

The Impact of South Asian Parental Involvement Behaviors on Children’s Academic Achievement: Instrument Development and Exploratory Factor Analysis

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Abstract

This study examined the factor structure of an instrument used to measure first generation Bangladeshi, Indian, and Pakistani (FGBIP) parental involvement behaviors in their children’s academic achievement in Southwest Florida. A survey was designed for FGBIP parents/guardians of K–12 children studying in public schools based on commonly used indicator variables of parental involvement in the literature. An exploratory factor analysis (EFA) was utilized to test the initial instrument by determining whether the survey items loaded onto the unique factors as well as the number of items to improve the reliability and validity of the instrument. The EFA produced 25 items under five factors: *parental involvement behavioral trends in school-based activities, parental involvement behavioral trends in home-based activities, parents’ personal behaviors, parents’ involvement in beyond home/school activities, and children’s personal behaviors*. The researchers described the design process and a useful tool for understanding relationships between parental involvement and students’ academic achievement.

Introduction

President Franklin D. Roosevelt once said, “We may not be able to prepare the future for our children, but we can at least prepare our children for the future” (Garr, 2018, p. 481). In the recent past, educational researchers have examined the role of schools, families (particularly parents and guardians), and the community in preparing and shaping children’s future (Epstein, 2001; Hill & Tyson, 2009; Jeynes, 2012; Uddin, 2011). All of these major stakeholders develop values, offer guidance, provide discipline, and surround children with positive supporters, role models, friends, and teachers (McGraw, 2012). Furthermore, when members of the school, family, and community work together, children are more academically proficient, more successful in completing their homework and improving their attendance, and they develop greater social and emotional skills (Dauber & Epstein, 1989; Sheldon & Epstein, 2004; Sheldon et al., 2010).

The United States has one of the most complex cultural identities in the world due to its enormous size and diverse heritage. Families have become more ethnically and racially diverse

than ever. In coming decades, the number of children who are two or more races is projected to more than double from 5.3% to 11.3% (Vespa et al., 2018). Multicultural families may be prevalent in society but experience a large amount of social exclusion due to racism from mixing races, cultures, and religions (Bratter & Kimbro, 2013; Lorenzo-Blanco et al., 2013; Pearce-Morris & King, 2011). Children in interracial families have a greater risk for lower levels of self-esteem, trust, and feelings of acceptance, and have exhibited greater levels of anxiety, restlessness, aggressiveness, and withdrawal (Lee, 2018; Smokowski et al., 2015). Multiracial children also have greater involvement in risky and antisocial behaviors and higher rates of depression, counseling, and academic problems than individuals with only one ethnicity (Villegas-Gold & Tran, 2018).

Extensive literature is available on the financial and academic achievement of South Asians and has documented them as one of the fastest growing and most successful racial subgroups within Asian Americans in the United States (Pew Research Center, 2017). South Asians are also noted for their strong family structure and the degree of parental involvement in their children's everyday lives. It is evident that not all immigrant groups are the same, as similarities and differences exist across ethnic groups and within subgroups. As the demographics of the U.S. schools are changing exponentially, greater attention is needed to explore various factors within minority groups pertaining to parental involvement behaviors and children's educational achievement. These changing demographics and related cultural factors have contributed to changing parental involvement behaviors, relationships among community members, family-school relationships, and parental roles in children's academic achievement (Fan & Chen, 2001; Rodriguez et al., 2014). Very few studies are available that have addressed the relationships between FGBIP parental behaviors and their children's academic achievement because South Asians are typically studied in a general pool of Asian Americans, (Rahman & Witenstein, 2014). Similarly, some scholarly contributions can be found on general parenting attitudes or parenting styles pertaining to South Asians Americans' educational development (Farver et al., 2007; Inman et al., 2007; Jambunathan & Counselman, 2002; Kurrien & Vo, 2004; Maiter & George, 2003; Patel et al., 1996; Sodowsky & Carey, 1988). Therefore, an in-depth understanding of various levels of parent involvement and various factors that influence parental involvement behaviors among FGBIP families is needed.

A number of studies on parental involvement and children's academic achievement have shown undesired student academic outcomes due to the differences and disparities in measurements of parental involvement behaviors in each situation (Hong et al., 2010). In addition, Hong and Ho (2005) discussed multiple constructs of parental involvement behaviors that impact children's academic achievement especially for families of various ethnic backgrounds. Similarly, researchers have explored parental involvement practices across major ethnic groups in the U.S., but the study of Asian American subgroups is less common. In the same context, research about developing and validating standardized instruments to measure diverse parental involvement behaviors and children's educational achievement in the United States is still scarce. Therefore, this study aimed to help fill this gap in the existing literature by developing and validating an instrument that measures FGBIP parental involvement behaviors in their children's academic achievement by following the accepted techniques for instrument development (e.g., Carberry et al., 2010; Li et al., 2008; Ro et al., 2015). In educational and clinical studies, factor analysis has been the most commonly utilized procedure for developing and refining instruments to establish construct validity of measurement variables. In the current study, the researchers have described the development and factor analysis processes used to refine an instrument for measuring parental

involvement behaviors to student academic achievement. In addition, the framework developed in this study attempted to measure various parental involvement behaviors related to their ethnic background, educational level, and income level. Hence, this study detailed the development process and exploratory factor analysis of an instrument measuring the *parental involvement behaviors' of first generation Bangladeshis, Indians, and Pakistanis in their children's academic achievement*. The overarching research questions given below were explored to accomplish the purpose of this study:

Research Question 1: What is the developmental process of creating an instrument to measure FGBIP parental involvement in their children's academic achievement?

Research Question 2: What are the impacts of FGBIP parental involvement behaviors in their children's academic achievement?

Literature Review

Over several years, researchers have recognized the value of family-school partnerships and have investigated various aspects of parental involvement in their children's academic achievement (Dearing et al., 2006; Epstein, 2001; Jeynes, 2012). In addition, there have been studies stating that parents' income and educational levels affect parental involvement behaviors, student enrollment, and children's academic achievement (Coleman et al., 1966; Jeynes, 2015; Lee & Bowen, 2006; Lindberg & Demircan, 2013). In the early stages of a child's schooling, parental expectations are based on the parents' personal expectations but as the child grows and moves into higher grades, their expectations depend on the child's academic performance. South Asian parents play an important role in their children's everyday lives, educational decision making and selection of career goals (Dutt, 2009; Ngo, 2006; Pew Research Center, 2012). Moreover, children's academic success and achievement of social and financial status is a source of pride and honor for the family. Children's academic success and social status is considered a reflection of successful parenting (Bhattacharya & Schoppelrey, 2004; Chao & Tseng, 2002). Policymakers and school administrators need to organize programs and structures that enhance parental participation to improve family-school relationships and structure that develop collaboration among family members to improve students' performance.

Children often tend to behave in accordance with their parents' beliefs about educational competence. Parents' expectations and attitudes toward education play a critical role in their children's academic performance (Enlund et al., 2015). There are various factors that influence parental involvement behaviors and prompt them to engage in their children's academic activities. One of the three determinants of parental involvement behaviors that influence children's education relates to the parents' attitudes and beliefs about their roles in their children's educational activities both at home and school (Ajzen, 1991, 2005). It is imperative to understand parents' reasons to engage in their children's education in order to develop ways to provide resources that would increase student proficiency. Therefore, the investigation of the relationship between parents' socioeconomic status and their level of engagement in children's educational activities will provide an evidence for future reform attempts in order to enhance the family-school relationship.

The environment a child works in and experiences at home is different than the environment at school. For instance, families may have different learning expectations for children when they are at home. Support and guidance provided outside of school are major factors in children's success at school and they heighten their academic attainment (Epstein, 2011). Moreover, family

characteristics such as parents' beliefs and support behaviors play a critical role in children's academic proficiency (Duncan et al., 2010). Therefore, the home environment offers key components that enhance the growth and development of a child, including family trust and confidence, family support, parental approval and encouragement, care, affection, and support of other family members (Epstein, 2011). Parental involvement plays a key role in educational outcomes and children's well-being at various levels throughout their academic career (Arias & Morillo-Campbell, 2008; Beauregard et al., 2014; Epstein 2001; Hill & Tyson 2009; Hornby, & Lafaele, 2011; Jeynes, 2011; Vera et al., 2012; Wilder 2014). Various types of parental involvement include home-based parental involvement in the form of assisting children with homework and providing resource support. School-based parental involvement includes participating in various academic activities at school and attending parent-teacher meetings (Harris & Goodall 2008). What is evident from the literature is that family is the most important informal structure that may affect a child's academic outcomes and social development (Baker & Rimm-Kaufman, 2014; Blair, 2014; Kuru & Taskin, 2016).

Limited research is available in education pertaining to South Asians including FGBIP individuals as they are typically studied in a general pool of Asian Americans (Kwon et al., 2017; Rahman & Witenstein, 2014). This pooling shrouds their experiences, achievements, and distinguishing features (Rahman & Witenstein, 2014). Despite their similarities in many respects with other Asian groups, South Asian communities have significant historical, linguistic, and cultural differences. Historically, under British rule, BIP was one big nation called India until 1947. For nearly two centuries, the English East India Company and British government ruled the sub-continent to consolidate their economic and political dominance. In 1947, the demand for a free India grew stronger and resulted in the country's partition into two independent states: India and Pakistan (Fitzpatrick, 2019). The geographic distance between East Pakistan and West Pakistan brought political unrest and the disruption of internal economic disparities, which led to Pakistan's civil war in 1971. After existing as part of a larger Pakistani nation for more than two decades, East Pakistan further separated, and Bangladesh emerged as an independent country (Lewis, 2011). Based on the latest United Nations statistics, the current population of the South Asian region is over 1.9 billion, with approximately 1.766 billion residing in BIP (World O Meters, 2020).

Theoretical Framework

Parental involvement at home can be multi-faceted (Gonida & Cortina, 2014; Walker et al., 2010). Besides assisting in homework, parents can share their thoughts related to students learning processes (Hill & Chao, 2009; Hoover-Dempsey & Sandler, 2005). Interactions between parents and children during educational activities at home, can support collaboration between parents and children on learning skills, creating learning strategies, setting up career goals, and educational outcomes (Vygotsky, 1978). Sheldon and Epstein (2005) conducted a longitudinal study and collected data to determine the types of parental involvement behaviors that influence secondary and elementary school students' educational achievement. The study was based on Epstein's (1995) six types of parental involvement behaviors: parenting, communicating, volunteering, learning at home, decision making, and collaborating with the community. For the purpose of this study parental involvement behaviors refers to parental actions in supporting their children at home, contacting school staff, participating in school-based activities to enhance academic achievement, and instilling values about the importance of good education (Jarrett & Coba-Rodriguez, 2017; McWayne et al., 2008, Zedan, 2012). Home-based activities include all actions or activities parents carry out at home that promote student academic achievement. These activities

include discussions with children about their day at school, assistance with homework, curriculum-related activities, and planning and organizing their time outside of school (Henderson & Mapp, 2002; Ho & Williams 1996). In addition, school-based activities refer to parents' communication with school-staff, parents' volunteering activities at school, participation in school events, and attending parent-teacher meetings that promote children's academic achievement (Henderson & Mapp, 2002). Therefore, in this study, the focus will be mainly on communicating, volunteering, and learning at home. Sheldon and Epstein (2005) investigated how each type of parental engagement influenced students' educational outcomes and identified that home interaction was positively related to improvements in students' academic achievement.

The target population for this study was English-speaking first-generation Bangladeshi, Indian, and Pakistan (FGBIP) parents living in Southwest Florida, and having children currently studying in K-12 public schools. The researchers used Epstein's (1995) framework of parental involvement as Epstein's focus was on studying the influence of the home/school environment on the development of students in K-12. A significant body of past research has utilized Epstein's framework and highlighted the effectiveness of parent programs, parent culture, and home/school interactions (Bhering, 2002; Chrispeels & Rivero, 2001). However, very little or no research is available on the relationships of parental involvement behaviors in their children's academic achievement across various demographics and ethnic groups (Cheung & Pomerantz, 2011; Cheung et al., 2016). By adopting Epstein's (1995) theoretical framework to explore parental involvement behaviors, the study will provide critical implications for developing effective partnerships between families and schools to enhance parental involvement.

Methods

Participants

A quantitative research method was used to collect data by employing a survey questionnaire. Quantitative studies deal primarily with numerical data which researchers use to explore relationships between variables and seek to identify and explain the causes of these relationships (Fraenkel et al., 2015). Web-based surveys are commonly employed in the social sciences and educational research to represent a target population and are cost and time efficient (Green et al., 2015; Solomon, 2001). For the quantitative survey used in this study, a purposive criterion sampling technique was employed to conduct quantitative data analyses by selecting first generation parents from BIP origin living in Southwest Florida with children currently studying in K-12 public schools. The FGBIP immigrants were appropriate participants in this study because these individuals maintain their cultural values at home and focus on academic excellence and economic stability (Ahmed, 2005; Giguere et al., 2010). In addition, parents from Bangladesh, India, and Pakistan tend to be more engaged in their children's daily after school activities (Bhattacharya & Schoppelrey, 2004).

Instruments

Typically, in an attempt to answer research questions, a researcher puts together a set of instrument items after reviewing the literature and engaging content experts. The questionnaire was developed to understand various aspects of parental involvement behaviors and their relationships with students' academic achievement. The questionnaire was designed and based on commonly used indicator variables of parental involvement in the literature. Many items were specifically related to the Asian American literature (five items making comparisons of

educational performance with others, restrictions on socializing with friends, assigning extra homework, attending social and sports events in school, and paying for academic tutoring lessons) and indicator variables of parental involvement behaviors were included from the National Education Longitudinal Study of 1988 (NELS:88; National Center for Educational Statistics, 1988) and National Education Longitudinal Study of 2002 (NELS:2002; National Center for Educational Statistics, 2002). Epstein's (2001) classification of parental involvement typologies was also used as a guide to construct questions related to home-based parental involvement behaviors and volunteering, communicating, and contacting school personnel to enhance student achievement.

This survey questionnaire consisted of four sections and was designed in order to study: (1) participant demographics, (2) participant cultural background, (3) parental involvement behaviors, and (4) children personal behaviors. In order to measure parental involvement behaviors, the number of items was limited to 37 to meet the subject-to-ratio criterion in factor analysis that specifies that there should be at least five cases/subjects for each item (Arrindell & Van der Ende, 1985; Bryant & Yarnold, 1995; MacCallum et al., 2001) or, according to some researchers, ten (Kunze et al., 1975; Norusis, 2009). The participants were asked to choose multiple choice options to answer questions pertaining to family demographics. However, the questions on the survey regarding cultural background and parental involvement behaviors could be answered using a 5-point Likert scale: *very often* = 5, *often* = 4, *sometimes* = 3, *rarely* = 2, and *never* = 0. The five-point Likert scale was appropriate because it allowed respondents to share the degree to which they *never* or *very often* influenced their children's academic achievement.

Next, the researcher utilizes exploratory factor analysis (EFA) to simplify a set of complex variables, to develop various factors and item loadings into the factors (Tavakol & Wetzel, 2020). EFA is used in the preliminary stages of instrument development and is utilized to remove items from the survey that do not belong to the intended construct (Knekta et al., 2019). Factor analysis can be conducted using various statistical software such as SAS, SPSS, and R (Tavakol & Wetzel, 2020). This approach is used to analyze relationships between survey items within a subset of participants' responses in order to analyze the dimensionality among various items (Bandalos, 2018; Kline, 2016). For instance, to explore inter-item relationships within a 20-item instrument, a simple statistical procedure will produce 400 correlations which makes the task hard to follow. Factor analysis is a statistical procedure widely used to develop and refine instruments in education to measure various behaviors or latent variables. EFA is commonly used in educational research to develop and refine an instrument in its early phases. It is used specifically to measure latent variables that are impossible to measure directly. The exploratory factor analysis conducted in this study will allow the refined instrument to be used by researchers and practitioners seeking a tool to study parental involvement behaviors in their children's academic achievement. EFA develops various constructs to analyze whether a set of items loaded on factor can accurately measure the phenomenon (Knekta et al., 2019). By using EFA, the researcher produces factors and factor loadings, and refines the measure.

Researchers used a survey research design to collect quantitative data from a large group of people that describe participants' perceptions of and attitudes towards the phenomenon under investigation (Colton & Covert, 2007; Creswell, 2012). The researchers in this study used Qualtrics, a web-based survey company to design the instrument.

The development process for the instrument used in this study is shown in Figure 1. This process was iterative, and which involved a five-step approach:

1. *Generate items and develop construct for the instrument.* The first step included developing survey items from prior literature on parental involvement behaviors, involvement in home/school and beyond home-school activities, and academic achievement. The goal was to develop items that measure the phenomenon and demonstrated content validity (Hinkin, 1998). A minimum of four items per scale were needed to test the homogeneity in each construct (Harvey et al., 1985) and at least three items were needed to obtain internal reliability (Cook et al., 1981).
2. *Validity testing.* The researchers developed the instrument to measure the parental involvement behaviors which needed a test for validity. The validity test was achieved through various ways including expert review, Cronbach’s alpha, narrative, and cognitive interviews with the potential participants of the research (Hinkin, 1998).
3. *Instrument implementation.* The researchers implemented the instrument by conducting a pilot study for exploratory factor analysis.
4. *Exploratory Factor Analysis.* The identification of various factors, and item loading into identified factors was done by conducting the pilot study and main study.
5. *Replicating findings* through the administration of the full instrument. After conducting exploratory factor analysis, the researchers made some modifications and replications to further refine the instrument.

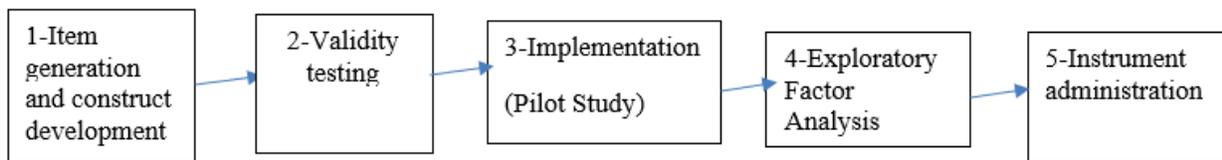


Figure 1. The Instrument Development Process of the Parental Involvement Behaviors Survey

Study Timeline

Table 1 presents the timeline of the overall research process from designing the survey instrument, through collecting quantitative data, to conducting a pilot study. Next, to ensure the study met all moral and ethical considerations, Institutional Review Board (IRB # S2020-16) approval was secured. Then, the researchers distributed the survey to the participants.

Table 1. *Timeline for the Research Process*

Research Process	Execution Timeframe
Survey instrument design	First two weeks of January 2020
Pilot study	February 2020
IRB approval	March 2020
Survey distribution for this study	Mid July – End of August 2020

Data Collection Procedure

In order to explore the relationships between first-generation Bangladeshi, Indian, and Pakistani parental involvement behaviors, and their children’s academic achievement, it was important to select a sample that accurately represented the target population (Johnson, 1995), so the results could be generalized to the entire population under study (Creswell, 2012).

Furthermore, deliberate efforts needed to be made to choose participants who could provide rich information pertaining to the target population (Kemper et al., 2003). The survey was used in order to gather information on participant demographics, participant cultural background, and parental involvement behaviors at home and at school in relation to their children's academic achievement. Two hundred surveys were distributed through Qualtrics and direct administration. In addition, the researchers used WhatsApp, and FaceTime phone applications to share the survey link. Furthermore, the researchers visited places of worship such as mosques and temples, to distribute the survey questionnaire. Direct administration to a large number of participants who belonged to FGBIP families was done at weekly community gatherings for three consecutive weeks. Individuals were asked to complete the survey questionnaire at these events. One online survey respondent chose the option of no consent, and six others were missing key information and were rejected. Similarly, one paper survey was rejected due to incomplete responses to a majority of the questions. A total of 153 participants completed the survey. The incomplete surveys were rejected and a total of 145 valid surveys, with a response rate of over 73% were analyzed.

These purposively selected 145 FGBIP participants were surveyed in order to address the research questions pertaining to the design of an instrument for measuring parental involvement behaviors in their children's academic achievement. Moreover, FGBIP individuals were surveyed in order to explore the impacts of South Asians' parental involvement behaviors on their children's academic achievement.

Statistical Analyses and Process

Factor analysis is a statistical procedure to simplify a set of complex variables and explore relationships between multiple variables/items (Tavakol & Wetzel, 2020). The researchers used SPSS-26 for EFA and to present the results from the surveys in tables and figures to provide a visual representation of the raw data. As the survey was specifically developed for this study by the researchers, an exploratory factor analysis (EFA) validated and consolidated the number of items to establish factors of parent perceptions and behaviors. This method was suggested by previous scholars (Field, 2013; Williams et al., 2010) and established five strong factors to measure parental involvement behaviors in their children's academic achievement. The EFA was conducted because the parental involvement measurement items were borrowed from the National Education Longitudinal Study of 1988 (NELS:88) and National Education Longitudinal Study of 2002 (NELS:2002) as well as were drawn from the literature. Previous studies focused mostly on the White American population, while this study was specifically conducted on FGBIP Americans. Therefore, the parental involvement behavior dimensions may differ in this study. Thus, an exploratory factor analysis was done to determine the constructs of the revised parents' behavioral scale. Another type of factor analysis is called confirmatory factor analysis (CFA) which is used on instruments with prior EFA studies to confirm or disconfirm the factor structures or dimensions. Thus, the researcher tests the hypothesized internal structure of the scale by fitting data to their model (Niu et al., 2013). In this study the CFA was not utilized because the purpose of factor analysis in this case was to determine constructs from a newly created parental involvement scale. Therefore, exploratory factor analysis was employed to determine factors and item loading for these factors. The detailed EFA process is explained in the next sections.

Prior to conducting data analyses, the raw data was cleaned to ensure the units of measures were uniform across the data. For example, incomplete survey responses were rejected after the data was transferred from Qualtrics or manually entered into the SPSS dataset. Descriptive statistics and abbreviations were displayed in tabulated form to represent family income, parent's

educational level, child's gender, cultural characteristics, and various measures of parental involvement behaviors. Similarly, both parental involvement behaviors and academic achievement were displayed in a tabulated presentation. Multiple regression analyses, a *p*-values analysis and Spearman correlation coefficients were employed to establish relationships between parental involvement behaviors and children's educational achievement, as well as the relationships between educational level, cultural characteristics, income level, child's gender, and parental involvement behaviors.

Step 1. Item Generation and Construct Development

The first step to develop a new instrument, is to generate the items appropriate to measure the desired constructs by using a deductive or inductive scale development approach (DeMonbrun et al., 2017). In the absence of large scale empirical research and developed framework on measuring diverse parental involvement behaviors in children's academic achievement, the researchers used an inductive approach to generate items (Ironson et al., 1989). The researchers developed a framework to better understand FGBIP parental involvement behaviors in their children's academic achievement and was comprised of several variables that potentially contribute to the phenomenon. It is evident that parents' expectation level and cultural background can influence parental involvement behaviors. Therefore, parents' expectation level scale was added as well as a number of variables were included in the participants' cultural background section. Similarly, items related to parents' attitude, motivation, and self-efficacy were created as a measuring scale. In the same context, several variables were added to represent home based activities, school based activities, parental involvement in beyond home and school based activities, and children personal behaviors.

Step 2. Instrument Validation

As the survey was specifically developed for this study by the researchers, an exploratory factor analysis (EFA) validated and consolidate the number of items to establish factors of parent perceptions and behaviors. This method was suggested by previous scholars (Field, 2013; Williams et al., 2010) and established five strong factors to measure parental involvement behaviors in their children's academic achievement. The values of Cronbach's alpha coefficients are presented in Table 6 and discussed further in a later section. In addition, a panel of experts was included to evaluate the instrument for content and clarity and to offer their suggestions and recommendations for the final draft of the survey before conducting the EFA.

Step 3. Instrument Implementation by Conducting a Pilot Study

Researchers have concluded that pilot studies can help answer methodological questions and can test an instrument in order to identify and minimize risks associated with future study design, data collection and data analysis processes (Jairath et al., 2000). Furthermore, a pilot study can yield feedback on clarity, errors, and the impartiality of questions, and can assist in identifying ethical and practical issues that could halt the main study (Doody & Doody 2015). Therefore, a pilot study was conducted throughout the month of February 2020 to ensure methodological rigor, face validity, and the reliability of the questionnaire (Fink, 2013). As a result, a few questions were re-ordered in the demographic section and two questions were removed and one was reworded to eliminate bias in the parental involvement behaviors section (Rasool et al., 2020). An EFA was utilized to amend and improve the instrument based on the data analysis yielded in the pilot study.

The items loaded into these factors could validate the instrument and scale. A 37- item instrument produced 25 items that explained 53.92% of the variation after conducting factor analysis. Overall, the pattern of survey responses for this pilot study provided useful feedback to improve the instrument for this research study.

Step 4. Exploratory Factor Analysis

As a result of the pilot study, an exploratory factor analysis was utilized to refine the survey instrument by determining if the survey items loaded into the unique factors as well as the number of items can improve the reliability and validity of the instrument (Bailey & Wells, 2015; Fraenkel et al., 2015; D'Haenens et al., 2010). In addition, the EFA was done to determine the constructs of the newly developed parents' behavioral scale factors as well as the number of items that can improve the reliability and validity of the instrument (Bailey & Wells, 2015; Fraenkel et al., 2015). Therefore, the items were removed from the survey to obtain a valid measure of relationships between variables such as parental involvement behaviors and children's academic achievement (D'Haenens et al., 2010).

Measures of Appropriateness

Kaiser-Meyer-Olkin (KMO) was used to analyze the measures of appropriateness, the measure of sampling adequacy and Bartlett's test of sphericity. The results of KMO are presented in Table 2. The KMO value varies between 0 and 1 (Field, 2005). A value 0 indicates the inappropriateness of factor analysis while values closer to 1 show strong patterns of correlations, indicating that factor analysis has resulted in reliable factors. The value for the KMO in this analysis was .787 which is considered a good value (Field, 2005; Norusis, 2009). A significance test indicates that the variables used in the factor analysis have some relationships. This study's variables had a significance value of .000. Therefore, both tests showed that correlations in the data sets were appropriate for factor analysis.

Table 2. *KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.787
Bartlett's Test of Sphericity	Approx. Chi-Square	2846.757
	df	666
	Sig.	.000

Extraction Criteria

The application of principal component analysis (PCA) is recommended to have a first glance at the factor analysis model (Norusis, 2009). The number of factors in this study were determined based on: (a) the percentage of variance explained (accumulating between 70-90%); (b) Kaiser's criterion of eigenvalue >1 (Kaiser rule); (c) examination of the scree plot; and (d) conceptual meaningfulness of factors (Field, 2005; Norusis, 2009).

Table 3 shows that after applying the Kaiser rule, 10 factors resulted in Eigenvalues greater than one. Table 3 also explains that the total variance accounted for each parents' behavioral factor. The percent of variance column reflects that after component 5, the percent of variance explained by each component factor dropped to below 5%. Based on two initial criteria, a total of 10

components were retained that included 37 items. This method essentially failed to reduce any substantial number of items included in the survey.

Table 3. *Eigenvalues and Variance Explained for Parent Behavioral Items*

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	9.411	25.435	25.435
2	3.598	9.725	35.160
3	2.483	6.712	41.872
4	2.471	6.678	48.550
5	1.988	5.372	53.922
6	1.627	4.398	58.320
7	1.495	4.040	62.360
8	1.195	3.230	65.591
9	1.115	3.013	68.603
10	1.010	2.729	71.333

Note. Extraction Method: Principal Component Analysis

However, the criteria of the scree plot could be used to reduce the number of components by eliminating survey items for which the last significant drop took place before the curve flattened. Figure 2 shows that the steep slope distinctly breaks at component 5 and flattens thereafter. The first five components with Eigenvalues of at least 1.9 and higher explained a total variance of around 53.92%. Based on the scree plot and the percentage variances, five factors with 25 survey items could adequately represent the data.

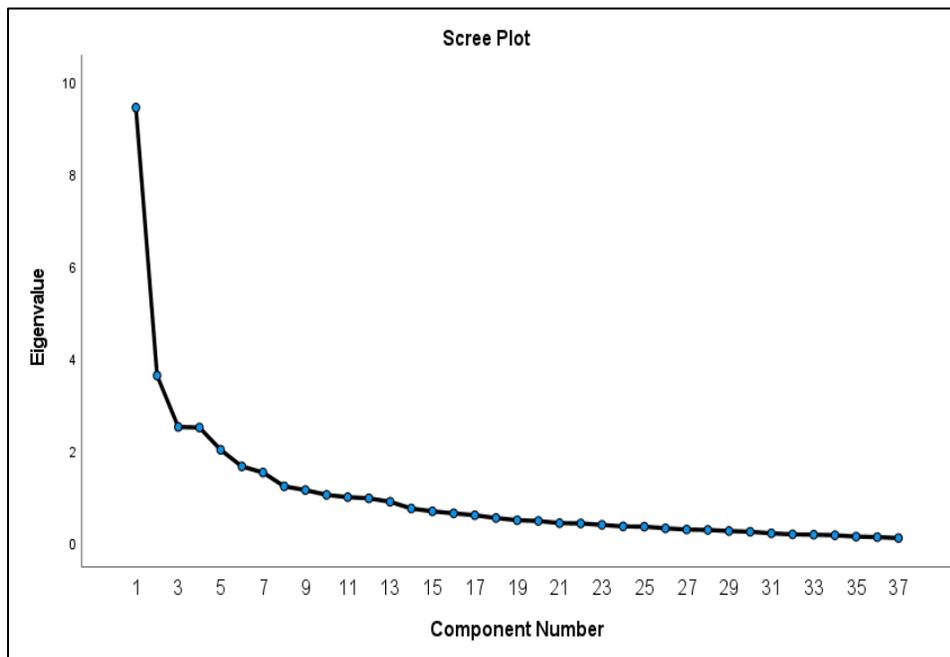


Figure 2. Scree Plot of Parents’ Behavioral Items. *Note.* Extraction Method: Principal Component Analysis

The Component Matrix

Appendix A displays the component matrix and shows the correlation of each survey item with the components. For example, Item 14-3, parents' behavioral involvement trend in school-based activities to inquire about the academic program of their child, had a correlation with two components: component 1 and component 2. However, the correlation of this item with component 2 was negative and had a lower value than component 1. Therefore, this survey item was retained in component 1 as the highest value of each item explained the greatest variance for that factor.

The Rotated Component Matrix

The rotated component matrix (Appendix B) displays each of the 10 initial components with an Eigenvalue above 1.0 and accounting for over 71% of the cumulative variance of each item as a fit for those factors. The rotated component matrix cycles the items in such a way that the survey items show the highest correlation possible to one another. In the current analysis, the correlation between the items necessary to retain a survey item in a factor was set at 0.5 or higher. The correlation between the survey items is clearly visible in Appendix B. For example, factor 1 has five survey items with a correlation value of .5 or higher. This value shows that the survey items are highly correlated with each other and are loaded in groups consistently throughout the survey.

Factor interpretation.

Table 4 shows that the factor analysis resulted in five factors that produced 25 items and explained 53.92% of the variation in the data. The researchers examined items in each group to identify commonalities in order to establish relationships between the items, and they reviewed the literature, theoretical framework, and research questions to guide this process. Table 5 shows all five factors and items listed under each factor.

In Table 4, the first factor included six items (14-1, 14-2, 14-3, 14-5, 14-6, 15-3) linked by a common theme of parents involvement in school based activities. For example, Item 14-1 was about parents contacting the school to learn about their child's academic performance. The second factor comprised seven items (13-1, 13-2, 13-3, 13-4, 13-7, 14-5, 14-7), the most in any factor retained. The central idea of this factor theme was related to parental involvement behaviors in home-based activities. The third factor emphasized parents' personal/motivational behaviors and contained five items (12-1, 12-2, 12-3, 12-5, 12-6). The fourth factor included only three items (12-4, 15-5, 15-6) that aligned with parental involvement in beyond home/school activities. This factor had the lowest number of items retained among all the five factors. The fifth and final factor, parental involvement behaviors was based on children's personal behaviors, contained four items (16-1, 16-2, 16-4, 16-5).

Table 4. *Factor Interpretation*

<i>Factor</i>	Items	Factor Theme
1	14-1, 14-2, 14-3, 14-5, 14-6, 15-3	Parents' School-based Activities
2	13-1, 13-2, 13-3, 13-4, 13-7, 14-5, 14-7	Parents' Home-Based Activities
3	12-1, 12-2, 12-3, 12-5, 12-6	Parents' Personal/Motivational Behaviors
4	12-4, 15-5, 15-6	Parents' Beyond Home/School Activities
5	16-1, 16-2, 16-4, 16-5	Children's Personal Behaviors

Note. Item 14-5 and multiple other items were designed to be related to more than one factors. However, each of these items was included in the factors with which it had the strongest relationship, indicated by the highest values.

Step 5. Replicating Findings through the Administration of Full Instrument

After conducting the EFA and pilot study, the instrument could be modified and replicated to further strengthen it. The pilot study and the replication and administration of the full instrument is part of the second half of this current study. However, the current instrument represents our team's effort to further explore parental involvement behaviors in children's academic achievement and is ready to be administered as part of a full scale future study.

Results

Factor Structure

In Table 4, a five-factor solution accounting for 53.92% of the variance was achieved based on a principal axis factoring (PAF) analysis. The exploratory factor analysis resulted in five strong components consisted of 25 items. These items were grouped together into factors and items were loaded based on their strong correlation. This five-factor solution made perfect sense and resulted in a clear pattern of grouping and loading for all the survey items. To best interpret the identified factors, the parent behavioral trend scale items were rotated orthogonally using varimax rotation with Kaiser normalization. The orthogonal rotation method makes the interpretation of the factors much easier as they are uncorrelated (Norusis, 2009). The grouping of survey items took place based on their highest factor loadings. The factor analysis, the five factors that emerged from the factor analysis were: *parental involvement behavioral trends in school-based activities*, *parental involvement behavioral trends in home-based activities*, *parents' personal behaviors*, *parents' involvement in beyond home/school activities*, and *children's personal behaviors*. Table 4 depicts the five-factor grouping with factor loadings. However, Table 5 shows the results of multiple regression analysis and correlation coefficients between various involvement behaviors of the 145 FGBIP parents in their children's academic achievement presented under various factors.

Factor 1. Parents' School-Based Activities

The first factor was labeled as "school-based activities" and contained six items related to parents' behavioral trends in supporting their children's education at school, for instance, contacting the school regarding the academic performance of their children, children's behavior in school, and the academic program of their children; attending parent-teacher conferences; and obtaining information about college. Each of these items emphasized the significance of family-school relationships for children's success (Patrikakou et al., 2005). The results were reaffirmed in previous studies as researchers have recognized the value of family-school partnership and above given aspects of parental involvement in their children's academic achievement (Dearing et al., 2006; Epstein, 2001; Jeynes, 2012). In Table 3, this factor explained 25.43% of the total variance. This means 25.43% of the change in the dependent variable (academic achievement) was due to one unit change in these independent variables (parent-school based activities). This aspect of parental involvement was particularly lacking among FGBIP parents and an improvement in parents' school-based activities could enhance student academic achievement. The findings for Factor 1, showed a p -value of .007 indicating a statistically significant relationship between parents' school-based activities and their children's mathematics scores. Similarly, relationships between parents' school-based activities and their children's reading/writing scores were explored and found to have a p -value of .017 ($<.05$), indicating a statistically significant relationship between the variables (Table 5).

Factor 2. Parents' Home-Based Activities

The second factor was labeled as “home-based activities” and contained seven items. It reflected parents' behavioral trends in supporting their children's education within the home, for instance, by helping children with homework, discussing children's academic performance, discussing school activities or events of interest, discussing the selection of courses or programs, and discussing plans and preparation for going to college. It was evident from the literature that home-based parental involvement can have a substantial positive effect on a child's academic achievement and social development (Baker & Rimm-Kaufman, 2014; Kuru & Taskin, 2016). A family is the most important informal structure that provide necessary resource support (Blair, 2014) and the improvement in parents' home-based activities can enhance children's academic achievement. Factor-2 explained 9.72% of the total variance (Table 3). A multiple regression analysis was applied to Factor 2 to explore relationships between parents' home-based activities and mathematics score. It yielded a p-value $<.001$, indicated a statistically significant relationship between the variables. In the same context, relationships between parents' home-based activities and reading/writing scores were explored. The resulting p-value was $<.001$, showed a statistically significant relationship between the variables. Finally, the relationships between parents' home-based activities and science scores were investigated, resulting in a .005 p-value that showed a statistically significant relationship between the variables (Table 5).

Factor 3. Parents' Personal/Motivational Behaviors

The third factor was named “parents' personal/motivational behaviors.” This component contained five items related to parents' behavioral trends in preparing themselves to help their children's academic achievement, for instance, parents' behavioral trends to learn new technology, to develop social skills, to improve their own educational level, to learn new things about school activities, and to enjoy figuring things out. The items in this factor helped parents enhance their self-efficacy, motivation, and control which helped them find more time to get involved in their children's educational activities both at home and at school (Hoover-Dempsey & Sandler, 1995). This factor explained 6.71% of the total variance (Table 3). The analysis resulted in a p-value $<.001$, showing a statistically significant relationship between Factor 3, parent's personal/motivational behaviors (the independent variable) and their children's mathematics scores (the dependent variable). Similarly, when the correlation coefficient was determined between Factor 3, parent's personal/motivational behaviors (the independent variable) and their children's reading/writing scores (the dependent variable), the p-value .003, indicating a statistically significant relationship between the variables. The researchers also found a p-value of $<.001$ that showed a statistically significant relationship between Factor 3, and science scores (Table 5).

Factor 4. Parents' Beyond Home/School Activities

The fourth factor was labeled as “parents' behavioral trends to be involved in activities beyond home and school” and consisted of three items, for instance, parents improving their career to help their children, attending parent-teacher organization meetings, and being actively involved in parent-teacher organization activities. The items retained in this factor reflected parents' active participation in events or activities beyond home and school to generally support their children's education and development. This factor explained 6.67% of the total variance (Table 3). A multiple regression analysis and correlation coefficient for Factor 4 showed no statistically significant

relationships between parents' beyond home/school activities and children's academic achievement (Table 5).

Factor 5. Children's Personal Behaviors

The fifth and final factor was labeled as "children's personal behaviors" and consisted of four items, for instance, children's personal behavior of learning new technology, learning social/emotional development skills, liking to work on extra homework assignments, and liking to do household chores. This factor explained 5.37% of the total variance (Table 3). For Factor 5, the analyses showed a p-value of .002 (<.05) indicating that children's personal behaviors (the independent variable) had a statistically significant relationship with math score. Similarly, a p-value of .023 (<.05) indicated that children's personal behaviors (the independent variable) had a statistically significant relationship with their reading/writing scores. Finally, the analysis of children's personal behaviors and their science scores showed a higher p-value of .063>.05, indicating a statistically non-significant relationship between children's personal behaviors and their science scores (Table 5).

Table 5. Correlation Coefficients: Parental Involvement Behavior Items and Academic Achievement

Item #	Variables	R Square	Unstandardized B	F	Sig.
<i>Factor 1</i>	Parents' School-Based Activities and Grade in Mathematics	.070	85.379	5.149	.007**
	Parents' School-Based Activities and Grade in Reading/Writing	.058	84.954	4.196	.017*
	Parents' School-Based Activities and Grade in Science	.028	88.948	1.980	.142
<i>Factor 2</i>	Parents' Home-Based Activities and Grade in Mathematics	.151	80.314	12.02	<.001**
	Parents' Home-Based Activities and Grade in Reading/Writing	.131	75.132	6.724	<.001**
	Parents' Home-Based Activities and Grade in Science	.092	78.425	4.501	.005**
<i>Factor 3</i>	Parents' Personal /Motivational Behaviors and Grade in Mathematics	.127	72.500	6.525	<.001**
	Parents' Personal/Motivational Behaviors and Grade in Reading/Writing	.097	73.662	4.818	.003**
	Parents' Personal/Motivational Behaviors and Grade in Science	.133	71.533	10.45	<.001**
<i>Factor 4</i>	Beyond Home/School Activities and Grades in Mathematics	.231	82.808	2.540	.059
	Beyond Home/School Activities and Grades in Reading/Writing	.021	85.683	2.964	.087
	Beyond Home/School Activities and Grades in Science	.012	86.228	.813	.445
<i>Factor 5</i>	Children's Personal Behaviors and Grades in Mathematics	.087	80.898	6.399	.002**
	Children's Personal Behaviors and Grades in Reading/Writing	.068	82.097	3.264	.023*
	Children's Personal Behaviors and Grades in Science	.025	84.276	3.513	.063

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics for Parents' Behavioral Factors

Mean composites were used to calculate factor scores for each of the parents behavioral trends. In Table 6, factor scores reflect the parents' personal behaviors factor was the most frequently used behavioral trends, followed by behavioral trends in home-based activities. Children's personal behaviors was the next factor that played an important role in motivating parents to become involved in their children's academic activities to enhance their children's academic achievement. Parents' behavioral trends to get involved in school-based activities was the fourth factor, while parents' behavioral trends in beyond home/school activities was the least frequently observed factor.

Reliability Analyses of Parents' Behavioral Factors

Table 6 shows the overall value of the Cronbach's alpha coefficient for the survey questionnaire was .901, which indicated a high reliability of the instrument design. The alpha for the *parents' personal/motivational behaviors* scale was .819. Similarly, the alpha for the *parents' behaviors in home-based activities* scale was .857. Furthermore, the alpha for the *children's personal behaviors* scale was .774. In the same context, the alpha for the *parents' behaviors in school-based activities* scale was .874. Finally, the alpha for the *parents' behaviors in beyond home-school activities* scale was .793. Table 6 reflects that all the parents behavioral subscales showed a high Alpha coefficient (Cronbach's Alpha > .70), indicating the parents' behavioral trends constructs were highly reliable for use with this study's FGBIP parent sample.

Table 6. Descriptive Statistics for Parents' Behavioral Factors and Instrument Validity

Parents' Behavioral Factors	n	Missing	Minimum	Maximum	M	SD	Cronbach's α
1. School-based Activities	142	3	1	5	3.35	1.24	.874
2. Home-based Activities	142	3	1	5	3.90	0.98	.857
3. Parents' Personal Behaviors	142	3	1	5	3.95	0.90	.819
4. Beyond Home/School Activities	140	5	1	5	3.27	1.25	.793
5. Children's Personal Behaviors	142	3	1	5	3.69	0.99	.774
All Variables	145	-	1	5	3.63	1.06	.901

Note. Parents' behavioral factor scores range from 1 to 5, with 5 being the highest on the Likert scale.

Step 5. Replicating Findings through the Administration of Full Instrument

After conducting the EFA and pilot study, the instrument could be modified and replicated to further strengthen it. The pilot study and the replication and administration of the full instrument is part of the second half of this current study. However, the current instrument represents our team's effort to further explore parental involvement behaviors in children's academic achievement and is ready to be administered as part of a full - scale future study.

Discussion and Conclusions

The aim of this study was to describe the development process for an instrument to measure parental involvement behaviors in children's academic achievement. In addition, this study explored the impacts of South Asian parental involvement behaviors in their children's academic achievement. For the first research question, the instrument developed to measure South Asian parental involvement behaviors was in line with the instruments used in the previous parental involvement studies (Hoover-Dempsey & Sandler, 1997; Sheldon & Epstein, 2007). The findings of this current study which categorized parental involvement behaviors into home-based and school-based activities were supported by the previous studies with similar focus (Deslandes & Bertrand, 2005). The preliminary validity for the scale is also provided in this article. The researchers conducted EFA to analyze the internal structure of the measuring scale.

In this current study, out of the five factors, the two major factors related to parental involvement at home and at school showed a positive correlation with enhanced student academic achievement at various levels of schooling (Epstein, 2001; Henderson & Mapp, 2002; Sheldon et al., 2010). The results reaffirmed the previous studies as researchers have recognized the value of family-school partnership and above given aspects of parental involvement in their children's academic achievement (Dearing et al., 2006; Epstein, 2001; Jeynes, 2012). In Factor-2, it was evident from the literature that home-based parental involvement can have a substantial positive effect on a child's academic achievement and social development (Baker & Rimm-Kaufman, 2014; Kuru & Taskin, 2016). A family is the most important informal structure that provide necessary resource support (Blair, 2014) and the improvement in parents' home-based activities can enhance children's academic achievement. The items in Factor-3 helped parents to enhance their self-efficacy, motivation, and control which help them find more time to get involved in their children's educational activities both at home and at school (Hoover-Dempsey & Sandler, 1995).

Factor 4 was related to parents' beyond home/school activities and showed a nonsignificant relationship with parental involvement behaviors and academic achievement. This dimension of parental involvement behavior was associated with parents' participation in events or activities outside the home and school environment to provide support to their children's development and academics. In this study, the participants reported that they tended to engage less often in activities outside the home, especially in activities of a social or leadership nature. Asian parents including those in FGBIP families, often have little contact with parents of their children's friends (Sun, 1998). Similarly, South Asian families generally maintain contact with members of their own ethnic community and are reluctant to develop friendships outside the community (Hickey, 2006).

The results of this study were supported by this construct in the theoretical framework by indicating that there was a positive relationship between parental behaviors towards school and parental behaviors at home with their children's academic achievement. These behavioral trends were consistent with the literature explaining that in Asian families, parents are fully engaged to provide a safe home environment which is favorable for learning school related activities (Schneider & Lee, 1990). In the same context, further results showed that parents' attitudes towards school and parents' attitudes towards their involvement behaviors at home were statistically significant and positively related to their children's academic achievement. The results supported the previous research studies that parental involvement plays a key role in educational outcomes and children's well-being at various levels (Arias & Morillo-Campbell, 2008; Beauregard et al., 2014; Epstein 2001; Hill & Tyson 2009; Hornby, & Lafaele, 2011; Jeynes, 2011; Vera et al., 2012; Wilder 2014). Thus, family is the most informal structure that may affect a child's academic outcomes and social development (Baker & Rimm-Kaufman, 2014; Blair, 2014;

Kuru & Taskin, 2016). The parental involvement is about parents' participation in school activities (Coleman & McNeese, 2009), and parental involvement in schoolwork at home and more broadly parental involvement is parental participation in the educational processes and experiences of their children (Jeynes, 2007). As described in the literature, the participants expressed their high expectations and involvement in their children's educational activities at home and at school and showed the ardent desire of not quitting (Castro et al., 2015). The FGBIP parents showed willingness to utilize any resource or strategy that will enhance their children's academic success and featured such practices in their involvement behaviors.

The researchers understand the procedure described in this article may be challenging to carry out in a substantive educational study. However, it is critical to properly understand the procedure for refining an instrument before starting a robust research study. A researcher can have the confidence and trust to carry out a study and ensure the replicability of results in the future based on the reliability of the scale they use to measure the phenomenon. For instance, using an uncalibrated scale or a biased instrument may result in incorrect conclusions. The researcher can have reliable inferences based on the values provided by the instrument, but an invalid instrument will result in invalid inferences. Therefore, the aim of this article was to provide a methodology to strengthen educational research in an effort to continuously improve the quality of higher education. Thus, by following the five-step process provided in this article future researchers should have efficient and effective measures at their disposal to conduct an educational research study. The purpose of this study was to develop an instrument to measure South Asian's, particularly FGBIP's, parental involvement behaviors in their children's academic achievement. It is argued that several studies have been conducted on parental involvement, and the same factors may influence parental involvement behaviors of individuals from various ethnic backgrounds. It is therefore appropriate to design an instrument to measure parental involvement behaviors for diverse populations. In this study, the refined and revised final version of the parental involvement behavior instrument was developed with a diverse sample of a regional population. Therefore, it would be appropriate to administer this instrument to measure parental involvement behaviors of individuals from other regions with various ethnic backgrounds.

Limitations and Recommendations for Future Research

The researchers have noted a few limitations in this study of instrument development which will be addressed in our future research. First, the exploratory factor analysis was based on a pilot study and a single research study with a limited number of participants living in a small area, which might influence the model fit. However, in our future research, a larger set of data will address this issue and will further refine the instrument on the basis of the expanded results. Second, operational definitions for some of the terms describing parental involvement activities were not created, and some of the terms might overlap with each other because they might describe similar activities. Therefore, in the absence of formalized definitions of parental involvement measures, the researchers depended on various studies to find relevant items related to parental involvement activities with their children. Hence, multiple replicating studies will be needed to achieve a greater consistency in the internal validity of the instrument. Finally, the instrument relied on parents' self-reporting about their parental involvement behaviors, which may be different when parents from different backgrounds take this survey. However, the researchers will note this constraint in future studies using the same instrument to develop a more reliable measuring scale.

In regard to the implications of this study, this instrument could be used in studies pertaining to parental involvement behaviors in their children's academic achievement. The following stages

of future analyses will involve implementation and broader administration of the instrument in order to conduct a more systematic analysis of the instrument across multiple types of parental involvement behaviors. First, the researchers have described a variety of factors that emerged from the EFA, which can be used to measure parental environment behaviors of families belonging to various ethnic groups and socio-economic status. Second, after reviewing the literature, the researchers have compiled various items to measure parental involvement behaviors, which can be incorporated into future studies involving parents in their children's educational activities. Next, the researchers have developed a framework with the hope that future researchers can utilize the instrument to study parental involvement behaviors across various ethnic groups to better understand the role parental involvement plays in student academic achievement. Finally, the future researchers can expand the area of the target population of FGBIP parents to other parts of the state or throughout the United States. Overall, there is much to be learned in the important area of parental involvement behaviors and children's academic achievement. Hence, the researchers encourage future researchers to use and build on this instrument in their own work.

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Appendix A										
<i>Component Matrix</i>										
Item	Component									
	1	2	3	4	5	6	7	8	9	10
Q 14-4: School-based - Volunteer at school (school trips, classroom, etc.)?	.672									
Q 15-3: Beyond home/school - Communicate with parents of child(ren) friends?	.659									
Q 14-6: School-based - Information about college?	.651									
Q 14-3: School-based - The academic program of child(ren)?	.634	-.538								
Q 13-3: Home-based - Discuss school activities or events of interest?	.627	.471								
Q 15-6: Beyond home/school - Active involvement in PTO/PTA activities?	.608		-.495							
Q 14-1: School-based - Academic performance of child(ren)?	.588	-.499								
Q 13-4: Home-based - Discuss selecting courses or programs?	.584	.495								
Q 14-7: School-based - Attend social & sports events at school?	.583									
Q 16: Children’s personal behavior - To work on extra homework assignments	.580									
Q 12-1: Parents behavior- Like to learn new technology?	.579									
Q 12-3: Parents behavior: - Like to improve educational level?	.579			.437						
Q 15-5: Beyond home/school - Attend Parent Teacher Organization/Association (PTO/PTA) meetings?	.574		-.492							

Q 14-2: School-based - Pertaining to child(ren) behavior in school?	.563	-.542								
Q 14-5: School-based - Attend parent-teacher conferences?	.551									
Q 13-2: Home-based - Discuss child’s academic performance?	.544	.526								
Q 16-2: Children’s personal behavior - Learn social/emotional development skills	.537									
Q 12-2: Parents behavior - Like to develop social skills?	.533									
Q 12-4: Parents behavior - Like to improve career?	.533			.505						
Q 12-5: Parents behavior - Like to learn new things about school activities?	.516			.494						.418
Q 16-5: Children’s personal behavior - To do household chores	.504						.468			
Q 15-4: Beyond home/school - Enroll child(ern) in music, dance, or sports activities outside of school?	.498				.424					
Q 15-1: Beyond home/school - Pay for academic tutoring lessons?	.485									
Q 15-2: Beyond home/school - Take child(ern) to visit a museum, library, art gallery, or historical site?	.468									
Q 13-8: Home-based - Set rules of maintaining a certain grade point average?	.411									
Q 13-11: Home-based - Compare academic performance to others?		-.525								
Q 13-7: Home-based- Discuss plans and preparation for going to college?		.466								
Q 13-1: Home-based - Assist with homework?	.441	.463								

Q 12-8: Parents behavior- Have/had energy and motivated enough to meet child(ren) needs?		.419								
Q 13-10: Home-based - Enforce time limit with friends?			.586			.426				
Q 13-9: Home-based- Limit amount of time the child can watch TV/social media/screen time?			.520			.431				
Q 12-6: Parents behavior - Enjoy figuring things out?	.504			.560						
Q 12-7: Parents behavior- Have/had high expectations for child(ren) academic performance?				.464						
Q 16-3: Children’s personal behavior - To participate in extracurricular activities (sports, music, or dance)	.437				.511					
Q 16-1: Children’s personal behavior - Learn new technology						-.418				
Q 13-5: Home-based - Provide resources at home to help your child in study (desk, computer, books)?								.515		
Q 13-6: Home-based - Prefer your son’s education over your daughters?						.419			.540	

Extraction Method: Principal Component Analysis.

a. 10 components extracted.

Appendix B										
<i>Rotated Component Matrix</i>										
Item	Component									
	1	2	3	4	5	6	7	8	9	10
Q 14-1: School-based - Academic performance of child(ren)?	.869									
Q 14-3: School-based - The academic program of child(ren)?	.854									
Q 14-2: School-based - Pertaining to child(ren) behavior in school?	.830									
Q 14-6: School-based - Information about college?	.668									
Q15-3: Beyond home/school - Communicate with parents of child friends?	.598									
Q 13-3: Home-based - Discuss school activities or events of interest?		.821								
Q 13-1: Home-based - Assist with homework?		.808								
Q 13-4: Home-based - Discuss selecting courses or programs?		.781								
Q 13-2: Home-based - Discuss child’s academic performance?		.778								
Q 13-7: Home-based- Discuss plans and preparation for going to college?		.572								
Q 14-5: School-based - Attend parent-teacher conferences?	.408	.519								
Q 14-7: School-based - Attend social & sports events at school?		.461						.410		
Q 12-1: Parents behavior- Like to learn new technology?			.776							
Q12-5: Parents behavior - Like to learn new things about school activities?			.733							
Q 12-6: Parents behavior - Enjoy figuring things out?			.710							
Q 12-3: Parents behavior: - Like to improve educational level?			.632	.538						
Q 12-2: Parents behavior - Like to develop social skills?			.580							
Q15-5: Beyond school - Attend Parent Teacher Organization/Association (PTO/PTA) meetings?				.767						
Q 15-6: Beyond home/school - Active involvement in PTO/PTA activities?				.766						

Q 12-4: Parents behavior - Like to improve career?			.449	.563						
Q 16-1: Children’s personal behavior - Learn new technology					.801					
Q 16-5: Children’s personal behavior - To do household chores					.664					
Q 16-4: Children’s personal behavior - To work on extra homework assignments	.539				.591					
Q 16-2: Children’s personal behavior - Learn social/emotional development skills					.588					
Q 13-9: Home-based- Limit amount of time the child can watch TV/social media/screen time?						.761				
Q 13-10: Home-based - Enforce time limit with friends?						.725				
Q 13-8: Home-based - Set rules of maintaining a certain grade point average?						.643				
Q 13-11: Home-based - Compare academic performance to others?						.469				
Q 12-7: Parents behavior- Have/had high expectations for child(ren) academic performance?							.761			
Q 12-8: Parents behavior- Have/had energy and motivated enough to meet child(ren) needs?							.671			
Q 13-5: Home-based - Provide resources at home to help your child in study (desk, computer, books)?							.486	.462		-.422
Q 16-3: Children’s personal behavior - To participate in extracurricular activities (sports, music, or dance)								.777		
Q 15-4: Beyond home/school - Enroll child(ern) in music, dance, or sports activities outside of school?								.583	.513	
Q 15-2: Beyond home/school - Take child(ern) to visit a museum, library, art gallery, or historical site?									.708	
Q 14-4: School-based - Volunteer at school (school trips, classroom, etc.)?									.553	
Q 15-1: Beyond home/school - Pay for academic tutoring lessons?	.402								.530	
Q 13-6: Home-based - Prefer your son’s education over your daughters?										.794

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

a. Rotation converged in 10 iterations.