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Assessing the Quality of Parent-Teacher Relationships for Students with ADHD

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Abstract

Family involvement in education, including quality of family-school communication, has been demonstrated repeatedly to have a substantial effect on child development and success in school; however, measures of this construct are limited. The purpose this study was to examine the factor structure and concurrent validity of the Quality of the Parent-Teacher Relationship, a subscale of the Parent-Teacher Involvement Questionnaire (PTIQ) in a sample of children with ADHD. Participants were 260 parents and teachers of children diagnosed with ADHD in grades K to 6. Results provided support for a two-factor model, consisting of separate factors for parents and teachers, and correlational findings provided support for concurrent validity. This measure appears to have utility in assessing parent-teacher relationships and evaluating the effectiveness of family-school interventions.

Parental involvement in education is known to have a substantial effect on the development of children. Studies have demonstrated that parental involvement in education contributes to children's academic achievement, as well as their socio-emotional maturity (Christenson & Sheridan, 2001). More specifically, parental involvement in education has been shown to be positively correlated with children's academic motivation and achievement, attitudes toward school work, self-efficacy, behavioral functioning, and social competence (El Nokali, Bachman, & Votruba-Drzal, 2010; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004;

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Reynolds, Weissberg, & Kaspro, 1992). Additionally, parent involvement is negatively associated with conduct problems in preschool aged children (Fantuzzo, McWayne, Perry, & Childs, 2004) and adolescents (Hill et al., 2004), and school absences in elementary school students (Reynolds et al., 1992).

Research has also shown that parental involvement in education occurs in many different forms, including home-based involvement, school-based involvement, or home-school collaboration (Fantuzzo, Tighe, & Childs, 2000; Manz, Fantuzzo, & Power, 2004). Home-based involvement (i.e., parental ability to support educational development at home and in the community) encompasses educational support initiated by the parent that takes place outside of the classroom, such as helping with homework, playing educational computer games, or taking trips to museums or libraries. School-based involvement includes activities that take place within the school, such as a parent volunteering as a teaching assistant in the classroom or an aide on a field trip. Finally, home-school collaboration refers to relational activities between the family and school, such as parent-teacher conferences, or written communication between teacher and caregiver.

Strong collaboration between families and schools can have a beneficial effect on children in both the school and the home settings (Sheridan et al., 2012). A collaborative family-school relationship provides the foundation for parents and teachers to engage in collective efforts to enhance children's competencies and solve their problems at school and at home (Sheridan & Kratochwill, 2008). For children with Attention-Deficit/Hyperactivity Disorder (ADHD), however, family-school relationships often are strained due to increased challenges related to working with the child in the classroom (Mautone, Carson, & Power, in press). In these cases, it often is necessary for a third party (e.g., school psychologist) to get involved to encourage the development of a collaborative partnership in order to most effectively support the child's educational growth (Sheridan & Kratochwill, 2008). In the context of this type of relationship-building consultation, it is advisable that school psychologists assess and monitor the quality of the family-school relationship over time; however, few empirically-supported measures are available for this purpose.

The Family Involvement Questionnaire (FIQ; Fantuzzo et al., 2000), is a measure designed to assess the extent of family involvement in education. Originally designed for children in preschool through first grade, it was later adapted for use across grades 1 to 5 (Manz et al., 2004). The FIQ is a parent-report measure that examines the *frequency* of family involvement in educational activities. This measure, however, does not provide information from the teacher's point of view nor does it assess the *quality* of the home-school relationship. In addition, the FIQ is a relatively long scale that takes parents about 10–20 minutes to complete.

The Family-School Questionnaire (FSQ; Midgett, 2000) is a measure designed to assess mothers' and fathers' perceptions of their involvement in their child's learning. Although this measure has the advantage of assessing both parents' views of educational involvement, it does not include a version to assess teachers' perceptions.

The Teacher-Parent Survey (T-PS; Izzo, Weissberg, Kasprow, & Fendrich, 1999; A. J. Reynolds et al., 1992) is unique in that it assesses parental involvement from the point of view of teachers. However, it does not provide an assessment of parent perceptions and only two items on the scale are directed at measuring the quality of the parent-teacher relationship.

The Parent-Teacher Relationship Scale-II (Vickers & Minke, 1995) examines quality of the home-school relationship, including aspects of mutual respect, dependability, shared expectations, and communication with each other. This measure has separate versions for completion by parents and teachers. Research supports the construct validity of the measure (Vickers & Minke) and utility for theory building and assessment of outcomes (Sheridan et al., 2012). A potential shortcoming is that the measure has 35-items, which can make it challenging to use repeatedly for the purpose of quality improvement or progress monitoring.

A measure that has demonstrated considerable promise is the Parent-Teacher Involvement Questionnaire (PTIQ; Kohl, Lengua, McMahon, & Conduct Problems Prevention Research Group, 2000), a scale initially developed for the Fast Track study to broadly assess parent involvement in education. The multi-informant PTIQ is comprised of 37 items (21 parent-reported items; 16 teacher-reported items) loading on six factors: Parent-Teacher Contact, Parent Involvement at School, Quality of the Parent-Teacher Relationship, Teacher's Perception of Parent, Parent Involvement at Home, and Parent Endorsement of School. Internal consistency ranges from .67 (Parent Involvement at Home) to .93 (Teacher's Perception of Parent). For purposes of evaluating the quality of the home-school relationship from the perspective of both parents and teachers, the 11-item Quality of the Parent-Teacher Relationship factor is useful. When this factor is administered separately from the entire PTIQ as a method for assessing relationship quality, it can be completed by each informant in about a minute, rendering it efficient to use for screening and ongoing progress monitoring. However, to date, research on the Quality of the Parent-Teacher Relationship factor is limited, although studies have shown that this scale has strong internal consistency (authors blinded), is related to parental perceptions of teacher support with homework (authors blinded), and is sensitive to change over the course of a family-school intervention for children with ADHD (authors blinded). As such, the purpose of this study was to examine the construct validity of the Quality of Parent-Teacher Relationship factor of the PTIQ, with the aim of determining its potential for assessing home-school collaboration. Specifically, we sought to examine whether a one-factor model combining parent and teacher reports (as originally suggested by the authors of the measure) was superior to a two-factor model (separate parent-report and teacher-report factors) for assessing the quality of the home-school relationship. Also, we examined the relationship of this factor to other measures related to parent involvement in education, including measures of home-based involvement, to determine concurrent validity. A unique aspect of the study is that it was conducted with the parents and teachers of children diagnosed with ADHD.

Method

Participants

Participants in this study included the parents and teachers of 260 children enrolled in one of two larger studies (authors blinded) examining the effectiveness of a family-school intervention for children with ADHD in kindergarten and grade 1 ($n = 61$) and grades 2 to 6 ($n = 199$), respectively. These studies were conducted through the ADHD center of a pediatric hospital located in the Northeast of the United States. Participants were recruited via referral to the center by parents or school/primary care providers. Children met criteria for ADHD based upon parent-report on the Schedule for Affective Disorders and Schizophrenia for School Age Children – DSM IV (K-SADS-P IVR; Ambrosini, 2000). Children in grades K or 1 met criteria for any subtype, and those in grades 2 through 6 met criteria for ADHD, Combined Type (ADHD/COM) or ADHD, Inattentive Type (ADHD/I). Children were required to have elevated ratings on the Inattention or Hyperactivity-Impulsivity factor of the ADHD Rating Scale-IV School Version (ADHD RS-IV; DuPaul, Power, Anastopoulos, & Reid, 1998), and/or the Attention Problems or Hyperactivity subscales of the Behavior Assessment System for Children, Second Edition – Teacher Rating Scales (BASC-2; Reynolds & Kamphaus, 2004). The cut point for children in grades K or 1 was the 90th percentile, and the cut point for those in grade 2 through 6 was the 85th percentile. Children in grades 2 to 6 also had to score at or above 0.75 of a standard deviation above the mean on the parent-rated Homework Problem Checklist (Anesko, Schoiock, Ramirez, & Levine, 1987). Children with learning disabilities, disruptive behavior disorders, and mild to moderate internalizing disorders that did not require separate treatment were included. In addition, only children scoring at or above an estimated IQ of 75 on the two-subtest version of the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999) were included. Children meeting criteria for a psychotic disorder, bipolar disorder, chronic tic disorder or Tourette's disorder were not included, nor were those with obsessive compulsive disorder, anxiety disorder, or mood disorder serious enough to warrant separate treatment. In addition, children were excluded if they had a history of major neurological illness, or a history of suicidal or homicidal behavior or ideation. Data were collected at four points across the intervention. Only data collected at baseline were analyzed in this study.

Children ranged from 4 to 12 years of age ($M = 7.97$, $SD = 1.72$) and were enrolled in grades K through 6 ($M = 2.81$, $SD = 1.64$). Boys comprised 69.2% of the sample. The racial composition of the sample was as follows: 71.1% White, 22.0% Black/African American, 3.2% multi-racial, 2.3% Pacific Islander, and 1.4% Asian. With regard to ethnicity, 8.5% of the sample was Hispanic. These demographics are consistent with the racial/ethnic composition of the region of the country where the study was conducted. With regard to ADHD subtype, 6.5% of children met criteria for ADHD, Hyperactive-Impulsive Type, 42.7% had ADHD, Inattentive Type, and 50.8% had ADHD, Combined Type. The majority of the sample (97.3%) belonged to the three highest categories of the Hollingshead (1975) scale, indicating that the sample was largely comprised of families with middle and upper middle income.

Measures

Parent-Teacher Involvement Questionnaire (PTIQ)—The PTIQ (Kohl et al., 2000) is a 47-item scale developed for the Fast Track study to measure parental involvement in education¹. A factor analysis of the PTIQ revealed a Quality of the Parent-Teacher Relationship factor, consisting of 6 parent-reported items as well as 5 teacher-reported items; the results suggested parent- and teacher-rated items should be combined on the same subscale. Higher scores on this factor reflect a stronger, higher quality relationship (Kohl et al., 2000). Items rated by parents were rated on a 5-point, Likert scale with 0 = not at all, 1 = a little, 2 = some, 3 = a lot, and 4 = a great deal, and items rated by teachers used a 5-point scale. For four teacher-rated items, 0 = strongly disagree, 1 = disagree, 2 = not sure, 3 = agree, and 4 = strongly agree, but for one item the scale was the same as the parent-rated items. The parents and teachers of all 260 children in the study were administered the relationship quality factor of the PTIQ. Because the larger studies were focused on assessing the quality of interactions between parents and teachers and attempted to minimize respondent burden by limiting the number of measures administered, only the Quality of the Parent-Teacher Relationship factor of the PTIQ was used.

Given the relationship between dimensions of family involvement in educational activities (i.e., home-based, home-school collaboration; Fantuzzo et al., 2000; Manz et al., 2004), measures of family involvement at home (i.e., Family Involvement Questionnaire and Parent As Educator scale) were selected to examine validity. Because of the natural home-school connection inherent in student homework activities (Olympia et al., 1994), measures of homework performance were also selected. Further, the Student-Teacher Relationship Scale was included because it was expected that a strong parent-teacher relationship likely would improve teacher understanding of student needs (Sheridan and Christenson, 2001) and contribute to a stronger student-teacher relationship, especially among students with attention and learning problems.

Family Involvement Questionnaire – Home-based Involvement Factor—The 13-item Family Involvement Questionnaire (FIQ) Home-based Involvement factor was used to assess caregiver use of educational activities and parenting practices to support their child's learning at home (Fantuzzo et al., 2000). Parents self-report the frequency of their behavior using a 4-point scale (ranging from rarely to always). In the current sample, the Cronbach's alpha coefficient for this factor was .85. The FIQ was administered to the parents of the 61 children in kindergarten and first grade.

Parent as Educator Scale (PES)—The PES is a 10-item scale used to assess the extent to which parents/caregivers believe themselves to be competent in assisting with their children's education. Parents respond to each item on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. The alpha coefficient for this scale has been found to be greater than .85 (Hoover-Dempsey, Bassler, & Brissie, 1992); in the present study alpha was .84. Parental self-efficacy is likely to influence the extent to which parents are involved

¹The full version of the PTIQ is in the public domain and available on the internet. The Quality of the Parent-teacher relationship factor (parent and teacher versions) is available by contacting the first author.

in their children's education (Kim, Sheridan, Kwon, & Koziol, 2013), including communicating with teachers. Therefore, the PES was expected to be associated with the quality of the parent-teacher relationship. The PES was administered to all parents participating in the study.

Homework Problem Checklist (HPC)—The HPC (Anesko et al., 1987) is a measure used to assess parents' perceptions of their child's homework performance. Each item is rated on a 4-point scale with 0 = never and 3 = very often, indicating how frequently the child manifests common homework problems. The HPC has two factors, Inattention/Avoidance (e.g., child procrastinates or is easily distracted) and Poor Productivity and Nonadherence With Rules (e.g., child does not know assignments and child does not return assignments to class; Power, Werba, Watkins, Angelucci, & Eiraldi, 2006). Only the Poor Productivity and Nonadherence With Rules factor was included in this study, because this subscale assesses a child's organizational skills, which are influenced by school and home factors as well as home-school communication (Langberg et al., 2010; Power et al., 2006). Coefficient alpha for this factor in the present sample was .78. The HPC was administered to the parents of the 199 children in grades 2 to 6.

Homework Performance Questionnaire (HPQ)—The HPQ is a measure intended to assess homework performance among children in elementary and middle school. This scale consists of a 36-item parent-rated scale (HPQ-P) and a 22-item teacher-rated scale (HPQ-T), which assesses the frequency of homework-related behaviors. Items on the parent version are rated by informants on a 4-point scale, ranging from rarely or never to always or almost always. Items on the teacher version are rated a 7-point scale, ranging from 0–10% of the time to 91–100% of the time. Factor analyses of the HPQ-P revealed three factors: Student Task Orientation/Efficiency (e.g., child needs reminders to do homework), Student Competence (e.g., child has the ability to do math homework), and Teacher Support of Homework (e.g., teachers communicate effectively with parents about homework; Power, Dombrowski, Watkins, Mautone, & Eagle, 2007). In the present sample, alphas for the three factors of the HPQ-P were .78, .69, and .68, respectively. In a previous study, the Quality of the Parent-Teacher Relationship factor of the PTIQ demonstrated a significant correlation (.37 and .58 in separate subsamples) with the Teacher Support factor of the HPQ-P, reflecting that parent perceptions of teacher support with homework are positively and moderately associated with the quality of home-school relationships (Power et al., 2009). A factor analysis of the HPQ-T revealed two factors: Student Responsibility (e.g., student finishes homework regardless of quality) and Student Competence (e.g., amount of homework the child can complete independently; Power et al., 2007). Coefficient alphas for these factors in the present sample were .90 and .86, respectively. The HPQ-P and HPQ-T were administered to the parents and teachers of the 199 children in grades 2 to 6.

Student-Teacher Relationship Scale – Short Form (STRS)—The STRS (Pianta, 2002) is a 15-item scale intended to evaluate the teacher's perception of the quality of the student teacher relationship. The measure consists of two factors; closeness (i.e. warmth of interactions) and conflict (i.e. discord in the relationship); however, the total score was used in the present study. All items are rated on a 5-point scale indicating the extent to which

each statement applies to the relationship between the teacher and a particular student (1 = definitely does not apply, 5 = definitely applies). In the present sample, the coefficient alpha was .82. The STRS was administered to the teachers of the 61 children in kindergarten and first grade.

Data Analyses

To evaluate the construct validity of the Quality of the Parent-Teacher Relationship factor of the PTIQ, several analyses were conducted. First, corrected item-total correlations were computed. It was determined a priori that items would be considered questionable if the corrected item-total correlation for the item was $< .40$ (Power et al., 2009), and removal of the item resulted in an increase in Cronbach's alpha. Second, confirmatory factor analyses (CFA) using the maximum likelihood estimation method were conducted with AMOS version 20 to determine whether the items of the PTIQ could be accounted for by a unitary latent construct, as suggested by the developers of the measure, or if a two-factor model, corresponding to parent-reported versus teacher-reported items, provided a better fit. Given the standards for interpreting the results of CFA developed by (Marsh, Liem, Martin, Morin, & Nagengast, 2011) and (Hu & Bentler, 1999), models with comparative fit indices (CFI) $.90$ and root mean square error of approximation (RMSEA) $.08$ were deemed acceptable, and models with CFI $.95$ and RMSEA $.06$ were considered good. Finally, Pearson's correlations between this factor of the PTIQ and measures of factors related to family involvement in education, such as frequency of involvement in home-based activities, parental self-efficacy in supporting their children's education, homework performance, and quality of the student-teacher relationship, were examined.

Results

Prior to completing data analyses, the dataset was examined for missing data, which were relatively low. Measures were included in the analyses if the respondent answered at least 75% of items on the measure. For the PTIQ, 4 cases were missing 1 item, and 1 case was missing 2 items. In these cases, a regression-based method of imputation was used to address missing data. A total of 20 cases were excluded from the analyses based on missing data on the PTIQ; 16 cases were missing all 11 items, 3 were missing 6 items, and 1 was missing 5 items, resulting in a sample size of 240 for the CFA. For all other measures, mean item score was calculated and used in analyses if the respondent answered at least 75% of items on the measure. See Table 1 for means and standard deviations of all measures included in the study.

Corrected item-total correlations for 10 of the 11 items on the Quality of Parent-Teacher Relationship factor of the PTIQ were relatively high (range = $.48 - .71$). However, the corrected item-total correlation for Item 5 on the teacher version of the scale ("Since the beginning of the school year, how often has the parent made suggestions to you about this child?") was relatively low ($r = .24$). Further, deletion of this item resulted in an increase of the alpha coefficient from $.87$ to $.88$, suggesting that the item might be problematic.

Using CFA, the single-factor model originally presented by the developers of the measure, including both parent-reported and teacher-reported items, was tested; this analysis produced

a CFI of 0.665, a RMSEA of 0.215, and a significant chi square value ($\chi^2 = 530.458$, $p < .0001$). Because of the low corrected item-total correlation for Item 5 on the teacher-rated scale, the one-factor model was re-examined with this item deleted, resulting in no improvement in model fit (CFI=.662, RMSEA=.214, $\chi^2=535.564$, $p < .0001$).

Next, a two-factor model that examined parent-reported and teacher-reported items as separate, but correlated, latent constructs was tested (see Figure 1). Initially, the two-factor model was examined with all 11 items included; subsequently the model was tested with teacher Item #5 removed. The fit indices for the 11-item model (CFI = 0.960; RMSEA = 0.075) were slightly more favorable than those for the 10-item model, which excluded the potentially problematic teacher item (CFI = 0.943; RMSEA = 0.089). Further, the chi-square value for the 11-item model was more favorable (i.e., lower) than the value for the 10-item model, indicating a significantly better fitting model ($\chi^2(1,240) = 26.150$, $p < .0001$). Because model fit was acceptable (RMSEA < .08) to good (CFI > .95) when applying the two-factor model with 11 items, and because the 11-item, two-factor model produced better fit than the 10-item model, selection of the two-factor, 11-item model as the best fitting model was justified. Alpha coefficients for the separate parent and teacher factors were .90 and .81, respectively. Corrected item-total correlations for the 6 items of the parent-reported factor were relatively high (range = .58 – .80), as were 4 of the 5 items of the teacher-reported factor (range = .66 – .71). Consistent with previous findings, teacher Item #5 was somewhat lower ($r = .35$). The correlation between the two factors was .35 ($p < .01$).

Correlations between the parent and teacher versions of the PTIQ factor and measures of variables related to family involvement in education are reported in Table 2. Significant correlations ($p < .01$) were found between the parent version of the PTIQ and the HPQ-P Teacher Support factor (moderate correlation) as well as the PES (low; see Table 2). Correlations between the parent version of the PTIQ and all other measures were not significant. Low-to-moderate, significant correlations were found between the teacher version of the PTIQ and the HPQ-P Teacher Support factor, the HPQ-T Student Responsibility factor, the HPQ-T Student Competence factor ($p < .01$), and the STRS ($p < .05$; see Table 2).

Discussion

Research related to child development and education indicates that family involvement in education, including strong family-school partnerships, is important for supporting healthy development and positive educational and social outcomes (El Nokali et al., 2010; McWayne et al., 2004); however, the development and evaluation of interventions to support positive family-school collaboration has been limited by the availability of psychometrically sound, multi-informant, and efficient measures of the family-school relationship. This study sought to evaluate the construct validity of the Quality of the Parent-Teacher Relationship factor of the PTIQ, a brief measure developed in the FAST Track study that includes parent- and teacher-reported items. Results of CFAs provided support for a two-factor model, consisting of separate factors for parents and teachers, rather than a unitary factor as initially suggested (Kohl et al., 2000). As is the case with measures that assess a clinical construct (e.g., anxiety, inattention) using both parent and teacher report

forms, such as the Child Behavior Checklist (Achenbach & Rescorla, 2001) and the Behavior Assessment System for Children – Second Edition (Reynolds & Kamphaus, 2004), the correlation between parent and teacher reports of the proposed construct in this study (Quality of the Parent-Teacher Relationship) was significant but not high. Given that the shared variance between parent and teacher reports of the Quality of the Parent-Teacher Relationship is only 12%, the findings indicate that each respondent adds a substantial amount of unique information to the assessment of the home-school relationship. Obtaining the perspectives of both respondents likely would be useful to school psychologists and other clinicians working to support the development of collaborative family-school relationships.

Correlational findings investigating the association between the PTIQ and measures of variables related to family involvement in education provide support for concurrent validity. Of note, the parent version had a strong (moderate) correlation with parent ratings of teacher support of student homework on the HPQ-P. This finding suggests that quality of the parent-teacher relationship is strongly associated with the effectiveness of home-school communications related to homework, a naturally occurring avenue for home-school interaction. In contrast, parent ratings were not associated with student homework performance as assessed by both parent and teacher report, highlighting that many factors in addition to the quality of the parent-teacher relationship have an effect on students' actual homework performance (Langberg et al., 2010; Power et al., 2006). These other factors may include child attention and organizational skills, parenting skills, and teacher organization in assigning homework and providing consequences for homework completion. Further, parent ratings of the Quality of Parent-Teacher Relationship demonstrated only a low correlation with factors pertaining to home-based parent involvement in education, as assessed by the PES and FIQ, suggesting the relative independence of these two dimensions of family involvement (i.e., home-based parental involvement versus quality of the family-school relationship).

With regard to teacher ratings of the Quality of the Parent-Teacher Relationship, there was a significant, albeit relatively low, correlation with parent ratings of teacher support with homework. It was noteworthy that there was a significant cross-informant correlation between measures of these two variables; not surprisingly, as noted above, the within-informant relationship between measures of these variables for parents was substantially higher. In contrast to the findings for the parent version, teacher ratings of Quality of the Parent-Teacher Relationship were significantly correlated (low to moderate range) with indices of student homework performance, but only when homework was assessed by teacher ratings. These findings suggest that teacher views about student responsibility and competence with homework are associated with their perceptions of the quality of home-school communication. Similar to the findings for parent report, the relationship between teacher ratings on the PTIQ and parent ratings of home-based involvement were low.

Another interesting finding was that teacher ratings of Quality of the Parent-Teacher Relationship were significantly correlated (low to moderate association) with teacher perceptions of the quality of the student-teacher relationship, as assessed by the STRS. This finding suggests a potential pathway through which parents may be able to influence their

child's performance in school: Parent efforts to improve the quality of the home-school relationship may have some influence on the quality of the student-teacher relationship, which has been demonstrated repeatedly to have an impact on student success in school (e.g., Baker, 2006; Hughes, Luo, Kwok, & Loyd, 2008). Partial support for this pathway was recently demonstrated by Sheridan and colleagues (2012) who found that teacher perceptions of the quality of the parent-teacher relationship mediated the effects of conjoint behavioral consultation (CBC), which involves parents and teachers in a problem-solving process, on student adaptive and social skills in school. Additional research is needed to demonstrate whether the mediation model explaining the effect of CBC on school performance follows a path that links changes in the home-school relationship to changes in the student-teacher relationship. The implication for school psychologists is that efforts to improve the quality of the family-school relationship may be a strategy for strengthening the relationship between student and teacher.

Additional research on the PTIQ Quality of the Parent-Teacher Relationship factor is needed. Although the findings of the two-factor CFA indicated that the version including all 11 items had better model fit than the form with teacher item #5 excluded, the regression weight of this item was still substantially lower than that of all other items (i.e., 0.34 as compared to a range of 0.75 to 0.86 for the other items). A possible explanation is that this item is used to rate frequency of communication between parents and teachers (i.e., scale ranged from 0 = not at all to 4 = a great deal), and all other items are used to rate the extent to which the teacher agrees with statements about the parent-teacher relationship (scale ranged from 0 = strongly disagree to 4 = strongly agree). Future research using the PTIQ might include an edited scale with item format and anchor points that are consistent across all items. Another potential concern is that the scaling for the parent version, which ranges from "not at all" to "a great deal," is different from the scaling for the teacher version, which generally ranges from "strongly disagree" to "strongly agree." The difference in scaling between versions may have compromised model fit and suppressed to some extent the correlation between the parent and teacher forms. Once the scale is refined as suggested, additional research will also be needed to evaluate additional psychometric properties of the measure (e.g., test-retest reliability, sensitivity to change).

Although results support the reliability and validity of the PTIQ, several limitations should be noted. In this study, only children who had been diagnosed with ADHD were included in the sample, and students in grades 2 to 6 also had identified homework problems. Families of children with ADHD often struggle to develop collaborative relationships with school staff. It is possible that this sample does not represent the full range of parent-teacher relationships in a general education sample. Also, the sample included only children in kindergarten through grade 6. Given that level of family involvement in education and teacher investment in intervention tend to decrease over time (Hoover-Dempsey, Ice, & Whitaker, 2009; Power et al., 2009), the psychometric properties of the PTIQ should be examined in a sample including older students. Furthermore, almost all of the families included in the sample were from middle to upper middle class backgrounds. As such, results cannot be generalized to the population of families of lower socioeconomic status or under-resourced schools. In addition, the current study did not include other measures specifically designed to evaluate the parent-teacher relationship, in particular the Parent-

Teacher Relationship Scale – II (Vickers & Minke, 1995). The inclusion of these measures in future studies will strengthen the evaluation of the concurrent validity of the PTIQ.

Despite these limitations, the PTIQ Quality of the Parent-Teacher Relationship factor shows considerable promise as a measure of the quality of family-school communication. The findings of this study strongly affirm that a two-factor model is warranted, indicating that separate parent and teacher versions should be used. Changes in item formatting and scaling are recommended, which might improve model fit and correlations with measures of related constructs. Nonetheless, this study provides partial support for the construct validity of the current version of the parent and teacher forms for elementary-aged children with ADHD. As such, the measure in its current form may have clinical utility for evaluating the effectiveness of family-school interventions.

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Figure 1.
PTIQ Two-Factor Model

Note: The regression weights presented above are standardized. All estimates are significant at the $p < .001$ level.

Table 1

Means and standard deviations for the parent and teacher versions of the Quality of Parent-Teacher Relationships factor of the PTIQ (PTIQ-P, PTIQ-T) and measures of factors related to family involvement in education

	M	SD
PTIQ-P ¹	2.93	.763
PTIQ-T ¹	3.09	.594
PES ¹	3.37	.607
FIQ ³	2.12	.475
HPC inattention/avoidance ²	2.07	.550
HPC poor productivity ²	.95	.525
HPQ-P task orientation ²	1.18	.494
HPQ-P competence ²	1.64	.449
HPQ-P teacher support ²	2.28	.421
HPQ-T responsibility ²	2.78	1.03
HPQ-T competence ²	2.85	.905
STRS ³	3.78	.602

Note:

¹
n = 240;

²
n = 181–188;

³
n = 51–52.

PTIQ-P – Parent-Teacher Involvement Questionnaire – Parent (Quality of Parent-Teacher Relationship factor; possible range of scores = 0–4); PTIQ-T – Parent-Teacher Involvement Questionnaire – Teacher (Quality of Parent-Teacher Relationship factor; possible range = 0–4); PES – Parent as Educator Scale (possible range = 1–5); HPQ-P – Homework Performance Questionnaire – Parent (possible range = 0–3); HPC – Homework Problem Checklist (possible range = 0–3); HPQ-T – Homework Performance Questionnaire – Teacher (possible range = 0–3); STRS – Student-Teacher Relationship Scale (possible range = 1–5); FIQ – Family Involvement Questionnaire – Home-based Involvement factor (possible range = 0–3).

Table 2

Correlations between the parent and teacher versions of the Quality of Parent-Teacher Relationships factor of the PTIQ (PTIQ-P, PTIQ-T) and measures of factors related to family involvement in education

	PTIQ-P	PTIQ-T
PTIQ-P ¹	--	
PTIQ-T ¹	.35 **	--
PES ¹	.20 **	.07
FIQ ³	.17	-.22
HPC inattention/avoidance ²	.09	-.01
HPC poor productivity ²	-.03	-.13
HPQ-P task orientation ²	-.12	.04
HPQ-P competence ²	-.02	.07
HPQ-P teacher support ²	.51 **	.27 **
HPQ-T responsibility ²	.01	.33 **
HPQ-T competence ²	.04	.20 **
STRS ³	.21	.32 *

Note:

¹
n = 240;

²
n = 181–188;

³
n = 51–52.

PTIQ-P – Parent-Teacher Involvement Questionnaire – Parent (Quality of Parent-Teacher Relationship factor); PTIQ-T – Parent-Teacher Involvement Questionnaire – Teacher (Quality of Parent-Teacher Relationship factor); PES – Parent as Educator Scale; HPQ-P – Homework Performance Questionnaire – Parent; HPC – Homework Problem Checklist; HPQ-T – Homework Performance Questionnaire – Teacher; STRS – Student-Teacher Relationship Scale; FIQ – Family Involvement Questionnaire – Home-based Involvement factor.

*
p < .05.

**
p < .01.