First published online July 11th, 2019 in *Assessment for Effective Intervention*

Garbacz, S. A., Hall, G. J., Young, K., Lee, Y., Youngblom, R. K., & Houlihan, D. D. (2019). Validation study of the Family Involvement Questionnaire-Elementary Version with families in Belize. *Assessment for Effective Intervention*. Advance online publication.
 doi: 10.1177/1534508419862857

Validation Study of the Family Involvement Questionnaire-Elementary Version with Families in Belize

S. Andrew Garbacz

Garret J. Hall

Kaitlyn Young

Yen Lee

Rachel K. Youngblom

Daniel D. Houlihan

S. Andrew Garbacz (sgarbacz@wisc.edu), Department of Educational Psychology, University of Wisconsin–Madison; Garret J. Hall (ghall3@wisc.edu), Department of Educational Psychology, University of Wisconsin–Madison, Kaitlyn Young (kmyoung6@wisc.edu), Department of Educational Psychology, University of Wisconsin–Madison; Yen Lee (ylee373@wisc.edu), Department of Educational Psychology, University of Wisconsin–Madison; Rachel K. Youngblom (rachel.youngblom@gmail.com), Young Mind Center, Phoenix, Arizona; Daniel D. Houlihan (daniel.houlihan@mnsu.edu), Department of Psychology, Minnesota State University Mankato.

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant #R305B150003 to the University of Wisconsin–Madison. The opinions expressed are those of the authors and do not represent views of the U.S. Department of Education.

Correspondence concerning this manuscript should be addressed to S. Andrew Garbacz, Department of Educational Psychology, University of Wisconsin-Madison, 1025 West Johnson Street, Madison, Wisconsin 53706-1796. E-mail: sgarbacz@wisc.edu

Abstract

The purpose of this study was to examine the factor structure of the Family Involvement Questionnaire–Elementary Version with families in Belize. Participants were 185 primary caregivers of children in primary education settings in Belize. Caregivers were given the Family Involvement Questionnaire–Elementary Version to measure their educational involvement in their children's schooling. Findings indicated the factor structure of the Family Involvement Questionnaire–Elementary Version in Belize was not congruent with the factor structures with samples from the U.S. and New Zealand. Exploratory factor analysis suggested a five-factor solution: (a) home-school communication, (b) home expectations and monitoring, (c) educational support, (d) school and community involvement, and (e) school attendance. In light of similar measurement studies in the literature, these data indicate that family educational involvement varies across geographic and cultural contexts. This suggests that interventions and policies to improve education outcomes via family involvement ought to consider the unique structure of families' involvement in the educational system.

Keywords: Belize, elementary school, family, family educational involvement, home-school collaboration

Validation Study of the Family Involvement Questionnaire-Elementary Version with Families in Belize

Family educational involvement (hereafter referred to as family involvement) refers to a family's support for their child's academic, social, and behavior development (Pomerantz, Kim, & Cheung, 2011). Families can be involved in school decisions, participate in school events, and serve on school teams as they collaborate with educators to improve cross-setting supports for children (Christenson & Sheridan, 2001). The variety of ways families support their children are often overlooked, pointing to a need to better understand how families from different backgrounds support their children (Garbacz & Sheridan, 2011). This is critical as understanding the myriad of ways families support their children can inform intervention development and progress monitoring (Sheridan et al., in press). Belize has received little attention in the literature and has a need to better understand family involvement (Näslund-Hadley et al., 2013).

Research on family involvement in Belize is limited. Descriptive findings have reviewed the landscape of family involvement in Belize and have found needs and opportunities for families in Belize education systems, such as concerns with youth violence and a lack of parenting support (Youngblom & Houlihan, 2014; United Nations Children's Fund, 2011). Although research examining family involvement in Belize is not well-developed, decades of research in other countries demonstrate the importance of family involvement for children's academic, social, and behavior success (Pomerantz et al., 2011; Sheridan et al., in press). Family involvement is positively associated with student academic performance (Fan & Williams, 2010) and negatively associated with student behavior problems (Sheridan et al., in press). In fact, research in Belize examining maternal cognitive engagement with preschool age children found positive associations with children's literacy skills (Yildirim & Roopnarine, 2017). Family

involvement is of particular concern in Belize due to disparities across geographic settings (Inter-American Development Bank, 2013), creating concerns for academic and behavioral outcomes of Belize children across districts. Measures of family involvement are necessary to tailor intervention strategies and to monitor progress of implemented interventions. To understand how family involvement can specifically benefit children in Belize, appropriate family involvement measures are necessary.

The Family Involvement Questionnaire-Elementary Version (FIQ-E; Manz, Fantuzzo, & Power, 2004) has potential for examining family involvement in Belize. Relative to other measures of family involvement (e.g., Caretaking and Routines Scale; Metzler, Biglan, Ary, & Li, 1998), items on the FIQ-E are inclusive and reflect family involvement across a spectrum of activities, including support for children at home (e.g., review schoolwork), in the community (e.g., take child to public library), at school (e.g., volunteer in the classroom), and in collaboration with teachers (e.g., attend parent-teacher conferences). Validation studies of the FIQ-E in the U.S. (Manz et al., 2004) and New Zealand (N.Z.; Garbacz & Sheridan, 2011) found similar three-factor solutions, including home-based involvement, school-based involvement, and home-school communication. Internal consistency of each factor ranged from .84 to .91 in the U.S. sample and .76 to .86 in the New Zealand sample. Differences in factor loadings were present as some items in the U.S. validation did not load on a factor in the N.Z. validation, suggesting the importance of context when validating measures. For the FIQ-E to be useful for educators in Belize, it is imperative that it is validated within the Belize context.

Study Purpose and Research Questions

The purpose of this study is to examine the FIQ-E with families of children in primary education settings in Belize and to identify the factor structure. Two research questions guide the

present study. First, is the factor structure of the FIQ-E in Belize the same as the factor structure in the U.S. and/or in N.Z.? Second, if the factor structure in Belize is not the same as in the U.S. or N.Z., what is the factor structure of the FIQ-E in Belize?

Method

Participants and Setting

According to the Ministry of Education (2011-2012), there are 570 schools operating in Belize. Belize and U.S. schools are not directly comparable. For example, all schools in Belize follow the British grading system. Additionally, preschools, primary, secondary, and tertiary schools are generally private, or church affiliated and maintained by religions or private entities. The FIQ-E was distributed randomly by district counselors to 240 volunteer families in all six districts in Belize. Responses were received from primary caregivers of 185 children in primary schools across four districts (response rate = 77%). District-level information is in Table 1.

Procedure and Measurement

The FIQ-E was distributed by agents of the Ministry of Education (e.g., counselors or principals). The agents were responsible for gaining informed consent and assent from guardians and children. Materials and procedures were approved by the appropriate Institutional Review Board of a U.S. Midwestern university that served as a contact. Returned FIQ-Es were compiled by the Deputy Minister of Education and delivered to the U.S. research team.

The FIQ-E includes 46-items rated on a 4-point scale (1 = *rarely*, 4 = *always*). The factor structure of the U.S. and N.Z. validations included school-based involvement (e.g., volunteer in my child's classroom), home-based involvement (e.g., read with my child), and home-school communication (e.g., The teacher and I write notes to each other about my child or school activities; Garbacz & Sheridan, 2011; Manz et al., 2004). However, item loadings and the factor

structures were different across the U.S. and N.Z. samples. Studies conducted with the FIQ-E have shown evidence of validity and reliability (e.g.; Cronbach's α range = .84 to .91; Manz et al., 2004).

Planned Analyses

We will use confirmatory factor analysis (CFA) with lavaan (Rosseel, 2012) to fit data to the FIQ-E factor structures described for U.S. and N.Z. samples. Measurement invariance of the Belize and N.Z. data will be explored to further understand the factor structure when sampling error is considered. For the CFA and invariance tests, we will use full information maximum likelihood estimation (FIML) with the Satorra-Bentler correction (Satorra, & Bentler, 1988). Comparative Fit Index and Tucker Lewis Index values $\geq$ .95 and root mean square error of approximation (RMSEA) $\leq$ .06 indicate an acceptable fit (Hu & Bentler, 1999). We will consider configural, metric, scalar, and error variance invariance (Cheung & Resnvold, 2002).

If the first level (configural) invariance cannot be established, we will identify the FIQ-E factor structure of the Belize sample through exploratory factor analysis (EFA). The EFA will be conducted in SPSS 23 to address research question 2. We will decide the number of factors using parallel analysis, minimum average partial test, the scree plot, and Kaiser's lower bound (Gorsuch, 1983). The data will be analyzed via the principal component method and oblique Promax rotation. McDermott (1993) suggested items should be excluded if the difference between its two largest absolute factor loadings is $\leq$ .10 or if it does not have salient loading (i.e., maximum loading $\leq$ .30). If we exclude items, we will reanalyze retained items via EFA and stop the process when the remaining items' factor structure satisfies all EFA criteria. Listwise deletion is permissible without severe bias as fewer than 11 items were missing (5.95%), and we did not reject the MCAR assumption ($\chi^2_{1843} = 1871.89, p = .31$).

Results

Invariance of FIQ-E Factor Structure Across Countries (Multiple-Group CFA)

The Belize sample showed inadequate fit to the U.S. and N.Z. factor structures based on the CFI (U.S. = .760, N.Z = .859) and TLI (U.S. = .754, N.Z. = .847) but marginal fit based on the RMSEA (U.S. = .062, N.Z. = .057). Similar results were found for the invariance test. The CFA (.856), TLI (.845), and RMSEA (.06) indicated marginal to inadequate fit. Thus, we used EFA to identify the factor structure.

Exploration of FIQ-E Factor Structure in Belize Sample (EFA)

We identified a five-factor solution by its interpretability, which accounted for 47.80% of the variance: Home-School Communication (12.31, 27.36%), Home Expectations and Monitoring (2.08, 4.63%), Educational Support (2.84, 6.32%), School and Community Involvement (2.55, 5.66%), and School Attendance (1.72, 3.83%). We excluded one item (I take my child to places in the community to learn special things) as the maximum loading was approximately .25. Factors have 3 to 15 items with loadings from 0.30 to 0.81. All the factors have Cronbach's $\alpha \geq .75$ with factor correlations $\leq .60$. Considering the average factor loading (.58), number of items (45), and factors (5), we believe our sample size (n = 185) was sufficient to yield stable factor loadings (de Winter, Dodou, & Wieringa, 2009). Table 2 displays factor loadings and Table 3 shows factor correlations and internal consistency reliability.

Discussion

The purpose of this study was to examine the factor structure of the FIQ-E in primary education settings in Belize. Results of the CFA and invariance tests indicated the factor structure of the FIQ-E in Belize was not congruent with factor structures from the U.S. or N.Z. samples. The five-factor solution from the EFA suggests similarities and differences in family

involvement dimensions on the FIQ-E across Belize, U.S., and N.Z.

We identified Home-School Communication as a factor from the EFA. Home-School Communication was also identified in the FIQ-E factor structure using U.S. and N.Z. samples (Garbacz & Sheridan, 2011; Manz et al., 2004). This finding underscores the relevance of home-school communication across cultures, based on FIQ-E items. Items that loaded on the Home-Based Involvement factor with the U.S. and N.Z. samples loaded on two factors in the Belize sample: Home Expectations and Monitoring and Educational Support. The Belize loading reflects more specific caregiver behavior of home-based involvement than what was captured with the U.S. and N.Z. samples, suggesting context-specific variations in family involvement.

The School and Community Involvement factor reflects caregivers' involvement behaviors that connect with the community and school. The involvement factor has similar loadings with the School-Based Involvement factor with U.S. and N.Z. samples but includes "I take my child to the library." The final factor, School Attendance, includes three items that loaded on the School-Based Involvement factor with the U.S. sample (Manz et al., 2004). For the N.Z. sample, items that pertained to caregivers taking their child to school and picking their child up from school did not load on a factor and the item about going on class trips loaded on the School-Based Involvement Factor (Garbacz & Sheridan, 2011). In Belize, there is not a formal school transportation system. Children tend to travel together to and from school. When adults are involved in dropping off or picking up children, it is often a grandparent.

Patterns of involvement can be gleaned from descriptive information. Caregivers reported educational support and setting expectations and monitoring practices between *often* and *always*. They reported home-school communication and supporting school attendance behaviors between *sometimes* and *often*. School and community involvement ratings were, on average, *sometimes*.

Limitations and Future Research Directions

Several limitations must be considered when interpreting these findings. Parents who completed and returned an FIQ-E may differ in important ways from families who did not return an FIQ-E. Future studies should seek a larger, more inclusive sample. In addition, contextual factors in rural and urban settings in Belize (Gale et al., 2010) suggest that there may be important ecological differences in family involvement. Future research should examine the nature of family involvement within and between locales. We could not obtain demographic information about participants, which underscores challenges in international research. In addition, six districts were given the FIQ-E, but caregivers from only four districts returned FIQ-Es. Although the two districts whose parents did not respond were similar to districts in the present sample on many educational factors (e.g., enrollment), there are differences that may have influenced the findings (e.g., student academic performance). Normative equivalence strategies (Rao, 2009) could increase response rates in future research with international samples.

Conclusion

Understanding the factor structure of family involvement measures in different contexts advances research and practice by enhancing the precision with which family involvement is measured. The present findings may promote designing family-school interventions in Belize to address dimensions of family involvement (e.g., home-school communication) with specified strategies (e.g., parent-teacher communication about peer relationships). Greater precision in family-school interventions may help bolster implementation by aligning evidence-based practices with the contextually-specific dimensions of family involvement. Such strategies may prevent long-term disengagement of families from their child's schooling and strengthen family-school partnerships in a culturally-responsive manner.

References

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9,* 233–255. https//doi.org/10.1207/s15328007sem0902_5

Christenson, S. L., & Sheridan, S. M. (2001). *Schools and families: Creating essential connections for learning.* New York, NY: Guilford Press.

de Winter, J. C. F., Dodou, D., & Wieringa, P. A. (2009). Exploratory factor analysis with small sample sizes. *Multivariate Behavioral Research, 44,* 147–181. https//doi.org/10.1080/00273170902794206

Fan, W., & Williams, C. (2010). The effects of parental involvement on students' academic self-efficacy, engagement and intrinsic motivation. *Educational Psychology*, *30,* 53–74. https//doi.org/10.1080/01443410903353302

Gale, H., Mortis, N., Vasquez, Mossiah, R.J., Hewlett, M., Amaya, A. (2010). Male social participation and violence in Belize: An examination of their experience with goals, guns, gangs, gender, god, and governance. *Report.* Retrieved from http://dbzchild.org/uploads/docs/complete_pgmale_social_participation_and_violence_in_urban_belize_grand.pdf

Garbacz, S. A., & Sheridan, S. M. (2011). A multidimensional examination of New Zealand family involvement in education. *School Psychology International*, *32*, 600–615. https//doi.org/10.1177/0143034311403034

Gorsuch, R. (1983). Factor analysis (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6,* 1–55. https//doi.org/10.1080/10705519909540118

Inter-American Development Bank (2013). *Annual report.* Retrieved from http://ww.iaddb.org/ar/2013

Manz, P. H., Fantuzzo, J. W., & Power, T. (2004). Multidimensional assessment of family involvement among urban elementary students. *Journal of School Psychology, 42*, 461–475. https//doi.org/10.1016/j.jsp.2004.08.002

McDermott, P. A. (1993). National standardization of uniform multisituational measures of child and adolescent behavior pathology. *Psychological Assessment, 5*, 413–424. https//doi.org/10.1037/1040-3590.5.4.413

Metzler, C. W., Biglan, A., Ary, D. V., & Li, F. (1998). The stability and validity of early adolescents' reports of parenting constructs. *Journal of Family Psychology, 12*, 600–619. https//doi.org/10.1037/0893-3200

Ministry of Education. (2011-2012). *Education Statistical Digest of Belize, 2011-2012.* Retrieved from http://moes.gov.bz

Näslund-Hadley, E., Alonzo, H., & Martin, D. (2013). Challenges and opportunities in the Belize education sector (Technical Note No. IDB-TN-538). Retrieved from the Inter- American Development Bank website: https://publications.iadb.org/handle/11319/5926

Pomerantz, E. M., Kim, E. M., & Cheung, C. S. (2011). Parents' involvement in children's learning. In K. R. Harris, S. Graham, T. Urdan, S. Graham, J. M. Royer & M. Zeidner (Eds.), *APA educational psychology handbook, Volume 2: Individual differences and*

cultural and contextual factors (pp. 417–440). Washington, DC: American Psychological Association

Rao, P. (2009). International survey research: Understanding national cultures to increase survey response rate. *Cross-Cultural Management: An International Journal*, *16*(2), 2009. doi: 10.1108/13527600910963917

Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software, 48,* 1–36. https//doi.org/10.18637/jss.v048.i02

Satorra, A., & Bentler, P. M. (1988, August). Scaling corrections for chi-square statistics in covariance structure analysis. *UCLA: Department of Statistics*. Retrieved from https://scholarship.org/uc/item/3141h70c

Sheridan, S. M., Smith, T. E., Kim, E. M., Beretvas, S. N., & Park, S. (in press). A meta-analysis of family-school interventions and children's social-emotional functioning: Moderators and components of efficacy. *Review of Educational Research.*

United Nations Children's Fund (2011). *The situation analysis of children and women in Belize 2011: An ecological review.* Belize City: Belize: Fer De Lance Productions, Inc.

Yildirim, D. E., & Roopnarine, J. L. (November 2017). Positive discipline, harsh physical discipline, physical discipline and psychological aggression in five Caribbean countries: Associations with preschoolers' early literacy skills. *International Journal of Psychology.* https://doi.org/10.1002/ijop.12465

Youngblom, R. K., & Houlihan, D. (2014). Family involvement in the schools of Belize. *Journal of Education and Training Studies, 3,* 1–6. https//doi.org/10.11114/jets.v3i1.601

Table 1

Student Enrollment, Teacher Employment, Geographic Locale, and Secondary School Dropout Rate by School District

	Enrollment		Teachers		Locale		Secondary School Dropout
District	Primary	Secondary	Primary	Secondary	Urban	Rural	Number (Percentage) of Students
District 1	17,666	6,509	871	496	41	20	461 (7.3)
District 2	17,537	4,700	797	322	19	50	294 (6.8)
District 3	8,336	2,077	372	147	7	36	203 (10.0)
District 4	9,848	1,995	440	155	7	31	192 (9.6)
District 5	9,259	2,622	423	171	8	26	301 (11.9)
District 6	6,685	1,762	312	122	4	46	149 (8.8)

Note. Bold typeface indicates districts from which caregivers completed and returned the Family Involvement Questionnaire-Elementary Version.

Table 2

Factor Loadings

Factors	Items	Loadings
Home-School Communica-tion	Talk to teacher about child's relationship with peers	.783
	Talk to teacher about child's difficulties at school	.761
	Talk to teacher or principal about disciplinary matters	.753
	Talk to teacher about child's accomplishments	.705
	Call teacher if concerned about something child said	.694
	Talk to teacher about work child should practice at home	.677
	Talk to teacher about personal matters if relevant to school	.606
	Talk to teacher on telephone	.596
	Talk to teacher about daily school routine	.571
	Write notes with teacher about child or activities	.526
	Attend conferences with teacher	.486
	Praise child for school work in front of teachers	.458
	Talk to teacher about classroom rules	.456
	Contact teacher or principal to get information	.443
	Participate in fundraising activities at school	.386
Home Expectations and Monitoring	Limit TV and video watching	.683
	Teachers and principal encourage parents to be involved at school	.674
	Maintain clear rules at home	.649
	Keep regular morning and bedtime schedule	.595
	Child has chores at home	.588
	Share stories with child about when in school	.520
	Talk to family and friends about child's school progress	.422
	Talk to child about how school has helped me	.335
Educational Support	Read with child	.811
	Bring home learning materials	.707
	Do creative activities with child	.694
	Spend time working on math skills	.658
	Ask child about day at school	.617
	Help with homework	.604
	Review child's school work	.584
	Check that child has place to keep school materials	.545
	Participate family activities in school	.304

School and Community Involvement	Meet with families outside of school	.725
	Talk to school personnel about job training	.631
	Suggest activities or trips to teacher	.515
	Parents at school support each other	.513
	Attend organized family–school association meetings	.513
	Take child to library	.497
	Arrange times for classmates to come play	.475
	Attend parent workshops or training at school	.424
	Talk with other parents about school meetings or events	.360
	Volunteer in classroom	.349
School Attendance	Pick child up from school	.839
	Take child to school	.785
	Go on class trips	.483

Table 3

Internal Consistency Reliability, Factor Correlations, and Descriptive Statistics

	1	2	3	4	5
1. Home-School Communication	0.893	0.329	0.525	0.397	0.376
2. Home Expectations and Monitoring		0.754	0.397	0.199	0.146
3. Educational Support			0.836	0.250	0.385
4. School and Community Involvement				0.775	0.073
5. School Attendance					0.759
M	2.67	3.27	3.28	2.10	2.77
SD	0.68	0.55	0.59	0.61	1.02

Note. Diagonal values are the Cronbach's α of each factor.