Measuring Parent Perceptions of Family–School Engagement: The Development of New Survey Tools

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Abstract

Given family–school engagement is correlated with student academic achievement, educational researchers have long been interested in the construct. However, measuring parental engagement is deceptively challenging. The concept includes school-based engagement, home-based learning support, and family–school communication. In this article we focus exclusively on measuring school-based family engagement. Examining this topic requires measuring parents' perceptions of their engagement with schools alongside the barriers that may limit their involvement. However, it is not obvious that barriers items should function like a traditional survey scale. We addressed these measurement challenges through a survey design process that synthesized academic theory with empirical findings from parent respondents, resulting in three survey tools: an engagement scale, a school invitational barriers sub-scale, and a non-school barriers composite measure. Three studies (n = 385; n = 266; n = 589) provide evidence that the school-based engagement tools effectively measure engagement patterns. We conclude by describing the potential uses of the tools for educators and researchers.

Key Words: family–school engagement, parent involvement, survey design, confirmatory factor analysis, parents, perceptions, tools

Introduction

Children whose parents are more engaged with their schools and their learning tend to perform better academically. A series of meta-analyses document that these children earn higher grades and scores on standardized exams (Fan & Chen, 2001; Hill & Tyson, 2009; Jeynes, 2003, 2005, 2007). Family–school engagement is also associated with effective school-level reform. The Consortium on Chicago School Research identified five commonalities between Chicago schools that experienced academic improvement over seven years, one of which was strong relationships between parents and educators (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010). Furthermore, a small but growing set of field experiments show a causal relationship between efforts to promote family involvement in children's learning and student success in school (e.g., Bergman, 2015; Harackiewicz, Rozek, Hulleman, & Hyde, 2012; Kraft & Dougherty, 2013; Kraft & Rogers, 2015). This evidence suggests that certain forms of family engagement have the potential to serve as a lever for increasing academic achievement.

The possibility that boosting family engagement may enhance student outcomes underlies the federal government's promotion of closer home–school ties. Districts receiving more than $500,000 in Title I funding through the Elementary and Secondary Education Act have been required to utilize at least 1% of these funds for family involvement (National PTA, 2009). Arne Duncan, the former U.S. Secretary of Education, proposed doubling that requirement (Duncan, 2010). The U.S. Department of Education (U.S. ED) has also promoted family–school engagement through School Improvement Grants (SIG) aimed at turning around low-performing schools. The "Transformation Model," one of four intervention options available to SIG grantees, requires schools to promote family and community engagement (U.S. ED, 2013). At the district level, the number of senior-level positions dedicated to family engagement increased from one in 2003 to over 125 in 2013 (Institute for Educational Leadership, 2014).

Unfortunately, there has been limited monitoring and evaluation of family involvement initiatives (Mapp, 2012). With taxpayer dollars at stake and new policies on the horizon with the implementation of the Every Student Succeeds Act, researchers must be able to document which interventions increase family engagement and which improve student outcomes. Given that family engagement can take on a variety of forms, including school-based engagement, home-based learning support, and family–school communication, learning which types of engagement are most important for improving student outcomes becomes an essential focus. Each type of engagement may have

different levels of potential to influence children's academic success. Given the potential importance of family–school relationships, the need for measurement tools that distinguish between these types of engagement and that accurately assess engagement-related constructs has never been higher. In this article we focus on measuring school-based family engagement because of recent policy interest in promoting these forms of engagement.

However, measuring school-based family engagement is complicated for three reasons. First, understanding how parental engagement functions requires measuring both the behavioral acts of engaging with the school and the barriers to those acts of engagement. Barriers come in multiple forms: logistical, behavioral, cultural, or perceptual. To effectively design, target, and implement engagement programs, educators must understand how parents perceive their own engagement and whether educator and parent perceptions are aligned. Additionally, to promote involvement, schools must understand the obstacles parents face to engaging (Hoover-Dempsey et al., 2005). Therefore, measuring both engagement and barriers to engagement is essential.

Consider two hypothetical parents, each with a fifth grade student enrolled in their local public school. Both parents care deeply about their child's education, but rarely interact directly with educators or families from the school. The first parent's limited involvement stems from her lack of connectedness to her child's school community and knowledge that she plans to transition her child to a private middle school next year. The second parent wishes to be more involved, but most opportunities conflict with his evening work shifts, and he worries that his English is not fluent enough to communicate with teachers.

Despite their identical levels of engagement, the steps the school might take to increase each parent's involvement would look quite different. The first parent may need greater motivation and a sense of connection with the school. The father, by contrast, is already interested in connecting. Increasing his motivation will be ineffective because logistical barriers would still remain in his way. Thus, without assessing barriers and engagement simultaneously, researchers may misunderstand critical aspects of family–school engagement. Consequently, schools may struggle to effectively encourage involvement.

The second reason that capturing these constructs is challenging is that a tool to assess engagement should function like a traditional scale in which all items are correlated, but a tool to assess barriers to engagement may or may not function this way. Although parents engage in different ways, on average most indicators of involvement should correlate with one another at least moderately well. For example, a father who is involved with a PTA is probably also more likely to volunteer at the school than a father who is not involved with the group. Similarly, some barriers are likely correlated. A parent who thinks

teachers lack cultural sensitivity is unlikely to feel a sense of belonging at the school. However, many of the hurdles parents must overcome to become involved are independent of one another. How busy a mother perceives her work schedule to be is unlikely to be correlated with the distance between her home and her child's school. In other words, we should expect some barriers to engagement items to function as a scale, but others should not.

The third complicating factor is that parents/guardians are uniquely busy survey respondents, especially those least engaged with their school and often underrepresented in engagement studies. To bolster response rates with "respondent-friendly questionnaires" (Dillman, Smyth, & Christian, 2009) schools typically prefer especially efficient surveys for parents.

We addressed these measurement challenges through a survey scale development process that synthesized prior theory on family engagement with inductive findings from parent interviews. This process led us to ultimately create three distinct tools, all related to measuring school-based family engagement: (1) a family–school engagement survey scale, (2) a sub-scale of barriers items that measure "school invitational barriers," and (3) a composite of items to gauge out-of-school barriers to engagement. Throughout our development process, we were conscious of "practical measurement"—the idea that practice-based learning requires measures that are efficient, not redundant, and therefore practical for repeated administration in applied settings (Yeager, Bryk, Muhich, Hausman, & Morales, 2013). As a result, we aimed to develop tools that cover the key aspects of school-based engagement but that were short enough to ensure schools use them. Thus, this article contributes a new set of parsimonious tools that simultaneously gauge parents' perceptions of their engagement with the school and both the school-based and out-of-school barriers that prevent greater involvement.

Scale Development

We created the engagement and barriers measures as part of a larger survey on family–school relationships designed for parents of children in grades K–12. We used Gehlbach and Brinkworth's (2011) six-step survey development process which aims to build in validity from the start of the design phase by front-loading input from both scholars and potential respondents.

We first reviewed the literature to identify key aspects of engagement and the most prevalent barriers families encounter to engaging with schools. We found scholars typically distinguish between school- and home-based involvement (Conners & Epstein, 1995; Epstein, 1987; Epstein & Sanders, 2002). School-based involvement includes activities like volunteer work and school

governance opportunities. Home-based involvement includes out-of-school support such as homework help. Ambiguity around involvement type may explain variability in previous findings regarding family involvement, prompting scholars to call for clear distinctions between family–school partnerships and home-based involvement (Fan & Chen, 2001; Sheridan et al., 2012). Epstein further distinguishes between home-to-school communication and other forms of school-based involvement such as volunteer work and involvement in school decision-making (Epstein et al., 2009). After synthesizing existing approaches to conceptualizing engagement, as part of our larger survey on family–school relations, we created separate scales to assess: school-based engagement, home-based learning support, and family–school communication. This article focuses exclusively on the school-based engagement scale and accompanying tools to measure barriers to school-based engagement.[1]

Unlike traditional survey scales, we did not expect the barriers construct to be unidimensional. However, the literature highlighted one critical subset of barriers related to how welcoming the school is to families. Hoover-Dempsey and Sandler (1997, 2005) argued that invitations from the school to get involved, the child's receptivity to parent involvement, parents' life contexts (e.g., social class, time, energy), culture, and language all play a role in predicting engagement. We recognized that barriers related to how inviting a school is might correlate with each other more than other barrier items. We ultimately consider a subset of our items to function as a "school invitational barriers" sub-scale that assesses the degree to which lack of school-based welcoming and invitations to involvement create barriers to engagement.

The literature also identified out-of-school barriers that were not related to school-based invitations nor highly related to each other. Therefore, we set out to develop a set of items that would identify the non-school based factors that prevent engagement. We did not hypothesize the existence of a single latent non-school barriers construct predicting how busy a mother perceives her work schedule, how far she lives from school, and how much her child wants to prevent her from getting involved. This expectation is consistent with Turney and Kao's (2009) study revealing low correlations between the eight barrier indicators they deployed ($\alpha = .42$). These non-school barrier items are primarily intended to help schools uncover the issues functioning as barriers rather than to provide an omnibus score of how difficult it is for a particular parent to engage. We did not anticipate that these items would work well in a confirmatory factor analysis model. Nevertheless, we did expect that parents reporting greater barriers would tend to have a harder time engaging and that the average across the non-school barriers items should allow scholars to rank order individuals on the underlying construct. As a result, we created a non-

school barriers composite, for which the indicators measure facets of the same construct, but do not function as a traditional scale (Bollen & Bauldry, 2011).

After reviewing the literature, we conducted three focus groups and one interview with a total of 12 parents. Through these focus groups we learned how parents conceptualized engagement, determined which indicators to include, and identified words parents used when describing these concepts. We recruited participants through our team's professional and personal networks as well as snowball sampling. Our sample included mothers (and one grandmother) of public elementary, middle, and high school students from urban and suburban districts in the Northeastern U.S. (although we did not intentionally recruit exclusively female interviewees). More than half were non-native English speakers. Our sample included participants who identified as Hispanic, Black, White, and Multiracial, and low-income. Our goal for this exercise was not to interview a nationally representative sample, but to get feedback from parents who were demographically somewhat different from each other and from the members of our team and who therefore might help us identify important facets of family–school engagement and barriers to involvement that we might otherwise overlook.

We conducted the 60-minute discussions in person, nine in English and one in Spanish. Participants received a $20 gift certificate. We captured audio recordings for later transcription. We relied on an open-ended interview protocol that began by asking interviewees to describe the ways they and other parents engage with their children's school. Eventually we asked whether parents ever experienced challenges making it difficult to get involved. We prompted parents to describe the last time they engaged with the school and encountered a difficulty engaging and what would need to change to make it easier for parents to get involved.

These questions helped us identify indicators that resonated with parents. For example, some interviewees said they hesitated to get involved in school affairs due to worries that if they raised a concern, teachers might treat their child differently. This indicator was not prominently featured in the literature we read but was salient for a sub-set of parents in our sample. Had we excluded it, our tool may have missed an important barrier and prevented educators from remediating this issue, illustrating the way our development process better captured parents' experiences than an exclusively theoretical model.

Third, we compared the literature review and interview findings to prioritize those indicators that emerged from both sources for item development. Parents echoed research-based indicators such as meeting with teachers and volunteering at school. However, this process often led us to appreciate nuanced and consequential differences between what we culled from the literature and from

parent interviews. For example, parents' schedules were a common barrier in both the research and interviews. However, while the literature focused primarily on parents' work schedules, parents discussed other scheduling issues. Mothers attending school themselves said their own class schedules made it difficult to engage. As a result, we developed the general item, "how busy your schedule is," rather than focusing exclusively on work schedules.

This type of subtle wording change can make a difference. Imagine a prospective survey respondent working a part-time job while attending school full time. With a typical item such as, "do you encounter the following challenge: trouble getting time off from work," this parent may respond that time off from work is "not a problem at all" for becoming engaged. However, the same parent might answer that "how busy her schedule is" presents "a very large problem" because of her responsibilities as both a student and mother. This example further illustrates how integrating findings from the literature and interviews helped minimize measurement error.

Fourth, we developed items that assessed key indicators of engagement and barriers to engagement, wording items to be consistent with language parents used and prioritizing indicators that surfaced in both the literature and focus groups. We initially developed 20 engagement items and 28 barriers items—including some items that assessed overlapping domains—with the assumption that we would eventually eliminate ill-performing items during the final development steps. Parsimony was paramount since many schools would administer our items as part of a longer survey on family–school relations.

We relied on best practices for item development to minimize avoidable sources of measurement error (Artino, Gehlbach, & Durning, 2011; DeVellis, 2003). To improve scale reliability, we avoided reverse scored items (Benson & Hocevar, 1985; Swain et al., 2008) and labeled answer choices with construct-specific anchors (e.g., "not at all involved," "slightly involved," etc. when the construct was "involvement"; Tourangeau, Rips, & Rasinski, 2000). To minimize cognitive demands on respondents, we avoided asking them to rate their level of agreement to statements (Gehlbach, 2015; Krosnick, 1999). These characteristics represent an advance over many older measures of parental engagement and barriers developed before some of these best practices were well known (Dillman et al., 2009).

Fifth, we subjected our items to an expert review procedure. Scholars and practitioners familiar with family–school relationships completed an online survey providing feedback on the clarity and relevance of items, possible missing items, and appropriateness for parents of all cultural and linguistic backgrounds. Eighteen experts examined the barriers items, and 13 examined the engagement items. Experts rated a majority of the engagement (70%) and

barriers items (89%) as "quite relevant" or "extremely relevant," on average. No item had an average rating less than "somewhat relevant."

Despite these high ratings, experts helped us identify items for elimination. Reviewers pointed out that the barriers item about "transportation needs" (M = 4.58, sd = .61 on a scale of 1-5) overlapped with the "distance between home, work, and child's school" item (M = 3.95, sd = .91). We eliminated the latter, thinking it could confuse respondents by asking about the distance between three locations. We broadened the transportation item to "transportation-related challenges" since we agreed with reviewers that a parent would be unlikely to say transportation-related challenges did not create problems if distance was a substantial barrier. Similarly, experts argued that the item, "You feel like you are bothering school staff by trying to get involved" (M = 4.11, sd = .96) would measure similar variation as the "School staff seem too busy" (M = 4.22, sd = .81) and "The school is not welcoming to parents" (M = 4.68, sd = .58) items. Since experts said that the word "bothering" could create confusion, we eliminated the bothering item.

The experts also helped broaden the suitability of our tools to a wider range of parents. Although many existing parental engagement scales include a fundraising-related item, some reviewers hypothesized that our item, "How involved have you been in fundraising efforts at your child's school?" (M = 3.08, sd = 1.32) could be differentially relevant for low-income compared with middle-income parent populations. As a result, we flagged the fundraising item as a candidate for potential elimination during the pilot phase when we planned to prune additional items.

Sixth, we employed a cognitive pretesting procedure with six parents to identify and eliminate major sources of confusion for potential respondents (Karabenick et al., 2007). None of these parents participated in our earlier interviews. In 60-minute one-on-one interviews we showed parents the survey items one at a time and asked them to restate each question in their own words and then "think aloud" as they came to their answer. Overall, these interviews suggested that parents understood our items but also led us to make subtle improvements. For example, at face value the item, "In the past year, how often have you visited your child's school?" seemed reasonable. However, some parents interpreted a visit to include daily drop off, while others thought we were asking about going inside the building. Given this ambiguity and because we thought our item about meeting with teachers would capture similar variability, we flagged the "visited" item for possible elimination during the piloting phase. Thus, we were left with 6 engagement items and 17 barriers items.

Methodology for the Three Studies

We next conducted three studies with national samples of parents. We relied on Study One to examine the factor structure and scale score reliability of our engagement scale and determine whether our barriers items would indeed function as a sub-scale and/or a composite. In Study Two, we replicated our findings for the engagement and barriers items and gathered evidence that inferences from scores showed convergent/discriminant validity with other constructs. In Study Three, we replicated our findings again for the engagement scale with a larger sample so we could gather further evidence of convergent validity by administering a preexisting scale designed to more directly measure a concept similar to our construct of interest.

Participants

We drew all three samples from *SurveyMonkey's* national panel of almost one million survey respondents. *SurveyMonkey* recruits members by asking people who create and take surveys on their website to volunteer to take additional surveys to benefit charities and be eligible for rewards. *SurveyMonkey* invited panel members with children between the ages of 5 and 18 to take our online survey and administered it to those who elected to participate in the spring of 2012 (n = 385), summer of 2012 (n = 251), and summer of 2013 (n = 589). We asked respondents with multiple children to focus on one child and his or her current school. Panelists could take the survey at their own convenience and stop and restart as needed. *SurveyMonkey* closed each survey within a few days.

The resulting samples, described in Table 1, were geographically diverse and included parents of children in a range of grades. On average, our sample members were slightly more affluent, educated, and likely to speak English at home than average Americans. This was not surprising given the source of our sample and the correlation between income, education, and Internet use. While all our participants had Internet access, this was true for roughly 78% of Americans as a whole as of 2011 (Zickuhr & Smith, 2011). The modal income range of our pooled sample was $75,000–$99,000, while national 2007–2011 median income was $52,762. While less than 5% of our samples reported speaking a language other than English at home, the Census estimates that this was true for approximately 20% of the American public between 2007 and 2011 (U.S. Census Bureau, 2012).

Table 1. Background and Demographic Characteristics of the Three Samples

	Study 1 (n = 385)	Study 2 (n = 266)	Study 3 (n = 589)
	%	%	%
Child's grade			
With children in elementary school (PreK–5)	43.44	43.52	41.45
With children in middle school (6–8)	23.03	22.22	24.53
With children in high school (9–12)	33.53	34.26	34.02
Relationship to child			
Mothers	35.47	39.63	51.15
Fathers	58.43	52.07	43.13
Other (e.g., Grandparents, Guardians)	6.10	8.29	5.73
Average annual household income			
$0–49,999	21.07	16.13	20.38
$50,000–99,999	35.61	41.01	38.85
$100,000–149,999	24.33	25.35	23.65
$150,000–199,999	10.98	11.98	9.23
$200,000 and up	8.01	5.53	7.88
Highest level of education			
Less than high school	0.58	2.20	2.85
High school degree	6.65	9.69	9.70
Some college	30.35	20.70	27.38
Associate or bachelor's degree	36.13	37.00	38.02
Graduate degree	26.30	30.40	22.05
Race/ethnicity of child			
White/Caucasian	74.85	72.90	68.08
Hispanic American	7.31	9.35	8.66
Black or African American	5.85	7.01	7.47
Asian or Pacific Islander	3.80	1.40	4.07
Multiple ethnicity/Other	8.18	9.35	5.60
Language			
English is child's primary language	96.81	94.91	97.89

Table 2. Engagement and Barriers Items

Engagement Scale	
Item Code	Item Text
MEET[a]	How often do you meet in person with teachers at your child's school?
GROUP[b]	How involved have you been with a parent group(s) at your child's school?
PARENTS[a]	In the past year, how often have you discussed your child's school with other parents from the school?
HELPED[a]	In the past year, how often have you helped out at your child's school?
School Invitational Barriers Sub-Scale[c]	
	How big of a problem are the following issues for becoming involved with your child's current school?
UNSURE	You feel unsure about how to communicate with the school
WELCOME	The school is not welcoming to parents
INFO	The school provides little information about involvement opportunities
CULTURE	The school doesn't communicate well with people from your culture
BUSY	School staff seem too busy
TREAT	You worry that adults at the school will treat your child differently if you raise a concern
BELONGING	You do not feel a sense of belonging with your child's school community
Non-School Barriers Composite[c]	
SCHEDULE	How busy your schedule is
TRANSPORT	Transportation-related challenges
CHILDCARE	Childcare needs
SAFELY	Concerns about getting to the school safely
WANT	Your child does not want you to contact the school
MEMORIES	Negative memories of your own school experience

[a]Answer options for these items were: Almost never, Once or twice [per year], Every few months, Monthly, Weekly or more.

[b]Answer options for this item was: Not at all involved, A little involved, Somewhat involved, Quite involved, Extremely involved

[c]The answer choice options for all of the barriers items were: Not a problem at all, Small problem, Medium problem, Large problem, Very large problem.

Measures

We administered engagement items in all studies and barriers items in Studies One and Two. Specifically, we deployed 6 engagement and 17 barriers items in Study One. In Study Two, we deployed 4 engagement and 13 barriers questions (see Table 2). Finally, in Study Three we administered the same four engagement items.

To gather evidence of convergent and discriminant validity of our measures, we also administered preexisting scales designed to measure constructs that were related to but distinct from family–school engagement (AERA, APA & NCME, 2014). We describe these measures in Table 3. In Study Two, we administered Walker et al.'s (2005) "Time and Energy" scale, which measures parents' energy for involvement, and the *National Household Education Survey* "Satisfaction with School" scale (NCES, 2007). This measure included items such as, "Would you say that you are very dissatisfied…or very satisfied with the school your child attends this year?" We used the "School Climate" scale to assess parent perceptions of their child's school (Schueler, Capotosto, Bahena, McIntyre, & Gehlbach, 2014). A sample item is, "Overall, how much respect do you think the teachers at your child's school have for the children?"

Table 3. Characteristics of Measures Deployed to Gather Evidence of Convergent/Discriminant Validity

Scale	Source	# of items	Chronbach's alpha with our sample
Time and Energy	Walker et al., 2005	10	0.81
Satisfaction	NCES National Household Education Survey, 2007	5	0.88
Climate	Schueler et al., 2014	7	0.91
Self-Efficacy	Hoover-Dempsey & Sandler, 2005	7	0.87
School Involvement	Hoover-Dempsey & Sandler, 2005	5	0.78

In both Studies Two and Three, we deployed Hoover-Dempsey and colleague's "Parent Efficacy for Helping the Child Succeed in School" scale (Hoover-Dempsey & Sandler, 2005). Finally, in Study Three, we administered Hoover-Dempsey et al.'s (2005) "School General Involvement" scale, which includes items such as "Someone in this family…attends PTA meetings," accompanied by frequency-related answer choices.

Table 4. Hypothesized and Actual Bivariate Correlations Between Scales with Study Two and Study Three Samples

Study Two Sample (n = 251)									
	Hypothesized Size of Correlation with:								
Scale	Engagement	Invitational Barriers	Barriers Composite	Engagement	Invitational Barriers	Barriers Composite	Time and Energy	Satisfaction	Climate
Engagement									
Invitational Barriers	Weak -			-.35***					
Barriers Composite	Weak -	Weak +		-.11***	.41***				
Time and Energy	Moderate +	Weak -	Weak -	.55***	-.26***	-.45***			
Satisfaction	Weak +	Moderate -	None	.33***	-.69***	-.03	.23***		
Climate	Weak +	Moderate -	None	.39***	-.60***	.09	.25***	.89***	
Self-Efficacy	Weak +	Moderate -	Moderate -	.25***	-.40***	-.37***	.67***	.25***	.28***
Study Three Sample (n = 561)									
	Hypothesized Size of Correlation with:								
	Engagement			Engagement	Self-Efficacy				
Engagement									
Self-Efficacy	Weak +			.33***					
School Involvement	Strong +			.92***	.41***				

In Table 4, we include our hypotheses about the expected direction and magnitude of the correlations between our engagement tools and the additional scales. We hypothesized that our engagement scale would have a weak negative correlation with both barriers tools on the premise that parents facing fewer hurdles are more likely to engage but that many parents overcome barriers, and several parents who experience few barriers still choose not to engage. We hypothesized that engagement would correlate moderately positively with the "Time and Energy" scale given that Walker et al.'s (2005) framework suggests parents with more energy will engage more heavily. We did not expect a high correlation, however, expecting that many parents who perceive themselves as busy still make time to engage, and those with free time do not necessarily spend it at their child's school.

We further anticipated that our engagement scale would correlate positively but weakly with the "Satisfaction with School," "School Climate," and "Parent Efficacy" scales. We hypothesized that greater satisfaction with the school and positive impressions of climate would improve the likelihood of involvement. However, some parent interviewees told us they were more likely to engage if something went wrong than if things were going well. Additionally, we expected that parents who felt more confident in their ability to support their child's learning would be more likely to engage but that a good portion of this confidence might manifest in home- rather than school-based support. Finally, we anticipated that our engagement scale would correlate positively and highly with the "School General Involvement" scale given that both were designed to measure the same construct.

For school invitational barriers, we expected that parents who perceive fewer barriers would tend to feel more efficacious, on average, but that these two scales would not be highly correlated since school-based practices should be largely distinct from parent self-perceptions. We expected our sub-scale to have a moderate negative correlation with measures of school satisfaction and climate since all three scales assess perceptions of the school, and parents who perceive the school to be less inviting are less likely to be satisfied.

In contrast, we did not expect our out-of-school barriers composite to correlate with either the satisfaction or climate scales since the composite was designed to measure barriers that are largely home-based and independent of the school. We hypothesized a weak negative correlation between our composite and Walker et al.'s (2005) scale since we expected parents who perceive greater barriers to also perceive they have less time and energy to engage.

Data Analytic Procedures

We used confirmatory factor analysis (CFA) to provide evidence of the engagement scale and school invitational barriers sub-scale factor structures. We

used M*plus* Version 7, treating all indicators as categorical, and using robust weighted least squares with adjusted mean and variance (WLSMV) estimation (Asparouhov & Muthén, 2006). We used full information maximum likelihood to handle missing data, which was no greater than 2% for any variable. We relied on Stata Version 12 for reliability analyses and descriptive statistics. We adjusted all correlations for attenuation due to measurement error.

Results

Study 1

The primary goals with Study One (n = 385) were to identify a well-fitting, theoretically grounded factor structure for our engagement scale, to discover whether our barriers items would indeed function as a school invitational barriers sub-scale and non-school barriers composite, and to determine whether our items appeared to function as we intended.

Family–School Engagement Scale

We began by examining the fit of the six-item, single-factor model with a focus on determining whether to preserve the two items we had flagged for removal in earlier phases of development. Model fit was relatively poor. We reject the null hypothesis that there is no significant difference between our model and one perfectly replicating the data (χ^2 = 80.29, df = 9, p < .05), and the RMSEA was well above Kline's (2011) suggested .08 cutoff (*RMSEA* = .14 [*90% CI* = .12, .17]; *CFI* = .97). Four modification indices were greater than Kline's recommended cutoff of 10, and three correlation residuals were higher than Kline's .10 threshold, all pointing to either the fundraising or visiting items we previously identified as potentially problematic. Since we did not believe either item captured critical variation not captured by other items, we removed these two questions.

For the single-factor, four-item engagement model, we reject the null hypothesis that there is no difference in the population between our model and one exactly replicating the data (χ^2 = 7.90, df = 2, p < .05). Although it is slightly higher than .08 (*CFI* = 1.00; *RMSEA* = .09 [*90% CI* = .03, .16]), the RMSEA tends to have a positive bias in models with low degrees of freedom, especially with small samples (Kenny, Kaniskan, & McCoach, 2014). We determine the fit is adequate in light of other indicators. The CFI was high, no modification indices were higher than 10, and no correlation residuals had absolute values greater than .10, suggesting the degree of misfit is not troublesome. We report standardized factor loadings (ranging from .60 to .89) in Table 5 along with item means (ranging from 2.40 to 2.93), standard deviations (from 1.09

to 1.34), and inter-item correlations (from .35 to .67). Respondents used the full range of answer choices for each item. The means and the magnitude of the standard deviations suggest that the items are capturing ample variation between respondents. Total scores had strong internal consistency (α = .81).[2] Overall, this evidence is consistent with the idea that the items function as relatively strong indicators of engagement.

School Invitational Barriers Sub-Scale

The seven barriers items related to school-based welcoming had inter-item correlations ranging from .45 to .66, with an average of .55 (see Table 6). Based on these findings and Hoover-Dempsey's framework, we examined the fit of these items as a single-factor sub-scale. Although we reject the null hypothesis of exact model fit (χ^2 = 48.38, *df* = 14, $p < .001$), we conclude that the degree of misfit is not worrisome (*CFI* = .99; *RMSEA* = .08 [*90% CI* = .06, .11]). The upper bound of the RMSEA 90% confidence interval extends slightly higher than .10; however, residual correlations and modification indices are all within Kline's recommended ranges. As we show in Table 7, standardized factor loadings ranged from .77 to .91, and total scores had strong internal consistency (α = .89). Respondents utilized the full range of response options for each item.

Non-School Barriers Composite

As anticipated, our barriers items did not appear to function as a single unified scale. As we report in Table 6, the six barriers items unrelated to school-based welcoming had relatively low inter-item correlations with each other (ranging from .09 to .46 with an average of r = .29) as well as with the invitational barriers items (ranging from .06 to .48). We could not identify theoretically grounded groupings to suggest these items should form subscales. These six items ultimately made up a composite of non-school barriers items. Table 6 reports means (ranging from 1.21 to 2.80) and standard deviations (ranging from 1.23 to 2.77). Respondents utilized all response options for every item.

Study 2

Because we had eliminated items from our engagement scale based on model fit and did not have strong prior hypotheses about the structure of the barriers items, we replicated the results with a second sample (n = 251). Additionally, we sought to gather evidence of convergent and discriminant validity of inferences.

Table 5. Means, Standard Deviations, Interitem Correlations, Parameter Estimates and Correlations Residuals for Engagement Scale

	Study 1 (n = 385)				Study 2 (n = 266)				Study 3 (n = 589)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
MEET	2.71	1.09	1	5	2.71	1.09	1	5	2.95	1.34	1	6
GROUP	2.48	1.23	1	5	2.47	1.18	1	5	2.35	1.26	1	5
PARENTS	2.93	1.34	1	5	3.02	1.22	1	5	3.30	1.64	1	6
HELPED	2.40	1.31	1	5	2.55	1.26	1	5	2.96	1.63	1	6
Interitem Correlations												
	Study 1				Study 2				Study 3			
	MEET	GROUP	PARENTS		MEET	GROUP	PARENTS		MEET	GROUP	PARENTS	
MEET	1				1				1			
GROUP	.44	1			.31	1			.33	1		
PARENTS	.35	.59	1		.27	.35	1		.35	.47	1	
HELPED	.50	.67	.49		.46	.57	.44		.49	.60	.48	
Factor Loadings												
Item	Estimated			SE			p-value			Standardized		
Study	1	2	3	1	2	3	1	2	3	1	2	3
MEET	1.00	1.00	1.00	.00	.00	.00	.00	.00	.00	.60	.55	.60
GROUP	1.48	1.26	1.38	.10	.13	.09	.00	.00	.00	.89	.69	.83
PARENTS	1.16	1.00	.86	.09	.12	.07	.00	.00	.00	.70	.55	.52
HELPED	1.39	1.69	1.30	.09	.19	.08	.00	.00	.00	.83	.93	.78
Correlation Residuals												
	MEET			GROUP			PARENTS			HELPED		
Study	1	2	3	1	2	3	1	2	3	1	2	3
MEET												
GROUP	-.04	-.02	-.03									
PARENTS	-.02	.00	.05	.03	.02	.00						
HELPED	.05	.01	.00	.00	.00	.01	-.03	-.01	-.05			

Table 6. Means, Standard Deviations, and Inter-Item Correlations for Barriers Items with Study One Sample

			Inter-Item Correlations											
			Non-School Barriers Composite						Invitational Barriers Sub-Scale					
	Mean	SD	SCHE-DULE	TRAN-SPORT	CHILD-CARE	SAFE-LY	WANT	MEMO-RIES	UN-SURE	WEL-COME	INFO	CULT-URE	BUSY	TREAT
Non-school Barriers Composite														
SCHEDULE	2.77	1.21	1.00											
TRANSPORT	1.73	1.08	0.30	1.00										
CHILDCARE	1.61	1.03	0.39	0.46	1.00									
SAFELY	1.28	0.70	0.20	0.39	0.38	1.00								
WANT	1.36	0.87	0.09	0.14	0.23	0.40	1.00							
MEMORIES	1.40	0.85	0.21	0.23	0.35	0.34	0.30	1.00						
Invitational Barriers Sub-scale														
UNSURE	1.37	0.83	0.19	0.24	0.38	0.50	0.48	0.46	1.00					
WELCOME	1.37	0.83	0.16	0.17	0.26	0.41	0.36	0.30	0.58	1.00				
INFO	1.51	0.92	0.14	0.06	0.22	0.36	0.38	0.12	0.51	0.66	1.00			
CULTURE	1.20	0.68	0.13	0.23	0.33	0.53	0.48	0.39	0.48	0.50	0.41	1.00		
BUSY	1.55	0.95	0.16	0.22	0.30	0.43	0.35	0.38	0.49	0.66	0.51	0.60	1.00	
TREAT	1.50	1.01	0.08	0.19	0.24	0.43	0.33	0.32	0.45	0.59	0.46	0.51	0.64	1.00
BELONGING	1.53	0.97	0.12	0.15	0.28	0.36	0.34	0.27	0.57	0.59	0.62	0.48	0.55	0.62

Note: Min = 1 and max = 5 for all items.

Table 7. Parameter Estimates for the School Invitational Barriers Model with Samples One and Two

Item		Est.			SE			*p*			Std.	
Study		1	2		1	2		1	2		1	2
UNSURE		1.00	1.00		.00	.00		.00	.00		.77	.74
WELCOME		1.17	1.18		.05	.09		.00	.00		.91	.88
INFO		1.06	1.04		.06	.08		.00	.00		.82	.77
CULTURE		1.11	1.01		.05	.08		.00	.00		.86	.75
BUSY		1.09	1.12		.05	.10		.00	.00		.84	.83
TREAT		1.06	1.13		.05	.08		.00	.00		.82	.84
BELONGING		1.12	1.10		.05	.07		.00	.00		.87	.82
	UNSURE		WELCOME		INFO		CULTURE		BUSY		TREAT	
Study	1	2	1	2	1	2	1	2	1	2	1	2
UNSURE												
WELCOME	.04	.00										
INFO	-.01	.02	.05	.01								
CULTURE	-.01	-.02	-.06	-.01	-.10	.00						
BUSY	-.07	-.04	.02	-.02	-.07	.02	.07	.04				
TREAT	-.04	-.01	-.03	.02	-.06	-.10	.02	-.03	.05	.03		
BELONGING	.03	.04	-.05	-.01	.04	.02	-.01	.01	-.06	-.04	.03	.01

Note. We set the loading of the first indicator to 1.0 to identify the model.

Family–School Engagement Scale

In Study Two, our four-item, single-factor engagement model had adequate fit (χ^2 = .94, *df* = 2, *p* = .63; *CFI* = 1.00; *RMSEA* = .00 [*90% CI* = .00, .10]). There were no problematic modification indices or correlation residuals. Table 5 displays standardized factor loadings (ranging from .55 to .93). Item means ranged from 2.47 to 3.02, standard deviations from 1.09 to 1.26, and inter-item correlations from .27 to .57. Total scores had relatively strong internal consistency (α = .73).

We also found evidence of convergent and discriminant validity of inferences (see Table 4). To do so, we fit a model with six latent factors—engagement, invitational barriers, time and energy, satisfaction, climate, and self-efficacy—each loading onto its indicators. We allowed each latent factor to correlate with the other latent factors, as well as scale scores for the non-school barriers composite. Model fit was acceptable (χ^2 = 1005.54, *df* = 609, *p* < .001; *CFI* = .96; *RMSEA* = .05, *RMSEA 90% CI* = .05, .06).

The correlation between the latent factors representing our engagement scale and our school invitational barriers sub-scale suggested that parents who perceive their school to be more welcoming engage more ($r_{n=251}$ = -.35; *p* < .001). The correlation between engagement and Walker et al.'s (2005) scale was consistent with the idea that parents with more time and energy have higher levels of engagement; however, these scales still appear to measure distinct constructs ($r_{n=251}$ = .55; *p* < .001). Engagement was only weakly correlated with parent satisfaction with the school ($r_{n=251}$ = .33; *p* < .001) and perceptions of school climate ($r_{n=251}$ = .39; *p* < .001). Bivariate scatterplots of scores on our engagement scale with both the satisfaction and climate scale scores show relatively few parents who are either dissatisfied with their child's school or perceive their child's school to have a poor climate and who are also highly engaged. In contrast, there is a greater concentration of parents who are satisfied with the school or perceive a positive climate but do not score highly on our engagement measure. Additionally, engagement was weakly correlated with parent self-efficacy ($r_{n=251}$ = .25; *p* < .001), consistent with the notion that parents who are more satisfied with the school and more self-efficacious are somewhat more likely to engage, although these scales still represent different constructs.

School Invitational Barriers Sub-Scale

The fit of the seven-item, single-factor school invitational barriers model was better with the Study Two than the Study One sample. We fail to reject the null hypothesis of no difference between ours and a model exactly replicating the data (χ^2 = 11.79, *df* = 14, *p* = .62). The other fit statistics fell within Kline's suggested ranges (*CFI* = 1.00; *RMSEA* = .00 [*90% CI* = .00, .06]). None of the

correlation residuals were greater than .10, and no modification indices were greater than 10. Standardized factor loadings ranged from .74 to .88, and total scores had strong internal consistency (α = .87). Table 6 shows that invitational barrier item means ranged from 1.22 to 1.70, standard deviations from .67 to 1.04, and inter-item correlations from .35 to .65.

The bivariate correlations between our invitational barriers sub-scale and preexisting scales provided evidence of convergent and discriminant validity of inferences (see Table 4). The correlation between the latent factors for engagement and invitational barriers was consistent with the premise that parents in schools perceived as less inviting engage less but that much of the variation in engagement is explained by other factors ($r_{n=251}$ = -.35; p < .001). Based on a scatterplot of the relationship between school invitational barriers and engagement, many parents in our sample at welcoming schools failed to engage, but few parents were highly engaged at unwelcoming schools. Furthermore, the correlation between the Time and Energy scale and our invitational barriers sub-scale was consistent with the idea that parents who face fewer barriers make more time to engage, but again these scales still appear to measure different constructs ($r_{n=251}$ = -.26; p < .001). Our sub-scale had larger negative correlations with measures of school satisfaction ($r_{n=251}$ = -.69; p < .001) and climate ($r_{n=251}$ = -.60; p < .001), which we expected given all three scales measure perceptions of the school. Finally, our findings for the self-efficacy scale provided some evidence of divergent validity, suggesting that parents who perceive school-based barriers are less confident, but that one scale measures a school-based construct and the other confidence to support learning in and out of school ($r_{n=251}$ = -.40; p < .001).

Non-School Barriers Composite

Table 6 reports that the composite of six non-school barriers item means ranged from 1.28 to 2.85, standard deviations from .67 to 1.18, and inter-item correlations from .02 to .38. Respondents gave the full range of answer choices to each item. To examine bivariate correlations between our barriers composite and preexisting scales, we calculated a composite scale score for each parent by averaging each response and weighting each indicator equally (M = 1.70; sd = .53; range = 1–4).

After fitting our model to test for convergent and discriminant validity, we found that the correlation between the latent factor for our engagement scale and the non-school barriers composite suggested that parents who perceive more and larger barriers engage less with their children's schools, but the correlation was not large ($r_{n=251}$ = -.26; p < .001). Interestingly, a bivariate scatterplot shows quite a bit of variation in levels of engagement among parents with few

non-school barriers; however, there are virtually no parents in our sample who encounter many out-of-school barriers and still engage at a high level.

The correlation between our barriers composite and the Time and Energy scale was in the expected direction ($r_{n=251}$ = -.38; p > .001). Parents with fewer perceived barriers to engagement also perceive they have more time and energy for involvement. As expected, the barriers composite was not correlated with either the school satisfaction ($r_{n=251}$ = -.05; p > .05) or climate ($r_{n=251}$ = .04; p > .05) scale, suggesting our composite assesses non-school barriers. Finally, parents with higher self-efficacy tended to perceive fewer barriers ($r_{n=251}$ = -.31; p < .001).

Study 3

We conducted our final study to replicate results for the engagement scale with a slightly larger sample (n = 507) and to examine evidence of convergent validity. Although we reject the null hypothesis of no difference in fit between our model and one perfectly replicating the data (χ^2 = 8.43, df = 2, p < .05), we do so narrowly (p = .01) and expect this given the χ^2 statistic is sensitive to sample size. Other fit statistics are within suggested cutoffs. Although the upper bound of the RMSEA 90% confidence interval is higher than .10 (*CFI* = 1.00; *RMSEA* = .08 [*90% CI* = .03, .14]), no correlation residuals were greater than .10, and no modification indices were above 10. We determine the RMSEA confidence interval does not signal a troubling degree of misfit based on the full set of indicators. We report standardized factor loadings (ranging from .52 to .83), item means (ranging from 2.35 to 3.30), and standard deviations (from 1.26 to 1.64) in Table 5. Again, our scale had relatively high internal consistency (α = .77).

To gather evidence of convergent and discriminant validity of inferences, we fit a CFA model with three latent factors—engagement, self-efficacy, and school involvement—allowing each latent factor to covary with the others to examine bivariate correlations between our engagement scale and the two preexisting scales we administered to participants. We reject the null hypothesis of exact model fit (χ^2 = 647.79, df = 101, p < .001). The CFI was .94, and the RMSEA was .10 (*RMSEA 90% CI* = .09, .11). As expected, our scale was strongly positively correlated with Walker et al.'s (2005) General School Involvement scale ($r_{n=589}$ = .92; p < .001). This was the highest correlation between our engagement scale and any of the additional scales we administered. Since Walker et al.'s scale was designed to measure a construct most similar to our own, this provides further evidence of convergent validity of inferences. As with the Study Two sample and consistent with our initial hypothesis, the parental self-efficacy and engagement scales were only weakly positively correlated ($r_{n=589}$ = .33; p < .001).

Discussion

Despite the importance of family involvement with children's schools, assessing family–school engagement is deceptively challenging. To fully capture this construct and learn how to promote engagement, it is important to measure not only parent perceptions of their engagement, but also the barriers parents believe prevent greater involvement. However, measuring these concepts is complicated by the fact that it is not obvious whether a set of barriers items should function as a traditional survey scale, and parental time limitations compound the challenges.

We addressed these challenges through a process that synthesized academic theory and empirical research with our own inductive findings based on interviews and surveys. Our process revealed that to effectively measure a complex construct like family engagement, researchers sometimes require a combination of scales, sub-scales, and composites. We illustrate that a composite variable can be useful for measuring a concept like barriers to engagement, for which the indicators measure facets of the same construct but do not function as a traditional scale.

Our results further suggest that educators and researchers alike can now use our items to measure parent perceptions of their engagement and the barriers parents believe they face to becoming more involved. Combining feedback from scholars and parents improved the likelihood our measures capture the key components of our constructs and are interpretable for respondents. We then administered our tools to large samples of parents to ensure adequate reliability and item functioning. For our engagement scale and school invitational barriers sub-scale, we identified a theoretically grounded factor structure that adequately fit the data across multiple samples. All three tools capture ample variation between respondents. This was true despite some differences between the three samples in terms of their demographic makeup (e.g., Study One and Two had a larger share of fathers than Study Three). Although factor loadings for individual items in our school-based engagement scale varied somewhat from sample to sample, the relative rankings of the standardized loading sizes were quite similar across samples.

Despite these findings, it is important to keep in mind that establishing the validity of a measure is an ongoing process (AERA, APA, & NCME, 2014). The *SurveyMonkey* samples provided an efficient way to test our measures with relatively large groups of parents, diverse in terms of geography and children's school levels and types. However, these samples came with two noteworthy limitations. First, our samples, on average, had somewhat higher income and education levels and were less likely to speak a language other than English at

home relative to the U.S. average. As a result, we are careful not to generalize our findings to the U.S. population as a whole. Before using the tools with samples that are demographically different than the *SurveyMonkey* panel, we recommend survey administrators conduct an open-ended survey to identify locally relevant barriers. Replication of our findings with a nationally representative sample would also be valuable. Second, these samples do not allow us to group parents by school. A natural next step would be to collect data allowing for an examination of both between- and within-school variation.

The survey tools we developed are parsimonious. This should encourage schools to deploy them and parents to complete them. These tools could provide a high-level view of parental perceptions of their engagement across schools with different grade configurations (e.g., elementary, middle, high school) and types (e.g., traditional public, private, charter). These tools may be less useful for researchers interested in a more granular exploration of the various facets of family–school engagement. These researchers should pair our tools with others designed to assess home-based involvement and home–school communication, especially given previous studies (e.g., Kraft & Dougherty, 2013; Kraft & Rogers, 2015) have shown these forms of involvement to be particularly predictive of student outcomes.

This type of examination can help researchers address critical questions for the field of family–school relations. Our barriers tools should help researchers build out the knowledge base around what practices best encourage family–school engagement, although our data do not suggest that barrier removal in itself will ensure all families are engaged, since many parents reporting few barriers also reported low levels of engagement. Therefore, it will be important for schools to use the engagement and barriers tools together to identify groups of parents that are less engaged and in need of targeted outreach efforts, to design strategies tailored to addressing the barriers faced by their communities, and to track their progress.

Students whose families are more engaged with their learning and schools where parents are more involved tend to do better academically (Fan & Chen, 2001; Hill & Tyson, 2009; Jeynes, 2003, 2005, 2007). These findings have led to significant research and policy interest and investments in the promotion of family engagement, based on the premise that improved home–school connections should boost student achievement. Accurate measurement of these constructs is a crucial step toward strengthening the knowledge base about the relationship between parental engagement and student achievement and about how to most effectively promote both.

Endnotes

[1]All of the tools are freely available at https://www.surveymonkey.com/mp/harvard-education-surveys/ and at https://www.panoramaed.com/resources or in 10 additional languages at http://go.panoramaed.com/download/family-survey-translations

[2]Although our models treat these indicators as ordinal, we realize that school leaders and researchers may prefer to treat them as numeric. Therefore, we present item means, standard deviations, and Cronbach's alpha, even though these are not defined for ordinal items.

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