity to receive additional help with skills they have trouble mastering.	.883

F5–School Respect for Cultural and Linguistic Diversity. As seen in Table 13, the school respect for cultural and linguistic diversity subscale of the ISC Parent Survey appeared to have adequate internal consistency, $\alpha = .72$.

Table 13

Reliability Scale for F5–School Respect for Cultural and Linguistic Diversity

Internal Consistency ($\alpha=.722$)	
Item (N=3)	α , if Item Deleted
E64. If needed, translators are available to help non-English speaking parents.	.506
E65. If needed, our school provides information for families in languages other than English.	.543
E80. Our school provides opportunities for families to celebrate the contributions of diverse cultures.	.811

F6–Volunteering at the School. As seen in Table 14, the volunteering at the school subscale of the ISC Parent Survey appeared to have questionable internal consistency, $\alpha = .69$.

Table 14

Reliability Scale for F6–Volunteering at the School

Internal Consistency ($\alpha=.691$)	
Item (N=3)	α , if Item Deleted
E82. I feel welcome to volunteer at school.	.656
E83. Our school trains parent and community members for meaningful volunteer work.	.709
E84. Volunteers feel appreciated and recognized by the school.	.426

F7–Safe School Environment. As seen in Table 15, the safe school environment subscale of the ISC Parent Survey appeared to have good internal consistency, $\alpha = .80$.

Table 15

Reliability Scale for F7–Safe School Environment

Internal Consistency ($\alpha=.804$)	
Item (N=3)	α , if Item Deleted
E35. My child feels safe at school.	.792
E37. The staff at school is concerned for my child's safety.	.678
E38. I see our school administration as being proactive in addressing school safety issues.	.712

F8–Active and Accessible Administrators. As seen in Table 16, the active and accessible administrators subscale of the ISC Parent Survey appeared to have good internal consistency, $\alpha = .83$.

Table 16

Reliability Scale for F8–Active and Accessible Administrators

Internal Consistency ($\alpha=.828$)	
Item (N=5)	α , if Item Deleted
E12. I feel I can talk to the principal at my child's school.	.793
E13. The principal clearly communicates our school's goals and priorities to me.	.788
E14. The principal is focused on student learning.	.785
E15. Our school's administration is visible in my child's classrooms.	.827
E17. The principal is open to parent input regarding school programs.	.773

F9–Parent-Teacher Contact. As seen in Table 17, the parent-teacher contact subscale of the ISC Parent Survey appeared to have good internal consistency, $\alpha = .83$.

Table 17

Reliability Scale for F9–Parent-Teacher Contact

Internal Consistency ($\alpha=.829$)	
Item ($N=6$)	α , if Item Deleted
E36. The staff at my child's school encourages positive social interaction among and between students.	.821
E53. My child's teachers provide opportunities for me to discuss my child's overall progress.	.783
E59. Teachers have adequate time to meet with parents.	.801
E60. Teachers meet with parents about their students' progress several times each year.	.795
E63. Parents share information about their children with teachers throughout the school year.	.784
E73. Parent meetings are offered at a variety of times to meet my needs.	.825

F10–Communication from School. As seen in Table 18, the communication from school subscale of the ISC Parent Survey appeared to have good internal consistency, $\alpha = .82$.

Table 18

Reliability Scale for F10–Communication from School

Internal Consistency ($\alpha=.815$)	
Item ($N=6$)	α , if Item Deleted
E28. Parents can know what their students are expected to learn in each subject.	.781
E47. I know that the parent/student handbook has written procedures for how to share my concerns.	.794
E49. I am regularly informed of my child's progress in addition to receiving an interim progress report and a report card.	.787
E50. I receive timely information about all aspects of my child's schooling.	.769
E51. I receive information about programs, curriculum, assessments, and proficiency levels that all students are expected to meet.	.765
E61. Parents are welcome to visit our school.	.810

F11–Communicating Student Expectations. As seen in Table 19, the communicating student expectations factor’s internal consistency was questionable with an alpha of .65. With only two items, SPSS did not calculate “ α , if item deleted.”

Table 19

Reliability Scale for F11–Communicating Student Expectations

Internal Consistency ($\alpha=.647$)	
Item ($N=2$)	α , if Item Deleted
E45. Our school's expectations for student conduct are equally applied to all students in our school.	
E52. My child's report card accurately reflects academic achievement in a way I can understand.	

F12–Parent Voice in the School. As seen in Table 20, the parent voice in the school subscale of the ISC Parent Survey appeared to have good internal consistency, $\alpha = .80$.

Table 20

Reliability Scale for F12–Parent Voice in the School

Internal Consistency ($\alpha=.795$)	
Item ($N=4$)	α , if Item Deleted
E76. A committee of parents and staff makes decisions about ways to involve families in students' learning.	.718
E77. Policies promote family involvement in school.	.735
E78. Parents serve on school committees.	.728
E79. Our school regularly surveys parents about what they need to promote students' learning.	.799

F13–Parent Participation at School Meetings. The parent participation at school meetings subscale of the ISC Parent Survey appeared to have unacceptable internal consistency, $\alpha = .40$. As seen in and SPSS did not calculate “ α , if item deleted.”

Table 21, only two items exist in this subscale and SPSS did not calculate “ α , if item deleted.”

Table 21

Reliability Scale for F13–Parent Participation at School Meetings

Internal Consistency ($\alpha=.395$)	
Item ($N=2$)	α , if Item Deleted
E57. Parents know when and where parent groups (PTO, etc.) meet.	
E58. Parents feel welcome to comment at school meetings.	

Conclusion

Overall, these analyses indicated that 13 distinct factors were underlying parent responses to the likert-scale items and that these factors were internally consistent. Eight of the 72 items were eliminated, and the remaining factor structure aligned well with previous parent involvement, satisfaction, and choice literature.

Chapter 5

Conclusion

Introduction

International schools depend on parents. Not only do parents provide much needed cultural consulting and word-of-mouth marketing for the school, they also provide language expertise, volunteering, and essential insights on how the school can better serve their children. The International Schools of China (ISC) value parents and annually gather information from them in order to maintain the pulse on parent perception of the school.

International Schools of China (ISC) chose to develop in-house surveys due to its unique cross-cultural situation and transnational clientele. While the primary impetus for survey development was to gather data for accreditation studies, stakeholders reported that the current survey length inhibits both data gathering and analysis. Furthermore, the survey was developed using individual items gathered from a number of resources rather than groups of existing measures; these many individual items make it difficult to determine what exactly the survey is meant to measure.

Therefore, this study examined the ISC Parent Survey in order to determine internal reliability and underlying structure of the instrument. Overall, 13 parent experience factors for 64 (out of the 72) likert-scale items were evident, based on a principal axis factoring (PAF) exploratory factor analysis (EFA) with a Direct Oblimin rotation. This initial step helped to determine the key parent experience factors the survey measured, with the hope of reducing length and simplifying reporting of the survey in the future.

Discussion of Findings

The following section discusses the Chapter 4 findings by addressing the research questions in reverse order for the sake of simplicity. The research questions are:

1. Does the ISC Parent Survey demonstrate internal reliability?
2. What is the underlying structure of the ISC Parent Survey instrument?

Underlying structure of the ISC Parent Survey. The choice of structure model was as clear-cut as possible, considering the large number of variables retained and the strong inter-item correlation involved in the survey. In order to determine what the initial ISC Parent Survey was attempting to measure, I chose to look for factor solutions that described as many probable factors as possible. While dropping additional variables would likely have resulted in a cleaner factor solution for developing scales, final scale development was not the purpose of this current study. Therefore, retaining 13-factors (made up of 64 items) from the 14-factor model provided the clearest factor pattern that maintained the balance between discovering what the instrument actually measured well and identifying factors to further explore.

Eleven factors (F1-F10, F12) were all well-defined and internally consistent; with alphas greater than .80, nine of these factors (F1-F4, F7-F10, F12) present themselves as potentially strong scales. Two other factors, F11 and F13, only loaded on two items, and both demonstrated unacceptable internal consistency ($\alpha=.65$ and $\alpha=.40$, respectively). However, eliminating these items from the factor structure altogether posed even more problems to the remaining variables. Therefore, F11 and F13 were retained for discussion.

Correlations. Several notable correlations between factors were found in the final factor matrix (Table 7), indicating that these factors may work especially well with one another. The following factors correlated with one another above .3:

- F1–School Respect for Parent-Child Relationship correlated with 6 other factors (F3–Faith-based School, F4–Classroom Support for Learning, F5–School Respect for Cultural and Linguistic Diversity, F7–Safe School Environment, F8–Active and Accessible Administrators, and F11–Communicating Student Expectations)
- F3–Faith-based School correlated with 4 other factors (F1–School Respect for Parent-Child Relationship, F4–Classroom Support for Learning, F5–School Respect for Cultural and Linguistic Diversity, and F7–Safe School Environment)
- F4–Classroom Support for Learning correlated with 5 other factors (F1–School Respect for Parent-Child Relationship, F3–Faith-based School, F5–School Respect for Cultural and Linguistic Diversity, F7–Safe School Environment, and F8–Active and Accessible Administrators)
- F5–School Respect for Cultural and Linguistic Diversity correlated with 4 other factors (F1–School Respect for Parent-Child Relationship, F3–Faith-based School, F4–Classroom Support for Learning, and F7–Safe School Environment)
- F7–Safe School Environment correlated with 5 other factors (F1–School Respect for Parent-Child Relationship, F3–Faith-based School, F4–Classroom Support for Learning, F5–School Respect for Cultural and Linguistic Diversity, and F8–Active and Accessible Administrators)
- F8–Active and Accessible Administrators correlated with 3 other factors (F1–School Respect for Parent-Child Relationship, F4–Classroom Support for Learning, and F7–Safe School Environment)
- F9–Parent-Teacher Contact correlated with F10–Communication from School.

Integration with the literature. As referenced in Chapter 2, current research on parent involvement, satisfaction, and choice includes a wide variety of factors. Nine of the discovered factors fell into the areas of research involving parent involvement, with only four factors involving parent satisfaction and/or choice.

Comparison with parent involvement research. Most of the factors (F1, F2, F5, F6, F9, F10, F11, F12, and F13) discovered in the ISC Parent Survey aligned well with previous literature on parent involvement. The factors appeared to represent a blend of the popular, traditional Epstein and Hoover-Dempsey and Sandler frameworks, as well as indicate a strong relationship to the dual-model approach proposed by Arias and Morillo-Campbell (2008). The traditional elements of school-based parent involvement included volunteerism (F6), communication (F9-F11), and decision-making (F12-F13); however, each of these factors represented only a small percentage of the variance (1.9%, 1.4%, 1.3%, 1.2%, 1.1% and 1.0%, respectively) in the 64 items. Other factors focusing on the school's respect for parents' roles (F1), knowledge (F2), and diversity (F5) represented a much greater percentage of the total variance (33.1%, 6.6%, and 2.4%, respectively), leading me to believe that the parents' desire to feel respected by the school was more important to the parents than the traditional factors of involvement. Furthermore, individual items that clustered into these factors reveal parents' strong need for cross-cultural understanding in the international environment.

Comparison with parent satisfaction research. All four overlapping elements of parent satisfaction outlined in Chapter 2 emerged as factors in the ISC Parent Survey. The element of parent involvement was strongly represented, as outlined in the previous section. Additionally, the other elements of parent satisfaction – classroom support for learning, staff effectiveness, and school climate – all appeared in varying degrees as factors in the survey. However, these factors

(F4, F7, and F8) made up a middling percentage of the variance (2.9%, 1.8%, and 1.6%, respectively) in the total survey.

Comparison with parent choice research. Studies of parent choice reveal several common priorities, including academic and curricular emphases (Goldring & Phillips, 2008; MacKenzie, 2010), safe and caring environments (Goldring & Phillips, 2008; Independent Schools Council of Australia, 2008; MacKenzie, 2010), religious values (Bertram-Troost et al., 2007; Reichard, 2014; Taub & Ronen, 1999), and location (Diamond & Gomez, 2004; Goldring & Phillips, 2008). All of these priorities, but location, were identified in the ISC Parent Survey.

Internal reliability of the ISC Parent Survey. The internal reliability of the survey is determined by examining the soundness of each of the 13 factor's internal consistency. Cronbach's alpha was used to determine the statistical strength of the items, while association with previous literature and inter-item relationship adds to the dependability for the future use of each factorial scale.

F1–School Respect for Parent-Child Relationship. Factor F1 appears to be a strong scale ($\alpha=.87$). All items appeared to be worthy of retention; the greatest increase in alpha would come from deleting item E62, but removal of this item would increase alpha only by .004. The factor loadings were highest for items E40 and E41, which directly use the term “respect,” but the remaining F1 items focus on key characteristics that demonstrate respect including the school's disposition towards confidentiality, transparency, approachability, honesty, and general welcome. While F1 loosely aligns with *parental role construction* (Hoover-Dempsey & Sandler, 2005) and *basic obligation of parents* (Epstein & Salinas, 1993) in the traditional school-based parent involvement models, it truly exemplifies the ISC philosophy that parents are the primary

educators of their children (Leadership Development International, 2013). Ultimately, this factor indicates that parents want to be respected by their children's school.

F2–School Respect for Parent Skills and Knowledge. Factor F2 also appears to be a strong scale ($\alpha=.87$); all items appeared to be worthy of retention and removing items would only decrease the overall alpha. The factor name was chosen based on the previous parent involvement literature, specifically the closely related *parent skills and knowledge* factors presented by Hoover-Dempsey and Sandler (2005) and Collinsworth, Strom, and Strom (1996).

Not only do parents want to be respected, they want to be perceived as knowledgeable and considered for their own expertise. Though the parents of international school students are often highly educated individuals and need little instruction on parenting or identifying resources in their home culture, they may need support with understanding Western education approaches, as well as combating language difficulties, dealing with transition, and raising Third Culture Kids. Traditional models in the research tend to focus on educating parents in the skills and knowledge that will best fit the expected school environment, but F2 of the ISC Parent Survey seems to indicate the presence of Arias and Morillo-Campbell's (2008) dual-model approach in the ISC schools.

While most of the items in F2 focus on access to parenting and community resources that align with the Epstein model, items E29 (*Teachers and counselors ask parents about their children's strengths and how they can best learn*) and E81 (*Our school invites parents of all backgrounds to help plan activities for parents*) add new insight into the factor. Specifically, item E29 provides the opportunity for parents to add insight into their children's education from their family's historical and cultural lens. Additionally, item E81 offers the chance for parents to share their own expertise, contributing to the cultural capital of the school. By providing parents

of all backgrounds the opportunity to plan activities for parents, the school is able to connect parents of many backgrounds together, which also helps parents develop an essential social network for thriving in a foreign country (McNulty, 2012). These important parent connections further allow the school to capitalize on parent involvement and networking (Curry & Adams, 2014; Henderson & Whipple, 2013).

F3–Faith-based School. Research in school choice indicated that religious factors influence parents’ choice of schooling for their children (Bertram-Troost et al., 2007; Reichard, 2014; Taub & Ronen, 1999). Items E18, E31, E33, E34, and E96 loaded together to produce factor F3, explaining 4.2% of the total variance in the survey. All items appeared to be worthy of retention and removing items would only decrease the overall alpha. The factor name was chosen based on the top two loading items (Neill, 2008), emphasizing the faith-based schooling included in the ISC schools. In addition to the items (E31, E33, and E34) that use the term “faith-based school,” F3 also includes a focus on character excellence (E96) and the idea of ongoing school improvement (E31). F3–Faith-based School was among the stronger scales in the factor analysis ($\alpha=.81$) and correlated well with four other factors (F1, F4, F5, F7). As faith-based schools, parents indicate that they see a positive difference in the way ISC schools operate.

F4–Classroom Support for Learning. Items E19-27 ($\alpha=.89$) clearly focus on teachers and academic excellence. All items appeared to be worthy of retention and removing items would only decrease the overall alpha. Recognizing that the nine survey items were borrowed from various unknown sources, this factor gives the appearance of a pre-established scale that holds up well in the ISC parent community. The factor name was chosen based on a combination of previous literature on parent satisfaction which includes elements of *academic*

program, achievement, and quality of curriculum (Cooper & Letts, 2002; Friedman et al., 2015; Tuck, 1995).

Classroom support for learning consistently appears in both parent satisfaction and parent choice research, and international school parents look for schools with strong academics (MacKenzie, 2010). These nine items (E19-E27) produced the strongest internal consistency of all the factors ($\alpha=.89$), leading me to believe that the items' emphasis on academic excellence and high expectations translates well into the Korean, Chinese, and French versions of the survey.

In order to be assigned to an overseas posting, international school parents are most often well-educated, successful business men and women; they tend to already have high expectations for their children. But with such a large Asian contingency making up the population of the ISC schools, there exists an even a greater emphasis on academics and student learning from Asian parents. In their study of honor versus happiness in East Asian students, Dundes, Cho, and Kwak (2009) cited 15 other studies between 1990 and 2007 that evidence that Asians feel that "children's academic achievement is paramount" (p. 136). Furthermore, Asian parents have consistently demonstrated high academic aspirations of their children (Spera, Wentzel, & Matto, 2009). Huang and Gove (2012) reported that for Confucian cultures, "scholarship was associated with high social class, leadership, and high moral character" (p.392). For Asian parents, strong classroom learning is essential to future success.

F5–School Respect for Cultural and Linguistic Diversity. Factor F5 appears to be a good scale ($\alpha=.72$), though item E80 requires some consideration. If item E80 were deleted, the alpha would increase by .089. However, by dropping item E80, F5 would only include items that deal with linguistic diversity and omit the item representing cultural diversity. Furthermore,

an alpha of .72 still falls in the acceptable range for reliability analysis. Therefore, item E80 is retained in this study for discussion purposes.

The factor name was chosen based on all three items; E64 and E65 emphasizing respect for parents of diverse languages and E80 emphasizing respect for parents of diverse cultures. This 3-item factor indicates that ISC schools strive provide access for non-English speaking parents, as well as providing opportunities for families to celebrate the contributions of diverse cultures. Factor F5 highlights the continued need for connecting non-English speaking and culturally diverse parents in Arias and Morillo-Campbell's (2008) dual-model approach.

F6–Volunteering at the School. Volunteering showed up in both Epstein and Hoover-Dempsey and Sandler's frameworks and was the most common factor measured in the review of parent involvement measurement tools in Chapter 2. Therefore, it is not surprising that all three items (E82-E84) citing the term “volunteering” loaded on F6. However, it is surprising that F6 is amongst the weakest scales in the study ($\alpha=.69$), though all items in the factor appeared to be worthy of retention. The greatest increase in alpha would come from deleting item E83, but removal of this item would increase alpha only by .018, as well as limit the scale to two items.

The factor name further aligns with the many other *volunteering* measures outlined in Appendix B related to parent involvement (Epstein & Salinas, 1993; Hoover-Dempsey, Sandler, et al., 2005; Miller-Johnson & Maumary-Gremaud, 1995; National Center for Education Statistics, 2003; Patrikakou & Weissberg, 2000; Ringenberg et al., 2005). In ISC schools, parent volunteers most often work with the parent-teacher organization, provide translation and library assistance, or prepare classroom materials for teachers. Because volunteerism tends to be related to democratic ideals, further analysis of this factor in the international school context may perhaps reveal varying cultural perspectives and definitions of volunteering.

F7–Safe School Environment. Factor F7 also appears to be a strong scale ($\alpha=.80$); all 3 items appeared to be worthy of retention and removing items would only decrease the overall alpha. All items (E35, E37, and E38) in F7 include the word “safe” or “safety” and are general enough to be read as physical, social or emotional safety. Parent satisfaction literature includes *safe environment* (Skallerud, 2011) and *school safety* (Friedman et al., 2015) as a subcomponent of *school climate* (Schueler et al., 2014). Furthermore, it is not surprising that safe environment (2.3%) represented a smaller percentage of the variance than classroom support for learning (3.5%), since during his interviews with parents, Schueler et al. (2014) found that parents rarely mentioned safety and physical environment, instead focusing on teaching, learning, and other social dimensions.

Factor 7 is also included in parent satisfaction literature, in addition to school choice literature. Specifically, a supportive and caring environment (Independent Schools Council of Australia, 2008) and safety (Goldring & Phillips, 2008) were a significant indicators of parents’ choice in schooling for their children. Parents of international school students indicated that they looked for schools where the “children are happy and cared for” (MacKenzie, 2010). Therefore, F7–Safe School Environment could be considered an important indicator of both parent satisfaction and choice for ISC schools.

F8–Active and Accessible Administrators. The five items (E12, E13, E14, E15, and E17) focused on principals loaded as a strong factor with good internal consistency ($\alpha=.83$). All items appeared to be worthy of retention and removing items would only decrease the overall alpha.

Interestingly, administrators as an independent factor was only identified in Friedman, Bobrowski, and Geraci’s (2015) study of ethnic similarities and differences in parents’ school satisfaction. In the study, only Asian parents ranked the “principal” dimension over “teacher

effectiveness” in the order of influence of school dimensions on school satisfaction (Friedman et al., 2015, p. 483). This may also help explain why the items in F4–Classroom Support for Learning that indicate “teacher effectiveness” did not load separately from a focus on academic excellence. Obviously, the ISC parent community places significant responsibility on the role of the administration.

F9–Parent-Teacher Contact. Factor F9 also appears to be a strong scale ($\alpha=.83$); all items appear to be worthy of retention and removing items would only decrease the overall alpha. Parent-teacher contact primarily includes communication between the home and school regarding a child’s academic issues, but can also include the climate that the teacher creates for the parents and the quality of the parent-teacher relationship. Parent-teacher contact can be found in both Epstein and Hoover-Dempsey and Sandler’s frameworks and was also a common factor measured in the review of parent involvement measurement tools (Hoover-Dempsey, Sandler, et al., 2005; Miller-Johnson & Maumary-Gremaud, 1995; Patrikakou & Weissberg, 2000; Ringenberg et al., 2005).

Items E53, E59, E60, E63, and E73 clearly outline regular opportunities for parents and teachers to meet and share throughout the year, but item E36 (*The staff at my child's school encourages positive social interaction among and between students*) interestingly focuses on social relationships between students. Though seemingly unusual to most Western teachers, many parents in the ISC community do not hesitate to ask teachers to guide their children’s social interactions. Research indicates that Asian parents desire Western teachers to “give social skills” and “manage [students’] problems” (Tucker & Fail, 2007, p. 52). Further analysis of this factor would perhaps reveal varying items across subgroups.

F10–Communication from School. Factor F10 also appears to be a strong scale ($\alpha=.82$); all items appear to be worthy of retention and removing items would only decrease the overall alpha. Communication from school is closely related to parent-teacher contact and includes general school invitations for involvement, as well as other types of information sharing. The factor name further aligned with the several other *communication from school* scales outlined in Appendix B related to parent involvement (Hoover-Dempsey, Sandler, et al., 2005; National Center for Education Statistics, 2003; Patrikakou & Weissberg, 2000).

Items E28, E47, E49, E50, and E51 appear to emphasize the traditional types of communication from the school including academic learning, student progress, programming, and handbook. However, item E61 (*Parents are welcome to visit our school*) aligns with research supporting parents' perceptions of general invitations from the school found in the Hoover-Dempsey and Sandler framework. When parents receive regular communications inviting them to participate in school activities, they assume a welcoming and responsive school environment (Green et al., 2007).

F11–Communicating Student Expectations. Factor F11 is a poor scale ($\alpha=.65$); though retained for current discussion and future examination, F11 was the most problematic to conceptually interpret based on previous literature. The factor name was chosen based on a combination of the two items and their focus on communicating both academic and behavioral expectations for students. Additionally, only two items exist in this subscale, therefore removing items would not be appropriate.

F12–Parent Voice in the School. Items E76, E77, E78, and E79 nicely clustered together to form F12 ($\alpha=.80$) and only a minimal increase of .004 in alpha would come from deleting item E79. The factor name was chosen based on the relationship between the items; the

items focus on the role of parents in decision-making about the school through opportunities to express their opinions through surveys and participation on school committees, aligning well with previous literature on parent involvement in school decision-making (Epstein, n.d., 2010; Epstein et al., 2009). However, this was the only factor to negatively correlate with the other factors on the final correlation matrix (Table 7). While these practices are essential to the democratic fabric of American education, these types of decision-making values may not inherently transfer across cultures.

The negative correlation between F12 and the other factors may be a symptom of mismatch in perceptions of parents' role in education across culture. F12 items clearly focus on a more western and democratic definition of decision-making in schools, while at least 61.7% of parents completing this survey were from communal, Asian cultures. Based on the Confucian teachings of harmony and hierarchy, Asian parents will often look to the eldest person in their social group to make decisions (Nisbett, 2003). As observed in the ISC schools, Asian mothers of students feel most comfortable when meeting together, gathering their concerns, and appointing a designated spokesperson to speak with the teacher or principal.

This factor further supports the research emphasizing the need for a dual-model approach to parent involvement (Arias & Morillo-Campbell, 2008; Cheatham & Santos, 2005), representing the traditional values of a western-styled education and the non-traditional approaches for giving parents opportunities to speak-out in their own culturally appropriate ways.

F13–Parent Participation at School Meetings. Though factor F13 did not meet the criteria to be retained as an independent factor ($\alpha=.40$), it was retained for discussion alongside factor F12. Items E57 and E58 also focus on school meetings which also aligns well with previous literature on parent involvement in school decision-making (Epstein, n.d., 2010; Epstein

et al., 2009). However, questions remain about the translation of “school meetings,” as well as the cultural appropriateness of asking parents to comment at meetings (E58). At ISC PTO meetings, Korean, Chinese, and Japanese parents refrain from speaking out in an open forum; instead, they request time to meet with others in their language-speaking group before proposing a shared decision with the group. F13 positively loaded with other factors in the final factor correlation matrix, appearing to indicate that parents appreciate the opportunity be connected to other parents and heard by the school.

Implications of the Study

A primary purpose of this study was to better understand the ISC Parent Survey in order to determine what the instrument was actually measuring, in the hope of gaining useful information to aid school decision-makers. The findings of this study reveal that the ISC Parent Survey does indeed include a number of helpful items that do, in fact, cluster into several strong factors which reflect various aspects of parent experience in the international school. These results will aid not only ISC schools in further survey development, administration, and analysis, but will also shine light on survey development and use in an international school community.

Implications for international schools. The results of this study have several implications for the field of international schooling in regards to measuring parent experience.

First, this study will contribute to the limited research regarding studies in international schools of parent involvement, parent satisfaction, and parent choice. In fact, in email correspondence with me, Dr. Joyce Epstein stated that “I am not aware of studies in international schools (only) of school, family, and community partnerships. Therefore, your study is likely to make an original contribution to the literature” (personal communication, September 23, 2015).

Second, each of the students in an international school hail from various cultural and linguistic backgrounds. In such a multicultural community, student learning is influenced not only by the school, but also by the larger expatriate and host country communities, in addition to parents, extended family, and home country influences. These additional layers of family and community undoubtedly impact the lives of students, adding further support to the overlapping spheres of influence theory (Epstein & Sheldon, 2006; Epstein, 2010; Epstein et al., 2009). Epstein proposed that when these layers of school, family, and community overlap more closely, students are able to make stronger and deeper connections with their learning. But, with so many diverse (and often competing) experiences, philosophies, and practices from these additional influences, the international school must proactively work to increase the overlap with parents in order to help students learn.

Third, culture provides the lens to parent experience. Parents are away from their home countries and often familiar educational settings, and sometimes, the distance between what they have always known and this new, western education system feels like an impassable chasm. Where families come from impacts the way they view their own roles as parents, as well as the role of the school, administrators, and teachers. In a primarily western-styled school environment, parents need to fully understand the way the teachers are teaching and the expectations on their children. Strategic parent education will likely address raising Third Culture Kids, living cross-culturally, and understanding a Western style of education. At the same time, the international school should solicit opportunities to better understand the cultural norms and values of the parents.

International schools have the responsibility to bridge the cultural chasm and partner with parents in student learning. Consequently, in order to determine parents' perceptions and

experience, international schools need tools that reflect the unique philosophy and culture of the school, while at the same time, emphasize the desire to support parents who are navigating new cultural experiences. The scales garnered from this study can begin to meet this need.

Finally, the findings in this study indicate a number of useful factors for measuring parent experience in an international school setting. These scales could be especially helpful when utilized in the similar context of a western-styled school with a large Asian population. Strong final factors represented key indicators in the areas of involvement, satisfaction, and choice. Factors F1, F2, and F5 all measure parents' perceptions of school respect towards their role as parents, their skills and knowledge, and their cultural and linguistic diversity; these three scales can assist international schools in monitoring a quick snapshot on whether or not parents' feel respected by the school. Factor F3 measures parent perception of a faith-based school, and other international faith-based schools could likely benefit from using this factor as an indicator of parent satisfaction. Factor F4 measures parents' perception of classroom support for learning; with the strongest alpha of the final factors, this scale could likely help international schools track parent satisfaction in the area of academics. Factor F8 measures parents' perceptions of active and accessible leadership; especially in a community with many Asian parents, this factor can assist schools in examining whether parents' expectations of administrators are being met. Factors F9 and F10 both measure aspects of communication between the school and parents; annual analysis of these factors can aid the school in assessing whether its communication methods are meeting the needs of parents. By utilizing these scales and annually monitoring their results, international schools have the opportunity to better understand parent perception in their communities.

Implications for ISC administrators. In addition to the general implications for international schools, the results of this study have specific implications for ISC administrators in regards to further utilizing the ISC Parent Survey measurement tool.

Survey fatigue is a significant obstacle in the current survey. As evident by the 2014 participant responses, questions asked earlier in the survey garnered more responses than those at the end. Internet restrictions may also be a factor in survey completion. The survey items appeared to be answered in batches of 8-9 items, aligning with the 8-9 questions per page on the digital survey. Many parents expressed difficulty in the amount of time that each page took to load while trying to take the survey in China; some even abandoned the survey when a loading page “timed out” in the middle of a session. While several promising scales emerged in these findings, many parents appeared to be unwilling or unable to complete all 96 survey items.

There are several possible solutions to the problem of survey length. ISC leadership could choose to limit the number of scales that parents complete each year, but annual tracking would be better served by implementing shorter surveys targeting specific factor scales. Shorter surveys would be made up of only a few of the factors, using a maximum of 20 likert-scale items; for example, a shorter survey could measure scales F1, F4, and F7 (19 total items) or scales F2, F3 and F9 (20 total items). (The demographic, multiple choice, and open-ended response questions would need to be evaluated and condensed as well.) These shorter surveys could be distributed several times throughout the year to the entire parent population, but to avoid survey burnout, ISC schools could distribute each of the shorter surveys to a stratified group of potential parent respondents. Each group of potential parent subjects would need to consist of a minimum of 30 parents and include representatives of the essential demographic groups (as identified by ISC leadership). This would require a significant change in survey distribution methods and

could possibly limit the feedback to individual schools, but parents indicate that they would be much more likely to complete a shorter survey.

ISC administrators should also consider other best practices in survey administration to optimize their data collection. Specifically, ISC leadership should review and refine their survey distribution techniques. Research indicates that pre-survey notification, an initial link to the survey, and reminder messages increase the likelihood of responses (Perkins, 2011).

Additionally, respondents are more likely to complete a survey when they receive a personalized invitation for participation.

In the competitive international school market, ISC schools can greatly benefit from gathering data on parent perception, but the results are only as useful as they are understood and utilized. To this end, ISC leadership should develop a report for school decision makers which presents results by factors, to aid in the ease of interpretation and simplicity in tracking trends. Additionally, reporting by factor (in addition to individual items) will provide a simpler way to facilitate discussion and aid in decision-making. Finally, ISC administrators should devise a way to share a summary of the annual survey results with parents. Participants will be more likely to participate in future surveys, if they can clearly see the results of current surveys.

Limitations of the Research

While this study revealed several interesting findings, there are obviously numerous limitations in regards to this research. Primarily, factor analysis is an extremely subjective process, specifically in the naming and interpretation of factors. It is important to note that while the analyses revealed 13 underlying factors in the survey, due to the exploratory nature of the study, these factors may or may not relate to genuine scales of parent experience.

Furthermore, I chose to use PAF and ML for my factor extraction; however, there may have been better choices for this procedure. While Direct Oblimin is the most recommended factor rotation method for psychological and educational scales, looking at results from a different oblique rotation method could have revealed additional findings. Finally, alpha assumes that all items represent a single factor, and because this data set revealed multiple factor loadings for individual items, it can be concluded that the estimate of alphas in each scale could be somewhat misestimated (Osborne, 2014).

Suggestions for Further Study

This EFA was the first attempt at examining the constructs of any of the ISC surveys. While this study uncovered several interesting factors and relationships within the ISC Parent Survey, further analysis is needed to determine the desired parent experience factors in order to develop scales, condense the survey length, and summarize factor reporting in order to make the survey into a helpful data collection tool for ISC decision-makers.

In order to determine the intended constructs, it may be helpful to interview both ISC leaders and parents in order to better define the purposes of the surveys and the specific data collected. If school leaders plan to use the data to inform school improvement strategies, the data needs to be an accurate reflection of the anticipated factors. Questions regarding translation clarity could be alleviated by performing a blind-reverse translation of the Chinese, Korean, and French versions of the survey. Additionally, adding reverse-coded items to revised surveys could produce more meaningful diagnostic data in such a cross-cultural and multilingual environment. It is also important to note that the current instrument is written from an individualistic, American cultural perspective, rather than a communal, Confucian cultural

perspective. The wording of several survey items could likely be revised to better reflect a balance of cultural and educational expectations.

In order to revise the current tool, further confirmatory factor analysis (CFA), including invariance testing, needs to be examined to see if each of the 13 factors' structure holds up across sub-samples (such as mother tongue or across schools). Additionally, future CFA studies should include a closer look at all of the items and factors deemed problematic, including, but not limited to, the following:

- E16, E30, E32, E39, E44, E56, E66, and E85 (listed in Table 5);
- E80 (F5);
- E82-84 (F6);
- E35, E37, E38 (F7);
- E45 and E52 (F11); and
- E57 and E58 (F13).

These items should especially be examined for translation issues or cultural misunderstanding. For example, item E39 (*Our school takes action against bullying*) was dropped as a problematic variable (Table 5). The issue of bullying is an important safety concept in America, but for Korean culture, the concept of bullying is not defined in the same way. Further CFA could help clarify authentic factors towards the goal of scale development in the area of international school parent experience, though the entire revised parent experience tool would need to be examined in a new sample before ultimately concluding the reliability of each individual construct.

Finally, while this study focused on examining likert-scale items, future studies could examine the data in other components of the survey, such as the multiple answer data which asks parents about the events they attend on campus (E86), their reasons for placing their children at

the school (E94), and their reasons for keeping their children at the school (E95). This valuable data would only add to the conversation of parent involvement, satisfaction, and choice in an international school environment.

Conclusion

In conclusion, this exploratory study of the ISC Parent Survey identified 13 (including 11 well-defined and internally consistent) factors that measure various concepts of parent experience in an international school community. This exciting and noteworthy finding has significant potential, while equally necessitating further exploration and analysis. Each of the factors aligned well with previous literature on parent involvement, satisfaction, and choice, and the results of this study may indeed be the first of its kind. Furthermore, ISC leadership now has specific steps to improve the further development and use of their parent survey. This study was limited by the many subjective choices required in factor analysis, and future research should examine the factors for both translation issues and cultural misunderstandings, as well as further confirmatory factor analysis testing.

Most importantly, the findings of this study reveal a need for international schools to reevaluate the way that they engage parents. With so many additional overlapping spheres of influence (Epstein & Sheldon, 2006; Epstein, 2010; Epstein et al., 2009) in the international school setting, schools must focus on examining parent experience through each parents' cultural lens. The identified constructs, such as school respect for parents, faith-based schooling, academics, leadership, and communication, that were discovered in this study may aid international schools in learning how to build better parent and school partnerships.

Finally, ISC leadership should be commended for initiating data collection of parent experience in the international school context. The ISC Parent Survey instrument has taken the

first steps in developing authentic measures of parent experience, revealing several strong scales measuring various aspects of parent involvement, satisfaction, and choice. Hopefully, this is only the beginning, and these measures can be further developed in order to guide administrators not only to attract and retain parents in choosing the school, but also to best support all international school parents and their children.

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APPENDICES

Appendix A

List of the 2014 ISC Parent Survey Items in English

#	Item	Type of Item
U01.	My preferred language is...	Demographic
E02.	My child or children attend...	Demographic
E03.	*How many children do you have?	Demographic
E04.	*In which grades do you have children?	Demographic
E05.	What is your relationship to your child?	Demographic
E06.	*What year did your family begin living in this city?	Demographic
E07.	*What year did your family begin living in China?	Demographic
E08.	*What year did your family begin living away from your home country?	Demographic
E09.	*What year did your children begin attending this school?	Demographic
E10.	After this year, how long do you think you will stay in this city?	Demographic
E11.	*What language do you speak at home with your children?	Demographic
E12.	I feel I can talk to the principal at my child's school.	Likert-scale
E13.	*The principal clearly communicates our school's goals and priorities to me.	Likert-scale
E14.	The principal is focused on student learning.	Likert-scale
E15.	*Our school's administration is visible in my child's classrooms.	Likert-scale
E16.	*Our school's administration supports and attends extra-curricular activities (parent nights, sports, plays, SAC/PTO meetings, etc.).	Likert-scale
E17.	The principal is open to parent input regarding school programs.	Likert-scale
E18.	Our school is a faith-based school. I can see how that makes a positive difference in how our school is operated.	Likert-scale
E19.	*The teachers communicate and demonstrate that they believe all students can learn.	Likert-scale
E20.	*My child's school offers a variety of programs to assist students with different kinds of needs to meet high academic standards.	Likert-scale
E21.	*Our school staff encourages me to set high expectations for my child's overall achievement.	Likert-scale
E22.	*My child's teachers expect and promote academic excellence.	Likert-scale
E23.	*Teachers in my child's school are focused on academic excellence.	Likert-scale
E24.	*My child is actively engaged in teacher-planned learning activities during the school day.	Likert-scale
E25.	*At my child's school, teaching is focused on academic standards for which all students are held accountable.	Likert-scale
E26.	*My child's teachers are focused on teaching and learning.	Likert-scale
E27.	*Students in my child's school have the opportunity to receive additional help with skills they have trouble mastering.	Likert-scale
E28.	*Parents can know what their students are expected to learn in each	Likert-scale

	subject.	
E29.	*Teachers and counselors ask parents about their children's strengths and how they can best learn.	Likert-scale
E30.	*School staff receive training about the cultures of the families in our school.	Likert-scale
E31.	*I know that our school has an ongoing action plan for school improvement.	Likert-scale
E32.	*I believe that the annual standardized tests are an important part of my child's academic success.	Likert-scale
E33.	For my child, I can see that it makes a positive difference that our school is faith-based	Likert-scale
E34.	Though our school is a faith-based school, I never feel my child is being forced to believe a certain way.	Likert-scale
E35.	*My child feels safe at school.	Likert-scale
E36.	*The staff at my child's school encourages positive social interaction among and between students.	Likert-scale
E37.	The staff at school is concerned for my child's safety.	Likert-scale
E38.	I see our school administration as being proactive in addressing school safety issues.	Likert-scale
E39.	Our school takes action against bullying.	Likert-scale
E40.	I feel our school personnel respect me in my role as parent to my child.	Likert-scale
E41.	Our school demonstrates respect for parents as the ones with primary responsibility for the education of their children.	Likert-scale
E42.	*Annually, I receive a paper or electronic copy of our school handbook that describes ways the parent, student, teacher, and principal will support learning.	Yes/No
E43.	*I have read our school's expectations for student conduct.	Yes/No
E44.	*The expectations for student conduct are strictly enforced across our school.	Likert-scale
E45.	*Our school's expectations for student conduct are equally applied to all students in our school.	Likert-scale
E46.	I am confident that our school protects my confidential information.	Likert-scale
E47.	I know that the parent/student handbook has written procedures for how to share my concerns.	Likert-scale
E48.	Our school's communication is open and honest.	Likert-scale
E49.	*I am regularly informed of my child's progress in addition to receiving an interim progress report and a report card.	Likert-scale
E50.	*I receive timely information about all aspects of my child's schooling.	Likert-scale
E51.	*I receive information about programs, curriculum, assessments, and proficiency levels that all students are expected to meet.	Likert-scale
E52.	*My child's report card accurately reflects academic achievement in a way I can understand.	Likert-scale
E53.	*My child's teachers provide opportunities for me to discuss my child's overall progress.	Likert-scale

E54.	*My child's school provides resources and/or training to help me work with my child.	Likert-scale
E55.	I can share my concerns with school personnel without worry about it causing problems for my child or me.	Likert-scale
E56.	*The school communicates its policies to parents.	Likert-scale
E57.	*Parents know when and where parent groups (PTO, etc.) meet.	Likert-scale
E58.	*Parents feel welcome to comment at school meetings.	Likert-scale
E59.	*Teachers have adequate time to meet with parents.	Likert-scale
E60.	*Teachers meet with parents about their students' progress several times each year.	Likert-scale
E61.	*Parents are welcome to visit our school.	Likert-scale
E62.	*Parents know which staff members to contact about matters concerning their children.	Likert-scale
E63.	*Parents share information about their children with teachers throughout the school year.	Likert-scale
E64.	*If needed, translators are available to help non-English speaking parents.	Likert-scale
E65.	*If needed, our school provides information for families in languages other than English.	Likert-scale
E66.	*Parent advocates or liaisons are available to help parents meet with school staff.	Likert-scale
E67.	*Our school distributes information about community programs for families.	Likert-scale
E68.	*Our school sponsors family learning workshops at times and places accessible to all.	Likert-scale
E69.	*Our school provides families with information on child development.	Likert-scale
E70.	*Our school provides families with information on parenting.	Likert-scale
E71.	*Our school has a space for parents to use and obtain resources.	Likert-scale
E72.	*At least one school staff member is responsible for linking parents with resources in the community.	Likert-scale
E73.	*Parent meetings are offered at a variety of times to meet my needs.	Likert-scale
E74.	*My child's school has an active Parent/Teacher group and/or a School Advisory Council that includes parents.	Yes/No
E75.	*I feel welcome in my child's school.	Likert-scale
E76.	*A committee of parents and staff makes decisions about ways to involve families in students' learning.	Likert-scale
E77.	*Policies promote family involvement in school.	Likert-scale
E78.	*Parents serve on school committees.	Likert-scale
E79.	*Our school regularly surveys parents about what they need to promote students' learning.	Likert-scale
E80.	*Our school provides opportunities for families to celebrate the contributions of diverse cultures.	Likert-scale
E81.	*Our school invites parents of all backgrounds to help plan activities for parents.	Likert-scale

E82.	I feel welcome to volunteer at school.	Likert-scale
E83.	*Our school trains parent and community members for meaningful volunteer work.	Likert-scale
E84.	*Volunteers feel appreciated and recognized by the school.	Likert-scale
E85.	*Overall, I am satisfied with our school's educational program.	Likert-scale
E86.	*For which events do you come to our campus? (check all that apply)	Multiple choice
E87.	Would you like to make any comments about your child's teacher, or teachers?	Open-ended
E88.	Would you like to make any comments about the school's administration?	Open-ended
E89.	Would you like to make any comments about your child's curriculum?	Open-ended
E90.	Would you like to make any comments about the school's extra-curricular activities?	Open-ended
E91.	Would you like to make any comments about the school's support services (English support, special needs, counseling, health offices, library, admissions, technology, etc.)?	Open-ended
E92.	Would you like to make any comments about the school facilities?	Open-ended
E93.	Additional comments?	Open-ended
E94.	What was the reason(s) for initially placing your child at our school? Please check all answers that apply.	Multiple choice
E95.	Why do you keep your child at our school? Please check all that apply.	Multiple choice
E96.	Teachers in my child's school are focused on character excellence.	Likert-scale

Appendix B

Chart of Parent Involvement Factors Measured in the Research

Survey Name Study Author (Year)	Parent Involvement Factors								
	Learning at Home	Volunteering	Parent-teacher contact	Parent Efficacy	Communication from School	Parent Skills and Knowledge	Parental Role	Governance	Parent Time and Energy
The Family–School Partnership Lab Scales (Hoover-Dempsey & Sandler, 2005)		School-based involvement	Perceptions of invitations to be involved - specific teacher invitations	Personal motivators for involvement - self-efficacy	Perceptions of invitations to be involved - general school invitations	Perceived life context - skills and knowledge	Personal motivators for involvement - parental role construction		Perceived life context - time and energy
Parent And School Survey (PASS) (Ringenberg, Funk, Mullen, Wilford, & Kramer, 2005)	Parenting – home environment conducive to learning Learning at home – help and encouragement with school work	Volunteering – activities in the school and classroom	Communicating – home–school communication about child's academic issues					Decision making – involvement with governance and shaping policies/practices at school	
School and Family Partnership: Surveys and Summaries (Epstein & Salinas, 1993)	Involvement in learning activities and homework	Volunteers at the school building					Basic obligations of parents	Governance/ advisory roles for parents	
Parent and Family Involvement in Education Survey of the 2003 National Household Education Surveys Program (NCES, 2003)	Involvement in homework Involvement in non-school activities, such as home-based activities and outings with the student.	Involvement in school, such as attending school meetings and events, volunteering, serving on committees, and fundraising			School communication with families about student progress, opportunities for involvement, and other types of information-sharing				

Survey Name Study Author (Year)	Parent Involvement Factors								
	Learning at Home	Volunteering	Parent-teacher contact	Parent Efficacy	Communication from School	Parent Skills and Knowledge	Parental Role	Governance	Parent Time and Energy
Parent Perceived Teacher Outreach (PPTO) (Patrikakou & Weissberg, 2000)			Climate that the teacher creates for parents		Level of information the teacher relays to parents				
Parent Success Indicator (PSI) (Collinsworth, Strom & Strom, 1996)						How often the parent is good at communicating and listening to the child Information needs – how often the parent needs more information about various childhood concerns			How often the parent has difficulty finding time to be involved in the child's daily life
Parent–Teacher Involvement Questionnaire: Parent (PTIQ-P) (The Fast Track Project, 1995)		Parent involvement and volunteering at school	Frequency of parent-teacher contact Quality of parent–teacher relationship						
Parent Efficacy Scales (Hoover-Dempsey, Bassler & Brissie, 1992)				Parent perseverance General ability to influence children's school outcomes Specific effectiveness in influencing children's school learning					

Survey Name Study Author (Year)	Parent Involvement Factors								
	Learning at Home	Volunteering	Parent-teacher contact	Parent Efficacy	Communication from School	Parent Skills and Knowledge	Parental Role	Governance	Parent Time and Energy
Parent Involvement At Home (PIH) (Patrikakou & Weissberg, 2000)	Investigates various kinds of parent practices that contribute to the enhancement of academic and social development								
Parent Involvement at School (PISC) (Patrikakou & Weissberg, 2000)		Voluntary activities (e.g., volunteering in child's classroom)							

Appendix C

Letter of Permission



亚特兰大 成都 青岛 沈阳 天津 武汉 无锡
 Atlanta Chengdu Qingdao Shenyang Tianjin Wuhan Wuxi

September 14, 2015

Dear Committee Chair,

This letter is to notify you that Angela Patterson has the permission of International Schools of China to conduct research for her dissertation study. The purpose of the study is to further develop and refine the existing instrument that investigates parent's experience of their children's schooling in our international school system in China.

Ms. Patterson will have access to the 2014 parent survey data from six international schools in China. Ms. Patterson is authorized to access, analyze, evaluate and report data from this survey in the pursuit of answering the following questions:

1. Does the ISC Parent Survey demonstrate internal reliability and validity?
2. What is the underlying structure of the ISC Parent Survey instrument?

If you have questions regarding Ms. Patterson's permission to use this data instrument along with its results, please do not hesitate to contact me.

Sincerely,

Jeff Culp
 Superintendent
 International Schools of China
jeff.culp@ldichina.com
 +86-186-2705-6736

Missingness, Maximum and Minimum of ISC Parent Survey Responses (N=309)

E38. I see our school administration as being proactive in addressing school safety issues.	E39. Our school takes action against bullying.	E40. I feel our school personnel respect me in my role as parent to my child.	E41. Our school demonstrates respect for parents as the ones with primary responsibility for the education of their children.	E44. The expectations for student conduct are strictly enforced across our school.	E45. Our school's expectations for student conduct are equally applied to all students in our school.	E46. I am confident that our school protects my confidential information.	E47. I know that the parent/student handbook has written procedures for how to share my concerns.	E48. Our school's communication is open and honest.
281	281	282	282	280	280	281	275	273
28	28	27	27	29	29	28	34	36
1	1	1	1	1	1	1	1	1
5	5	5	5	5	5	5	5	

[illegible]

Initial Correlation Matrix for the ISC Parent Survey (72 items)

[illegible]

	Communalities		E30	E31	E32	E33	E34	E35	E36	E37	E38	E39	E40	E41	E44	E45	E46	E47	E48	E49
	Init.	Ext.																		
E12	.714	.674	.289	.479	.166	.267	.294	.388	.465	.395	.333	.265	.534	.438	.247	.254	.399	.462	.503	.352
E13	.715	.673	.286	.477	.368	.305	.351	.208	.365	.338	.295	.221	.431	.456	.295	.307	.421	.321	.508	.216
E14	.736	.632	.326	.565	.238	.396	.326	.396	.489	.346	.393	.266	.554	.376	.344	.448	.358	.335	.514	.346
E15	.596	.421	.287	.335	.152	.202	.305	.292	.387	.281	.410	.235	.336	.277	.232	.212	.303	.268	.321	.374
E16	.669	.502	.207	.445	.230	.368	.416	.306	.429	.388	.436	.224	.346	.394	.263	.273	.244	.331	.322	.276
E17	.753	.654	.387	.404	.283	.396	.409	.354	.444	.367	.404	.239	.548	.494	.315	.357	.414	.365	.510	.392
E18	.725	.731	.236	.509	.205	.716	.523	.466	.388	.479	.468	.334	.483	.404	.353	.349	.394	.282	.419	.252
E19	.775	.704	.274	.450	.226	.391	.349	.454	.504	.457	.498	.310	.513	.426	.246	.371	.388	.311	.411	.283
E20	.679	.546	.302	.455	.313	.292	.406	.277	.388	.312	.410	.196	.390	.406	.267	.334	.340	.302	.385	.328
E21	.783	.721	.290	.449	.324	.362	.229	.325	.451	.374	.382	.258	.426	.362	.310	.393	.276	.241	.390	.224
E22	.738	.686	.269	.466	.268	.436	.303	.426	.456	.367	.365	.235	.408	.397	.290	.281	.312	.318	.439	.335
E23	.729	.790	.240	.402	.261	.180	.094	.260	.255	.281	.311	.230	.326	.316	.151	.293	.284	.263	.350	.298
E24	.618	.485	.266	.404	.235	.280	.249	.223	.398	.292	.281	.273	.310	.278	.304	.253	.287	.230	.296	.275
E25	.703	.564	.318	.507	.289	.347	.318	.448	.450	.437	.455	.350	.493	.417	.382	.420	.394	.380	.460	.344
E26	.742	.644	.275	.488	.308	.357	.256	.349	.490	.421	.470	.347	.535	.490	.335	.402	.438	.356	.484	.392
E27	.724	.576	.229	.391	.257	.363	.298	.429	.358	.355	.378	.211	.445	.441	.238	.297	.327	.314	.447	.311
E28	.671	.474	.327	.300	.137	.254	.281	.302	.250	.284	.253	.308	.358	.307	.281	.337	.211	.412	.433	.410
E29	.671	.561	.351	.236	.152	.131	.209	.246	.318	.298	.349	.258	.305	.320	.178	.366	.236	.285	.322	.503
E30	.561	.389		.365	.285	.180	.303	.266	.210	.217	.280	.213	.387	.349	.189	.296	.334	.357	.429	.386
E31	.713	.594			.371	.466	.405	.364	.478	.375	.456	.383	.468	.505	.402	.351	.409	.391	.551	.284
E32	.524	.362				.141	.251	.127	.183	.124	.128	.148	.219	.307	.352	.157	.241	.232	.338	.031
E33	.724	.749					.509	.362	.373	.310	.320	.282	.411	.337	.264	.233	.261	.193	.348	.189
E34	.693	.558						.265	.395	.215	.285	.223	.355	.352	.284	.307	.293	.301	.298	.244
E35	.653	.552							.389	.518	.509	.325	.513	.531	.301	.329	.418	.309	.436	.257
E36	.742	.686								.513	.468	.475	.496	.336	.384	.346	.335	.324	.397	.367
E37	.702	.631									.662	.446	.440	.403	.228	.341	.473	.354	.419	.336
E38	.735	.763										.400	.419	.412	.326	.449	.516	.389	.379	.432
E39	.560	.405											.326	.283	.327	.346	.344	.277	.332	.266
E40	.807	.789												.713	.408	.502	.551	.417	.646	.340
E41	.752	.703													.374	.344	.559	.418	.587	.268
E44	.625	.421														.420	.379	.319	.345	.147
E45	.707	.999															.519	.279	.444	.312
E46	.750	.742																.464	.597	.391
E47	.592	.409																	.430	.406
E48	.736	.657																		.420
E49	.720	.665																		
E50	.735	.715																		
E51	.743	.648																		
E52	.694	.552																		
E53	.704	.609																		
E54	.642	.501																		
E55	.777	.694																		
E56	.606	.424																		
E57	.564	.397																		
E58	.716	.656																		
E59	.674	.585																		
E60	.677	.600																		
E61	.712	.558																		
E62	.581	.439																		
E63	.706	.619																		
E64	.731	.729																		
E65	.724	.702																		
E66	.681	.495																		
E67	.673	.564																		
E68	.670	.563																		
E69	.686	.605																		
E70	.669	.554																		
E71	.640	.582																		
E72	.649	.519																		
E73	.623	.522																		
E75	.718	.666																		
E76	.718	.686																		
E77	.725	.651																		
E78	.661	.566																		
E79	.614	.415																		
E80	.649	.571																		
E81	.631	.473																		
E82	.727	.690																		
E83	.697	.648																		
E84	.674	.708																		
E85	.700	.607																		
F96	.744	.697																		

	Communalities		E50	E51	E52	E53	E54	E55	E56	E57	E58	E59	E60	E61	E62	E63	E64	E65	E66	E67
	Init.	Ext.																		
E12	.714	.674	.296	.290	.251	.368	.272	.471	.308	.216	.573	.361	.398	.449	.324	.334	.218	.211	.174	.208
E13	.715	.673	.362	.305	.159	.250	.293	.401	.434	.289	.390	.228	.273	.327	.276	.293	.172	.199	.234	.239
E14	.736	.632	.307	.288	.383	.321	.279	.394	.272	.210	.436	.318	.365	.398	.276	.346	.296	.298	.131	.100
E15	.596	.421	.366	.226	.177	.222	.214	.358	.288	.203	.329	.176	.348	.299	.384	.299	.147	.159	.199	.163
E16	.669	.502	.151	.256	.215	.311	.325	.413	.323	.281	.312	.193	.246	.438	.244	.251	.294	.283	.166	.298
E17	.753	.654	.354	.372	.305	.248	.333	.496	.321	.262	.499	.235	.367	.373	.347	.321	.157	.192	.218	.220
E18	.725	.731	.239	.262	.303	.301	.308	.461	.302	.257	.313	.295	.190	.387	.249	.274	.314	.295	.279	.198
E19	.775	.704	.319	.295	.482	.410	.334	.523	.283	.219	.475	.339	.329	.494	.340	.322	.376	.372	.296	.191
E20	.679	.546	.311	.393	.303	.356	.462	.380	.239	.218	.276	.319	.329	.394	.294	.314	.206	.205	.158	.325
E21	.783	.721	.318	.228	.365	.428	.445	.404	.225	.163	.247	.242	.339	.314	.226	.399	.233	.277	.195	.184
E22	.738	.686	.314	.235	.377	.357	.442	.467	.297	.166	.272	.265	.285	.397	.227	.256	.355	.301	.310	.206
E23	.729	.790	.194	.249	.330	.371	.316	.403	.180	.066	.270	.312	.253	.408	.154	.342	.130	.173	.113	.161
E24	.618	.485	.342	.276	.357	.282	.345	.325	.251	.157	.136	.189	.190	.358	.197	.286	.370	.337	.282	.085
E25	.703	.564	.299	.401	.430	.386	.353	.488	.358	.255	.359	.382	.330	.443	.250	.419	.303	.343	.145	.172
E26	.742	.644	.337	.294	.466	.433	.343	.493	.337	.240	.412	.343	.410	.419	.279	.483	.337	.353	.180	.164
E27	.724	.576	.317	.387	.431	.384	.428	.468	.106	.213	.302	.378	.294	.311	.351	.310	.235	.240	.236	.223
E28	.671	.474	.478	.463	.474	.369	.396	.304	.309	.291	.311	.391	.268	.369	.365	.352	.306	.233	.182	.289
E29	.671	.561	.550	.441	.376	.371	.394	.383	.182	.198	.363	.369	.366	.202	.322	.487	.143	.110	.119	.402
E30	.561	.389	.357	.373	.244	.289	.365	.328	.277	.266	.411	.383	.260	.348	.299	.339	.198	.167	.161	.293
E31	.713	.594	.263	.264	.277	.460	.391	.494	.343	.252	.361	.348	.301	.449	.273	.333	.395	.384	.389	.228
E32	.524	.362	.096	.231	.150	.146	.301	.185	.192	.314	.182	.035	.183	.250	.200	.154	.237	.221	.325	.107
E33	.724	.749	.152	.187	.288	.239	.212	.378	.203	.244	.263	.227	.074	.370	.205	.176	.256	.257	.262	.118
E34	.693	.558	.162	.321	.207	.237	.351	.317	.394	.335	.319	.190	.133	.339	.265	.148	.267	.202	.246	.341
E35	.653	.552	.299	.303	.399	.317	.338	.447	.219	.249	.304	.286	.265	.426	.320	.227	.327	.334	.158	.136
E36	.742	.686	.375	.253	.361	.430	.382	.358	.285	.320	.405	.338	.488	.280	.304	.404	.369	.411	.249	.230
E37	.702	.631	.350	.263	.393	.372	.337	.389	.288	.159	.356	.322	.343	.289	.354	.394	.319	.361	.182	.204
E38	.735	.763	.356	.383	.450	.366	.403	.471	.309	.192	.313	.344	.384	.409	.365	.400	.311	.294	.185	.267
E39	.560	.405	.308	.268	.311	.346	.224	.254	.354	.128	.250	.287	.265	.312	.261	.343	.333	.350	.320	.142
E40	.807	.789	.417	.376	.463	.480	.366	.523	.392	.312	.540	.384	.380	.468	.427	.438	.321	.307	.264	.173
E41	.752	.703	.349	.324	.365	.470	.353	.557	.401	.371	.424	.259	.358	.446	.451	.379	.308	.267	.324	.214
E44	.625	.421	.193	.267	.302	.287	.410	.282	.332	.308	.168	.196	.326	.198	.303	.334	.332	.234	.290	.189
E45	.707	.999	.334	.330	.528	.310	.297	.414	.339	.303	.359	.316	.325	.281	.221	.425	.238	.306	.182	.125
E46	.750	.742	.382	.387	.444	.377	.321	.584	.431	.278	.417	.311	.419	.380	.422	.447	.337	.293	.291	.120
E47	.592	.409	.327	.474	.369	.400	.328	.473	.392	.211	.415	.356	.320	.331	.308	.322	.258	.157	.278	.243
E48	.736	.657	.392	.407	.457	.468	.348	.579	.416	.303	.529	.431	.399	.435	.430	.443	.329	.316	.374	.169
E49	.720	.665	.544	.566	.374	.492	.362	.402	.209	.127	.427	.506	.521	.292	.377	.475	.227	.165	.192	.389
E50	.735	.715	.579	.367	.431	.353	.454	.336	.184	.349	.408	.444	.292	.367	.537	.135	.166	.176	.339	
E51	.743	.648		.350	.394	.351	.393	.361	.300	.399	.443	.374	.385	.415	.383	.179	.153	.198	.305	
E52	.694	.552			.430	.252	.409	.253	.284	.338	.412	.321	.453	.358	.444	.308	.330	.192	.141	
E53	.704	.609				.380	.496	.226	.210	.371	.513	.558	.376	.415	.537	.292	.246	.366	.333	
E54	.642	.501						.371	.243	.232	.189	.351	.326	.298	.320	.353	.312	.180	.308	.414
E55	.777	.694							.411	.277	.543	.414	.332	.425	.366	.479	.337	.230	.294	.256
E56	.606	.424								.342	.349	.201	.259	.347	.241	.323	.316	.257	.285	.165
E57	.564	.397									.325	.174	.298	.294	.285	.262	.293	.269	.202	.220
E58	.716	.656										.494	.462	.430	.405	.432	.229	.246	.210	.198
E59	.674	.585											.428	.335	.395	.540	.154	.152	.156	.324
E60	.677	.600												.210	.427	.568	.235	.208	.236	.282
E61	.712	.558													.323	.307	.350	.437	.261	.209
E62	.581	.439														.438	.244	.165	.360	.233
E63	.706	.619															.250	.168	.220	.295
E64	.731	.729																.718	.355	.089
E65	.724	.702																	.306	.017
E66	.681	.495																		.282
E67	.673	.564																		
E68	.670	.563																		
E69	.686	.605																		
E70	.669	.554																		
E71	.640	.582																		
E72	.649	.519																		
E73	.623	.522																		
E75	.718	.666																		
E76	.718	.686																		
E77	.725	.651																		
E78	.661	.566																		
E79	.614	.415																		
E80	.649	.571																		
E81	.631	.473																		
E82	.727	.690																		
E83	.697	.648																		
E84	.674	.708																		
E85	.700	.607																		
E96	.744	.697																		

	Communalities		E68	E69	E70	E71	E72	E73	E75	E76	E77	E78	E79	E80	E81	E82	E83	E84	E85	E96
	Init.	Ext.																		
E12	.714	.674	.088	.141	.184	.123	.134	.248	.496	.259	.290	.177	.261	.284	.283	.372	.139	.184	.421	.286
E13	.715	.673	.198	.259	.193	.194	.186	.126	.405	.259	.401	.224	.340	.283	.331	.389	.242	.285	.546	.291
E14	.736	.632	.097	.237	.179	.149	.144	.212	.491	.251	.239	.236	.314	.315	.256	.387	.157	.255	.540	.516
E15	.596	.421	.002	.192	.158	.150	.181	.094	.307	.204	.136	.123	.201	.236	.225	.254	.169	.179	.316	.347
E16	.669	.502	.156	.172	.150	.161	.153	.095	.382	.215	.268	.181	.153	.326	.309	.428	.097	.266	.422	.338
E17	.753	.654	.156	.273	.265	.266	.198	.164	.447	.304	.401	.294	.275	.331	.324	.371	.273	.312	.486	.364
E18	.725	.731	.151	.124	.168	.188	.128	.126	.452	.191	.286	.295	.145	.359	.369	.397	.151	.155	.483	.472
E19	.775	.704	.045	.217	.184	.198	.196	.135	.453	.235	.198	.134	.290	.347	.243	.346	.141	.242	.450	.601
E20	.679	.546	.244	.300	.237	.358	.234	.309	.318	.409	.320	.264	.332	.333	.297	.289	.277	.262	.500	.456
E21	.783	.721	.115	.274	.135	.174	.225	.208	.391	.290	.293	.155	.277	.237	.209	.315	.214	.149	.394	.594
E22	.738	.686	.150	.260	.171	.201	.166	.144	.408	.218	.266	.140	.233	.293	.234	.344	.220	.247	.503	.603
E23	.729	.790	.050	.216	.158	.050	.203	.150	.315	.224	.242	.076	.276	.241	.160	.211	.087	.055	.370	.388
E24	.618	.485	.101	.196	.080	.157	.166	.061	.327	.129	.187	.184	.100	.357	.243	.332	.122	.201	.418	.405
E25	.703	.564	.138	.255	.264	.209	.139	.149	.473	.236	.280	.211	.286	.382	.236	.431	.094	.231	.513	.483
E26	.742	.644	.094	.275	.237	.129	.173	.210	.465	.236	.330	.189	.357	.324	.217	.351	.143	.193	.551	.537
E27	.724	.576	.200	.302	.271	.201	.237	.236	.433	.261	.275	.206	.323	.327	.181	.350	.178	.193	.362	.456
E28	.671	.474	.166	.394	.293	.315	.270	.307	.388	.364	.353	.302	.300	.320	.307	.349	.236	.255	.280	.292
E29	.671	.561	.250	.479	.496	.311	.368	.387	.260	.451	.360	.300	.489	.262	.299	.207	.253	.171	.207	.314
E30	.561	.389	.271	.392	.397	.376	.267	.318	.358	.417	.399	.399	.314	.388	.252	.194	.277	.238	.343	.288
E31	.713	.594	.181	.281	.211	.258	.174	.282	.512	.349	.376	.319	.386	.398	.408	.430	.233	.225	.457	.450
E32	.524	.362	.315	.172	.209	.283	.160	.193	.260	.232	.240	.148	.340	.205	.229	.231	.234	.288	.289	.205
E33	.724	.749	.072	.058	.124	.071	.094	.064	.391	.182	.243	.243	.113	.300	.292	.395	.114	.170	.468	.513
E34	.693	.558	.285	.151	.182	.339	.214	.097	.298	.292	.258	.355	.155	.344	.290	.444	.297	.293	.394	.276
E35	.653	.552	.149	.147	.183	.129	.105	.200	.522	.132	.155	.154	.146	.344	.268	.380	.085	.208	.433	.444
E36	.742	.686	.020	.207	.178	.133	.140	.232	.496	.206	.216	.229	.325	.331	.312	.452	.153	.342	.426	.513
E37	.702	.631	.127	.218	.185	.171	.146	.242	.518	.135	.286	.236	.181	.385	.302	.446	.077	.232	.383	.466
E38	.735	.763	.146	.342	.307	.283	.182	.288	.465	.243	.247	.242	.292	.442	.384	.408	.173	.263	.420	.497
E39	.560	.405	.085	.216	.217	.097	.135	.206	.384	.240	.285	.269	.238	.403	.266	.342	.049	.204	.275	.385
E40	.807	.789	.191	.351	.283	.182	.208	.222	.632	.333	.441	.347	.366	.495	.315	.378	.253	.249	.513	.586
E41	.752	.703	.253	.303	.303	.245	.194	.233	.555	.286	.444	.309	.343	.423	.297	.369	.222	.237	.437	.435
E44	.625	.421	.306	.284	.275	.293	.185	.337	.319	.248	.377	.286	.359	.425	.261	.318	.344	.268	.278	.338
E45	.707	.999	.113	.342	.221	.307	.212	.219	.481	.246	.289	.358	.256	.326	.359	.347	.253	.201	.301	.399
E46	.750	.742	.184	.304	.224	.229	.167	.266	.534	.200	.320	.243	.238	.448	.232	.388	.215	.259	.388	.367
E47	.592	.409	.228	.305	.311	.331	.212	.228	.426	.326	.336	.234	.416	.394	.241	.304	.136	.189	.322	.331
E48	.736	.657	.241	.306	.251	.299	.161	.303	.591	.348	.442	.355	.336	.386	.280	.360	.192	.246	.491	.429
E49	.720	.665	.127	.436	.377	.232	.334	.365	.302	.365	.312	.332	.299	.361	.230	.217	.207	.219	.288	.357
E50	.735	.715	.217	.497	.427	.261	.421	.305	.304	.316	.324	.261	.347	.273	.317	.258	.159	.222	.301	.315
E51	.743	.648	.320	.512	.489	.418	.420	.355	.315	.426	.362	.385	.402	.436	.329	.290	.191	.316	.364	.243
E52	.694	.552	.077	.326	.259	.214	.275	.200	.486	.252	.202	.242	.252	.402	.190	.306	.126	.189	.337	.460
E53	.704	.609	.170	.390	.265	.171	.293	.431	.414	.376	.357	.285	.348	.382	.241	.272	.188	.182	.272	.485
E54	.642	.501	.376	.455	.389	.393	.373	.336	.300	.467	.396	.370	.356	.425	.389	.234	.427	.221	.302	.376
E55	.777	.694	.167	.281	.267	.225	.287	.168	.448	.215	.287	.167	.299	.334	.341	.312	.104	.159	.378	.483
E56	.606	.424	.242	.250	.208	.344	.141	.147	.328	.237	.391	.303	.235	.356	.284	.412	.157	.277	.375	.271
E57	.564	.397	.265	.162	.228	.277	.202	.167	.350	.209	.245	.345	.247	.217	.449	.319	.173	.288	.160	.154
E58	.716	.656	.131	.226	.253	.208	.203	.318	.452	.298	.363	.342	.315	.299	.322	.301	.137	.308	.367	.314
E59	.674	.585	.146	.321	.352	.207	.274	.367	.323	.381	.368	.424	.281	.359	.241	.247	.214	.232	.319	.379
E60	.677	.600	.127	.294	.337	.189	.229	.383	.357	.226	.252	.245	.350	.268	.250	.247	.211	.309	.256	.367
E61	.712	.558	.197	.167	.185	.206	.174	.187	.522	.336	.310	.258	.210	.461	.317	.422	.137	.198	.477	.374
E62	.581	.439	.221	.386	.391	.286	.342	.319	.391	.341	.373	.281	.247	.343	.310	.261	.253	.295	.209	.256
E63	.706	.619	.199	.421	.417	.224	.387	.380	.390	.316	.400	.302	.335	.312	.335	.266	.280	.223	.260	.376
E64	.731	.729	.199	.196	.150	.275	.170	.174	.354	.187	.239	.176	.202	.439	.317	.350	.157	.197	.353	.351
E65	.724	.702	.056	.134	.053	.192	.093	.114	.399	.056	.151	.143	.112	.398	.234	.382	.043	.190	.339	.324
E66	.681	.495	.378	.322	.299	.398	.391	.271	.231	.371	.376	.275	.267	.303	.286	.236	.373	.237	.158	.276
E67	.673	.564	.449	.428	.493	.434	.539	.339	.091	.439	.419	.327	.324	.313	.389	.226	.428	.306	.126	.149
E68	.670	.563		.324	.538	.557	.407	.389	.117	.417	.470	.340	.268	.343	.371	.237	.379	.226	.142	.053
E69	.686	.605			.573	.441	.523	.371	.247	.507	.450	.302	.390	.379	.251	.115	.329	.127	.135	.277
E70	.669	.554				.421	.526	.356	.190	.439	.392	.321	.429	.339	.322	.145	.301	.173	.125	.196
E71	.640	.582					.427	.360	.161	.467	.442	.402	.295	.364	.403	.236	.378	.260	.174	.103
E72	.649	.519						.243	.039	.401	.357	.336	.377	.315	.370	.136	.311	.147	.084	.170
E73	.623	.522							.282	.491	.446	.389	.373	.352	.305	.273	.449	.367	.129	.199
E75	.718	.666								.243	.331	.286	.281	.459	.338	.575	.224	.325	.466	.482
E76	.718	.686									.594	.528	.466	.434	.396	.171	.546	.251	.240	.280
E77	.725	.651										.624	.397		.431	.435	.275	.421	.234	.252
E78	.661	.566											.356		.436	.415	.322	.400	.361	.217
E79	.614	.415													.388	.388	.193	.288	.233	.316
E80	.649	.571														.357	.445	.322	.301	.434
E81	.631	.473															.312	.296	.294	.212
E82	.727	.690																.578	.360	.327
E83	.697	.648																.500	.179	.212
E84	.674	.708																	.312	.199
E85	.700	.607																		.467
E96	.744	.697																		

Final Correlation Matrix for the ISC Parent Survey (64 items)

Item	E12	E13	E14	E15	E17	E18	E19	E20	E21	E22	E23	E24	E25	E26	E27	E28	E29	E31	E33	E34	E35	E36
E12		.463	.568	.408	.589	.345	.406	.362	.252	.304	.413	.240	.428	.387	.302	.261	.245	.472	.259	.290	.371	.462
E13			.555	.415	.578	.366	.348	.387	.374	.410	.370	.330	.410	.413	.348	.250	.244	.489	.325	.367	.226	.374
E14				.396	.607	.413	.471	.421	.443	.438	.414	.335	.497	.460	.418	.279	.269	.560	.388	.323	.385	.488
E15					.451	.240	.445	.272	.276	.299	.248	.240	.293	.372	.251	.258	.281	.326	.187	.294	.283	.382
E17						.439	.399	.404	.361	.407	.348	.286	.412	.416	.397	.188	.306	.398	.384	.401	.335	.441
E18							.424	.365	.350	.459	.202	.285	.479	.402	.394	.222	.177	.524	.730	.542	.466	.397
E19								.512	.560	.619	.507	.424	.547	.633	.577	.339	.395	.447	.383	.345	.439	.504
E20										.536	.532	.507	.318	.530	.528	.557	.250	.396	.464	.308	.417	.283
E21											.647			.616	.469	.474	.604	.630	.290	.309	.465	.392
E22														.549	.522	.542	.598	.553	.305	.275	.485	.471
E23																		.319	.408	.192	.107	.263
E24																						.261
E25															.392	.435	.370	.282	.127	.402	.277	.399
E26																.639	.441	.316	.333	.520	.377	.456
E27																	.511	.320	.381	.486	.346	.490
E28																			.315	.381	.409	.368
E29																				.440	.291	.246
E31																				.223	.121	.306
E33																					.484	.486
E34																					.424	.383
E35																					.529	.405
E36																						.394
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Item	E37	E38	E40	E41	E45	E46	E47	E48	E49	E50	E51	E52	E53	E54	E55	E57	E58	E59	E60	E61	E62	E63
E12	.384	.326	.532	.436	.253	.393	.452	.500	.352	.284	.290	.250	.362	.273	.463	.211	.572	.360	.397	.451	.322	.333
E13	.348	.307	.429	.453	.300	.436	.314	.501	.226	.352	.315	.158	.235	.304	.417	.309	.383	.221	.268	.328	.290	.287
E14	.341	.389	.554	.376	.446	.355	.332	.510	.345	.304	.287	.383	.317	.278	.389	.207	.435	.317	.364	.397	.275	.345
E15	.276	.403	.335	.276	.217	.293	.259	.315	.369	.355	.221	.176	.217	.209	.344	.188	.328	.182	.348	.300	.375	.299
E17	.353	.392	.548	.493	.354	.405	.363	.508	.390	.350	.369	.305	.247	.331	.485	.254	.499	.233	.367	.372	.343	.321
E18	.479	.469	.471	.394	.326	.418	.270	.409	.267	.223	.280	.294	.276	.325	.486	.297	.301	.273	.182	.384	.273	.264
E19	.448	.490	.514	.426	.369	.384	.308	.407	.282	.315	.294	.481	.405	.332	.515	.215	.473	.337	.328	.492	.339	.321
E20	.317	.412	.388	.405	.326	.352	.296	.382	.336	.302	.401	.301	.343	.469	.393	.237	.272	.310	.325	.394	.305	.310
E21	.374	.383	.418	.355	.368	.301	.238	.385	.238	.310	.245	.357	.407	.457	.428	.202	.239	.221	.330	.310	.248	.388
E22	.376	.372	.397	.385	.256	.343	.308	.426	.347	.302	.255	.364	.328	.454	.494	.216	.258	.239	.272	.387	.254	.244
E23	.285	.314	.326	.316	.288	.293	.259	.347	.303	.190	.256	.329	.361	.321	.409	.081	.267	.307	.251	.408	.163	.340
E24	.292	.282	.311	.278	.253	.286	.227	.292	.274	.338	.275	.356	.276	.343	.323	.157	.134	.190	.188	.356	.198	.284
E25	.433	.451	.484	.409	.394	.413	.375	.455	.355	.294	.412	.422	.368	.367	.507	.289	.349	.357	.321	.436	.270	.408
E26	.418	.467	.536	.490	.401	.435	.352	.479	.391	.333	.294	.466	.425	.342	.488	.238	.409	.342	.408	.417	.279	.481
E27	.367	.388	.440	.435	.286	.350	.304	.439	.322	.304	.398	.425	.363	.439	.488	.244	.293	.364	.287	.311	.367	.303
E28	.267	.238	.356	.306	.327	.202	.417	.429	.401	.485	.452	.471	.369	.385	.290	.278	.307	.380	.265	.356	.354	.348
E29	.257	.312	.299	.315	.346	.220	.289	.328	.496	.545	.432	.373	.378	.387	.363	.188	.364	.351	.367	.198	.311	.486
E31	.388	.465	.465	.500	.341	.428	.380	.540	.294	.253	.276	.274	.438	.401	.511	.278	.353	.338	.294	.447	.290	.326
E33	.322	.331	.402	.329	.213	.292	.189	.340	.205	.148	.206	.280	.217	.231	.407	.285	.251	.206	.068	.363	.231	.168
E34	.236	.301	.351	.347	.295	.318	.290	.291	.256	.153	.334	.204	.218	.364	.344	.362	.310	.180	.128	.338	.285	.143
E35	.555	.542	.496	.511	.336	.433	.269	.393	.258	.261	.305	.380	.266	.337	.459	.263	.279	.293	.245	.416	.330	.208
E36	.514	.472	.495	.336	.342	.347	.318	.392	.373	.367	.261	.359	.416	.388	.370	.332	.399	.333	.483	.280	.314	.400
E37		.681	.432	.394	.349	.485	.320	.387	.335	.316	.268	.381	.329	.338	.403	.177	.336	.328	.325	.289	.363	.375
E38			.413	.405	.453	.525	.358	.353	.430	.325	.385	.439	.329	.404	.481	.206	.298	.349	.369	.408	.373	.384
E40				.713	.499	.544	.413	.642	.339	.412	.374	.463	.474	.364	.514	.306	.538	.382	.379	.466	.424	.437
E41					.342	.551	.415	.584	.267	.346	.323	.365	.465	.351	.547	.363	.423	.258	.357	.445	.448	.378
E45						.503	.260	.427	.304	.314	.320	.523	.296	.287	.398	.280	.353	.329	.320	.283	.214	.419
E46							.449	.582	.399	.367	.398	.437	.353	.334	.600	.306	.405	.299	.408	.378	.438	.436
E47								.433	.400	.338	.466	.366	.404	.322	.456	.208	.412	.337	.318	.319	.300	.320
E48									.417	.393	.404	.455	.471	.346	.564	.299	.528	.415	.399	.430	.423	.443
E49										.533	.571	.372	.481	.370	.411	.146	.424	.494	.517	.293	.385	.471
E50											.566	.364	.434	.344	.434	.179	.345	.387	.439	.277	.356	.531
E51												.348	.381	.360	.405	.316	.395	.432	.370	.386	.424	.380
E52													.427	.251	.400	.277	.338	.408	.321	.451	.354	.443
E53														.368	.466	.192	.372	.497	.557	.367	.398	.536
E54															.385	.250	.186	.340	.322	.299	.331	.349
E55																.310	.527	.396	.322	.421	.385	.465
E57																	.313	.154	.288	.289	.307	.252
E58																		.487	.463	.428	.398	.432
E59																			.422	.336	.384	.534
E60																				.209	.420	.568
E61																					.323	.306
E62																						.431
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Item	E64	E65	E67	E68	E69	E70	E71	E72	E73	E75	E76	E77	E78	E79	E80	E81	E82	E83	E84	E96
E12	.215	.208	.199	.089	.143	.185	.125	.132	.248	.489	.255	.294	.177	.262	.289	.286	.369	.130	.184	.289
E13	.173	.200	.231	.212	.270	.185	.208	.196	.122	.421	.248	.406	.238	.330	.280	.343	.385	.239	.277	.299
E14	.295	.296	.100	.097	.236	.176	.151	.145	.210	.480	.250	.237	.236	.312	.312	.253	.384	.159	.254	.513
E15	.142	.153	.158	-.002	.187	.157	.149	.175	.094	.296	.208	.134	.125	.206	.237	.220	.248	.171	.186	.344
E17	.157	.191	.219	.154	.271	.265	.263	.196	.164	.434	.301	.398	.286	.274	.330	.319	.370	.266	.307	.362
E18	.311	.294	.180	.178	.147	.157	.208	.146	.120	.479	.167	.300	.306	.128	.353	.391	.391	.135	.137	.480
E19	.374	.371	.191	.046	.216	.181	.198	.196	.133	.443	.235	.196	.136	.289	.344	.241	.343	.143	.241	.597
E20	.207	.206	.316	.256	.309	.231	.366	.242	.305	.333	.396	.326	.271	.323	.332	.309	.289	.269	.253	.462
E21	.237	.281	.174	.139	.289	.127	.189	.240	.202	.413	.265	.301	.166	.255	.233	.231	.315	.196	.129	.595
E22	.352	.301	.193	.178	.278	.156	.221	.186	.135	.435	.192	.275	.159	.206	.282	.259	.339	.205	.220	.601
E23	.131	.174	.156	.060	.223	.154	.059	.209	.147	.323	.219	.246	.085	.270	.240	.168	.210	.087	.053	.392
E24	.368	.336	.085	.102	.195	.076	.160	.167	.059	.322	.130	.185	.187	.100	.353	.241	.329	.128	.201	.403
E25	.305	.345	.165	.160	.271	.253	.222	.157	.143	.489	.214	.287	.217	.263	.372	.254	.430	.082	.207	.486
E26	.334	.351	.164	.096	.274	.232	.133	.174	.207	.458	.238	.326	.194	.355	.320	.215	.347	.150	.195	.534
E27	.234	.241	.211	.219	.315	.260	.218	.249	.229	.453	.246	.284	.222	.308	.323	.203	.346	.173	.183	.463
E28	.307	.234	.299	.158	.383	.287	.303	.269	.303	.361	.361	.335	.285	.291	.306	.288	.348	.237	.245	.277
E29	.147	.114	.396	.244	.472	.500	.294	.362	.387	.242	.433	.356	.269	.477	.262	.290	.212	.218	.151	.307
E31	.392	.382	.219	.198	.293	.200	.274	.186	.274	.527	.336	.381	.332	.372	.391	.420	.424	.232	.217	.457
E33	.257	.259	.110	.100	.082	.112	.095	.116	.059	.417	.160	.252	.256	.095	.290	.312	.389	.107	.151	.515
E34	.266	.203	.326	.303	.169	.171	.354	.227	.092	.326	.275	.267	.367	.143	.339	.309	.437	.289	.280	.288
E35	.300	.308	.118	.163	.155	.153	.160	.113	.181	.533	.140	.160	.207	.147	.326	.277	.344	.129	.228	.442
E36	.367	.410	.225	.033	.214	.171	.145	.148	.228	.502	.201	.220	.240	.318	.328	.319	.448	.157	.337	.516
E37	.299	.341	.186	.140	.222	.162	.196	.150	.226	.530	.143	.286	.276	.181	.371	.310	.417	.114	.249	.467
E38	.293	.279	.248	.158	.343	.284	.302	.185	.274	.479	.246	.250	.278	.290	.431	.390	.384	.200	.278	.499
E40	.319	.306	.172	.190	.349	.280	.182	.208	.221	.617	.332	.437	.344	.364	.492	.311	.376	.252	.248	.583
E41	.306	.266	.213	.252	.302	.300	.244	.194	.232	.542	.285	.440	.306	.342	.420	.293	.366	.221	.235	.433
E45	.225	.293	.118	.106	.331	.214	.307	.202	.215	.466	.257	.283	.365	.265	.323	.348	.331	.268	.219	.394
E46	.333	.291	.111	.204	.316	.210	.247	.181	.257	.551	.188	.327	.262	.225	.439	.251	.381	.215	.249	.376
E47	.263	.164	.251	.223	.300	.310	.317	.214	.227	.401	.313	.324	.210	.400	.383	.228	.309	.120	.168	.319
E48	.333	.319	.169	.239	.305	.253	.290	.162	.303	.570	.335	.438	.333	.326	.383	.276	.364	.170	.227	.423
E49	.228	.167	.379	.139	.442	.371	.241	.340	.362	.314	.354	.318	.334	.291	.361	.242	.218	.198	.210	.363
E50	.141	.172	.349	.209	.485	.421	.246	.419	.302	.277	.305	.306	.234	.330	.258	.297	.263	.149	.200	.299
E51	.181	.156	.296	.331	.518	.482	.424	.425	.351	.330	.412	.368	.387	.392	.434	.340	.289	.183	.304	.252
E52	.307	.329	.140	.076	.324	.258	.212	.274	.200	.473	.250	.201	.237	.251	.400	.187	.304	.124	.187	.457
E53	.294	.247	.335	.158	.379	.269	.153	.286	.431	.381	.366	.345	.254	.340	.376	.225	.275	.166	.166	.469
E54	.313	.182	.403	.385	.462	.383	.400	.379	.332	.316	.451	.403	.372	.345	.423	.400	.235	.409	.211	.383
E55	.334	.230	.242	.190	.296	.252	.244	.299	.161	.472	.199	.297	.189	.282	.327	.360	.307	.104	.149	.490
E57	.293	.272	.208	.286	.183	.215	.291	.219	.159	.378	.186	.255	.350	.224	.211	.463	.317	.160	.261	.169
E58	.228	.246	.196	.128	.224	.254	.203	.200	.319	.437	.293	.361	.328	.313	.300	.317	.301	.126	.300	.311
E59	.142	.141	.313	.139	.311	.344	.208	.262	.362	.312	.390	.361	.428	.289	.356	.233	.232	.228	.249	.375
E60	.235	.207	.279	.124	.291	.338	.184	.226	.384	.345	.223	.250	.235	.347	.268	.245	.247	.200	.302	.364
E61	.345	.431	.199	.200	.169	.184	.210	.172	.187	.519	.332	.315	.262	.212	.464	.321	.416	.133	.200	.378
E62	.244	.167	.224	.236	.395	.380	.298	.350	.313	.409	.328	.379	.292	.237	.339	.324	.259	.247	.285	.266
E63	.250	.167	.293	.196	.418	.418	.219	.383	.381	.376	.312	.397	.291	.333	.312	.329	.266	.268	.217	.373
E64		.720	.092	.201	.198	.151	.269	.173	.174	.345	.177	.236	.163	.192	.434	.314	.354	.142	.181	.347
E65			.021	.060	.137	.054	.189	.098	.114	.390	.048	.150	.133	.103	.393	.232	.386	.033	.175	.321
E67				.436	.416	.487	.418	.533	.336	.072	.435	.400	.307	.314	.299	.368	.227	.420	.294	.136
E68					.335	.528	.562	.414	.383	.142	.401	.475	.346	.258	.341	.384	.237	.365	.215	.066
E69						.566	.447	.527	.368	.264	.491	.455	.305	.379	.378	.264	.118	.313	.118	.285
E70							.409	.517	.357	.177	.430	.389	.301	.425	.340	.315	.147	.278	.163	.192
E71								.430	.353	.186	.459	.447	.416	.291	.361	.414	.230	.377	.261	.116
E72									.240	.055	.389	.358	.334	.364	.310	.375	.139	.301	.136	.174
E73										.271	.485	.443	.375	.371	.352	.300	.273	.431	.359	.197
E75											.226	.344	.309	.268	.453	.361	.557	.217	.314	.492
E76												.577	.522	.470	.427	.378	.160	.552	.263	.272
E77													.618	.392	.435	.445	.272	.399	.228	.262
E78														.353	.428	.421	.303	.412	.371	.229
E79															.388	.377	.183	.290	.244	.312
E80																.359	.440	.305	.298	.436
E81																	.308	.279	.283	.227
E82																		.301	.554	.322
E83																			.510	.204
E84																				.197
E96																				