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# Parent Beliefs and Children's Social-Behavioral Functioning: The Mediating Role of Parent-Teacher Relationships


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Kim, Elizabeth Moorman; Sheridan, Susan M. Dr.; Kwon, Kyongboon; and Koziol, Natalie A., "Parent Beliefs and Children's Social-Behavioral Functioning: The Mediating Role of Parent-Teacher Relationships" (2013). *Faculty Publications from CYFS*. 94.  
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Published in *Journal of School Psychology* 51:2 (April 2013), pp. 175–185; doi: 10.1016/j.jsp.2013.01.003  
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Submitted January 9, 2012; revised January 9, 2013; accepted January 9, 2013.

The research reported here was supported by the U.S. Department of Education, through grant R305F050284 to the University of Nebraska–Lincoln. The opinions expressed are those of the authors and do not represent views of the U.S. Department of Education.

# Parent Beliefs and Children’s Social-Behavioral Functioning: The Mediating Role of Parent-Teacher Relationships

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## Abstract

This research investigated whether parent-teacher relationship quality mediated the relation between parents’ motivational beliefs and children’s adaptive functioning and externalizing behaviors. The sample consisted of kindergarten through third-grade children with behavioral concerns ( $N = 206$ ). Parents reported on their motivational beliefs (i.e., role construction and efficacy), and teachers reported on the quality of their relationships with parents and children’s adaptive functioning (i.e., social and adaptive skills) and externalizing behaviors. Results indicated that parents’ motivational beliefs were related significantly and positively to children’s adaptive functioning and negatively to children’s externalizing behaviors. Parents’ motivational beliefs were also significantly associated with enhanced parent-teacher relationship quality. There was a significant medium-sized

indirect effect of parents' motivational beliefs on children's adaptive functioning through parent-teacher relationship quality ( $k^2 = .12$ ) and a small indirect effect of parents' motivational beliefs on children's externalizing behaviors ( $k^2 = .05$ ). This research suggests that parent-teacher relationship quality may be one mechanism by which the benefits of parents' motivational beliefs are transmitted to children.

**Keywords:** motivational beliefs, efficacy, role construction, parent-teacher relationships

## 1. Introduction

The importance of connections between home and school for the promotion of children's optimal functioning has never been clearer (for a review, see Christenson & Sheridan, 2001). When parents and teachers coalesce to create continuities between home and school, children's achievement, social functioning, and emotional adjustment benefit (for reviews, see Hill & Taylor, 2004; Pomerantz, Moorman, & Litwack, 2007). Specifically, strong family-school connections have been linked to increased achievement and performance (Galindo & Sheldon, 2012), improved homework completion and accuracy (Masten & Coatsworth, 1998), enhanced student engagement and efficacy (Grolnick & Slowiaczek, 1994), decreases in absenteeism and truancy (Epstein & Sheldon, 2002), lower grade retention and drop-out rates (Barnard, 2004; Miedel & Reynolds, 1999), and decreases in disruptive behaviors (Sheridan et al., 2012).

The benefits of quality parent-teacher relationships for enhancing educational achievement have been established (for a review, see Clarke, Sheridan, & Woods, 2009). Indeed, the quality of parent-teacher interactions is considered more important in augmenting student achievement and behavior than simply the frequency or amount of contacts (Patrikakou & Weissberg, 2000). Importantly, interactions between parents and teachers provide the foundation for establishing relationships between them (Adams & Christenson, 2000; Minke, 2006). High-quality relationships between parents and teachers foreshadow children's enhanced academic and social-emotional adjustment (Hughes & Kwok, 2007; Izzo, Weissberg, Kasprow, & Fendrich, 1999). Despite the benefits for children of high-quality parent-teacher relationships, little is known regarding parents' motivations to establish such relationships.

Theory and research highlight parents' beliefs as a central motivator of parents' involvement in children's education (for reviews, see Hoover-Dempsey, Whitaker, & Ice, 2009; Pomerantz, Moorman, & Cheung, 2011). When parents believe they are capable of being engaged in children's education and feel it is their role to do so, they are more likely to be involved in children's learning at both home (e.g., talking with children about school) and school (e.g., volunteering; Green, Walker, Hoover-Dempsey, & Sandler, 2007; Hoover-Dempsey, Bassler, & Brissie, 1992; Semke, Garbacz, Kwon, Sheridan, & Woods, 2010). However, no research has yet examined whether these beliefs also influence the quality of the relationships parents establish with teachers. This is a significant gap given the benefits of high-quality parent-teacher relationships for children's functioning (Hauser-Cram, Sirin, & Stipek, 2003; Hughes, Gleason, & Zhang, 2005; Rimm-Kaufman, Pianta, Cox, &

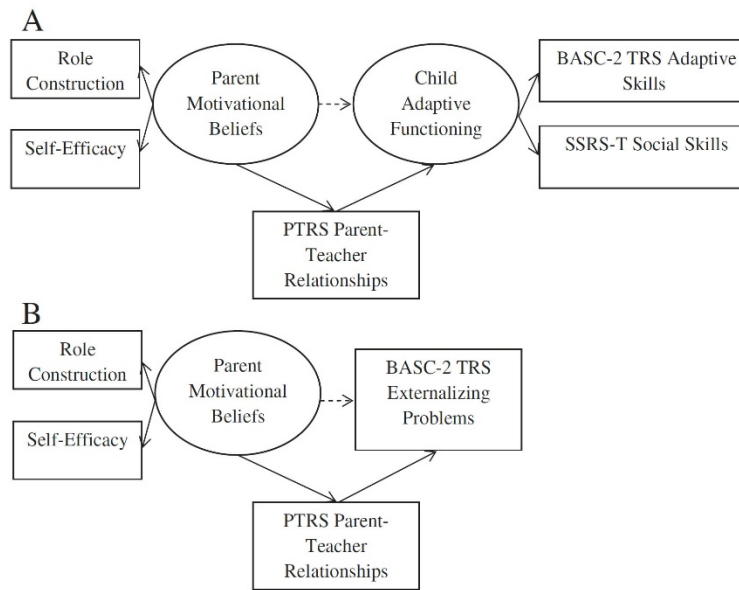
Bradley, 2003), and more research is necessary to understand factors that promote parent-teacher relationships.

The benefits of enhanced parent-teacher relationship quality may be particularly pronounced for families of children experiencing behavioral problems. Behavioral problems are a concern for both parents and teachers and are associated with children's later behavioral and academic difficulties (e.g., Bub, McCartney, & Willett, 2007; Hock & Lutz, 2001; Reinke, Herman, Petras, & Jalongo, 2008; Vitaro, Brendgen, Larose, & Trembaly, 2005). In the context of children's behavioral concerns, relationships between parents and teachers may become strained (Sheridan & Kratochwill, 2008; Sheridan et al., 2012). However, high-quality parent-teacher relationships appear to enhance the functioning of children with behavior problems across the school year (Serpell & Mashburn, 2012), and improvements in parent-teacher relationships have been shown to mediate the effects of consultation interventions on students with behavioral problems (Sheridan et al., 2012). Thus, determining factors that promote high-quality parent-teacher relationships may be particularly important for this group. However, no research to this point has specifically examined the mechanisms by which parent-teacher relationships are enhanced for children with behavioral concerns and, in turn, children's functioning.

Among a sample of children with behavioral concerns, the current research examined parents' beliefs as a motivator of establishing high-quality relationships with teachers, which, in turn, has positive implications for children's functioning. Specifically, using a cross-sectional research design, a mediational model was examined (see fig. 1) wherein parents' motivational beliefs are related to children's adaptive functioning (i.e., social and adaptive skills) and externalizing behaviors through parent-teacher relationship quality.

### ***1.2. Parents' motivational beliefs***

In the context of parents' interactions with children's schools and teachers, parents' motivational beliefs—in particular, role construction and self-efficacy—have received attention (Hoover-Dempsey & Sandler, 1997). Parents' role construction is defined as parents' perceived responsibility about how they should be involved in their children's education through such avenues as participating in school activities or helping children with schoolwork (Hoover-Dempsey, Walker, & Sandler, 2005). A second dimension of parents' motivational beliefs is their efficacy to help children succeed in school, which is defined as parents' belief that they can be effective in influencing their children's school functioning, such as feeling capable and knowledgeable when helping children with their learning (Hoover-Dempsey & Sandler, 1997). Role construction and efficacy are seen as distinct elements of parents' motivational beliefs (Hoover-Dempsey & Sandler, 1997; Hoover-Dempsey et al., 2005), but they are generally positively correlated with one another (Anderson & Minke, 2007; Green et al., 2007; Semke et al., 2010; Yamamoto, Holloway, & Suzuki, 2006).



**Figure 1.** Conceptual Models. **Note:** Panel A represents the conceptual model for children’s adaptive functioning. Panel B represents the conceptual model for children’s externalizing problems. PTRS is the Parent-Teacher Relationship Scale. BASC-2 TRS is the Behavior Assessment System for Children–Second Edition, Teacher Rating Scale. SSRS-T is the Social Skills Rating System–Teacher Questionnaire.

There is some evidence that parents’ motivational beliefs are related to children’s learning outcomes. Among a sample of public-school and home-schooled children in elementary and middle school, parents’ role construction and efficacy were positively related to parents’ reports of children’s academic adjustment but not children’s reports of their own adjustment (Ice & Hoover-Dempsey, 2011). No research to this point has examined parents’ motivational beliefs vis-à-vis other dimensions of children’s adjustment related to learning, such as their behavioral and social functioning. Indeed, social and behavioral problems and poor achievement often co-occur (Bub et al., 2007; Lopes, 2007; Reinke et al., 2008).

Theory and a large body of research suggest that parents’ motivational beliefs work through parents’ involvement in schools to enhance children’s adjustment (for a review, see Hoover-Dempsey et al., 2005). Parents high in role construction and efficacy are more likely to be involved in ways such as helping children with schoolwork, communicating with teachers, and volunteering at the school (Green et al., 2007; Hoover-Dempsey et al., 1992). Such involvement on parents’ part is related to children’s heightened achievement (Englund, Luckner, Whaley, & Egeland, 2004), social skills (McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004), and emotion regulation (Hill & Craft, 2003) and decreased behavior problems (Fantuzzo, McWayne, Perry, & Childs, 2004). No research, however, has established whether parents’ motivational beliefs also enhance the quality of parents’ relationships with teachers and, in turn, children’s behavioral and social functioning.

There are several reasons to believe that parents' motivational beliefs may be associated with enhanced relationships with teachers. First, when parents believe it is their role to be involved in their children's learning, they may be more likely to align their educational goals with those of children's teachers (Christenson & Sheridan, 2001). Second, when parents feel efficacious, they may be more comfortable communicating and sharing their goals with teachers in a constructive way (Clarke et al., 2009). Third, parents who are highly motivated for involvement may participate more often in children's schooling, which may create additional opportunities to establish positive relationships with children's teachers (Kohl, Lengua, & McMahon, 2000). These potential implications for adopting active roles in children's educational activities enhance the relevance of attending to parents' beliefs when developing and implementing home-school programs.

### ***1.3. Parent-teacher relationship quality***

Family-school connections have been characterized by structural and relational components. Of these components, relatively more research has focused on the structural components or learning-enhancing behaviors of parents (e.g., attending parent-teacher conferences, talking with children about school; for a review, see Pomerantz & Moorman, 2010). Lately, relational features, such as the quality of relationships between parents and teachers, have received increasing research and theoretical attention (see Clarke et al., 2009; Sheridan et al., 2012). Among others, communication and interpersonal connections between parties have been identified as fundamental relational characteristics (Clarke et al., 2009; Vickers & Minke, 1995) and served as the focus of this research. Structural and relational components, while associated with one another (Izzo et al., 1999), appear to be conceptually and empirically distinct (Waanders, Mendez, & Downer, 2007). Indeed, factor-analytic research demonstrates unique factors for structural and relational components of family-school connections (Kohl et al., 2000; Wong & Hughes, 2006).

High-quality parent-teacher relationships are related to multiple aspects of children's functioning. First, parent-teacher relationship quality is associated with children's academic functioning, including academic competence (Hauser-Cram et al., 2003), academic progress (e.g., yearly credits earned), grade point averages (Adams & Christenson, 2000), and achievement test scores (Rimm-Kaufman et al., 2003). Second, such relationships are associated with children's social skills as reflected in heightened functioning in the peer group (Rimm-Kaufman et al., 2003) as well as social competence (Serpell & Mashburn, 2012). Third, high-quality relationships are associated with children's diminished behavioral and social concerns, including fewer behavioral problems (Rimm-Kaufman et al., 2003; Serpell & Mashburn, 2012) and socioemotional difficulties such as shyness and anxiety (Izzo et al., 1999). Importantly, such effects on children's functioning are present across time even after adjusting for children's earlier functioning (Hughes & Kwok, 2007; Izzo et al., 1999; Serpell & Mashburn, 2012), socioeconomic status and parental sensitivity toward children (Rimm-Kaufman et al., 2003), and parents' academic involvement (Izzo et al., 1999).

A small amount of research has examined factors that promote or hinder parent-teacher relationship quality. The majority of this research has focused on the manner in which demographic disadvantages, such as neighborhood disorder (e.g., presence of litter and

abandoned buildings), financial strain, and single parenthood, hinder relationship quality (Kohl et al., 2000; Waanders et al., 2007). Little research, however, has examined whether cognitive factors, such as motivational beliefs, are related to relationship quality (for an exception, see Adams & Christenson, 2000). Understanding the contribution of cognitive factors such as parents' motivational beliefs regarding parent-teacher relationships appears important because they may be more malleable than demographic characteristics. As such, they are capable of being the target of school-based intervention efforts that have as a goal the improvement of parent participation in education and family-school partnerships.

#### **1.4. Purpose of study**

The primary purpose of this research was to examine whether the quality of parent-teacher relationships serves as a mediator between parents' motivational beliefs and children's social-behavioral functioning. Specifically, we examined the association within a sample of children identified as exhibiting behavioral concerns at school. Connections between home and school may be particularly relevant for children with behavior problems for whom the promotion of social and behavioral competencies is of particular importance, and for whom relationships between parents and teachers have the potential or proclivity to become strained (Christenson & Sheridan, 2001; Dishion & Stormshak, 2007; Sheridan et al., 2012). We utilized teacher reports to document children's behaviors, as teachers are recognized as accurate observers given the scope and quantity of their interactions with a range of diverse children (Achenbach, McConaughy, & Howell, 1987; Glaser, Kronsoble, & Forkner, 1997).

Three central questions guided this research:

- (1) Among a sample of children with behavioral concerns, do parents' motivational beliefs (i.e., role construction and efficacy) predict:
  - (1a) Children's adaptive functioning (i.e., social and adaptive skills) and externalizing behaviors and
  - (1b) The quality of parent-teacher relationships (i.e., communication and interpersonal connections)?
- (2) Does the quality of parent-teacher relationships predict children's functioning?
- (3) Does parent-teacher relationship quality mediate the effect of parents' motivational beliefs on children's functioning?

## **2. Method**

### **2.1. Participants**

#### *2.1.1. Children*

Participants were 206 kindergarten through third-grade children (51 kindergarten, 73 first-grade, 56 second-grade, and 26 third-grade children) identified as having behavioral concerns from 21 elementary schools in the Midwest. Approximately one fourth (26.2%) of the

student participants were girls. Students' average age was 6.51 years ( $SD = 1.12$  years). The majority of children (72.4%) were reported by parents to be White/non-Hispanic, 8.2% African American, and 19.4% other racial and ethnic backgrounds (i.e., Latino, American Indian, Asian, Native Hawaiian, Middle Eastern, or biracial). Nearly half (47.4%) of students met criteria for free and reduced-price lunch, with 40.3% of all students living at 150% of poverty (i.e., annual incomes that are 1.5 times the poverty threshold). A small percentage of children (4.6%) lived in households where English was not the primary language spoken, and 25% had only one adult residing in the home. Because the study concerned students with behavioral problems, participants had lower than average teacher-reported social and adaptive skills and higher than average teacher-reported externalizing behaviors, with means approximately one standard deviation from the mean on all scales (see table 1).

**Table 1.** Correlations, means, and standard deviations for study variables.

Variable	1	2	3	4	5	6
<i>Parent</i>						
1. Role construction	—					
2. Self-efficacy	.36*	—				
<i>Teacher</i>						
3. PTRS Parent-Teacher Relationships	.22*	.14	—			
<i>Child</i>						
4. BASC-2 TRS Externalizing Problems	-.19*	-.12	-.23*	—		
5. BASC-2 TRS Adaptive Skills	.08	.10	.30*	-.37*	—	
6. SSRS-T Social Skills	.16*	.12	.42*	-.51*	.71*	—
Mean	5.22	4.70	4.17	67.87	41.36	84.04
Standard Deviation	0.47	0.62	0.67	11.65	6.61	10.93

**Note:** PTRS is the Parent-Teacher Relationship Scale. BASC-2 TRS is the Behavior Assessment System for Children—Second Edition, Teacher Rating Scale. SSRS-T is the Social Skills Rating System—Teacher Questionnaire.

\*  $p < .05$

### 2.1.2. Parents

A total of 206 parents participated in this study. The average age of parents was 34.74 years old ( $SD = 7.79$  years old). The majority of parents (90.2%) were women and White/non-Hispanic (85.6%), 4.6% were African American, 3.6% were Latino, and the remainder self-reported as other. A small percentage of parents (4.1%) did not have a high school degree; 17.5% had a high school diploma (or equivalent). Approximately one third (32.9%) completed some college, 31.9% had a college degree, and 13.4% had some graduate coursework or an advanced graduate degree.

### 2.1.3. Teachers

A total of 82 general education teachers of participating students also served as participants. The majority of teachers were women (95%); 99% were White/non-Hispanic. The



average number of years in which teachers were in their current position was 9.70 ( $SD = 9.66$ ).

## 2.2. Procedures

Participants were recruited over the course of four years as part of a randomized trial assessing the efficacy of a school-based Conjoint Behavioral Consultation intervention program for children with disruptive behavior problems (Sheridan & Kratochwill, 2008). The present analyses were conducted using the pre-intervention questionnaire-based data collected from parent and teacher respondents. Recruitment of students followed a multi-gate procedure consistent with that outlined in the Systematic Screening for Behavior Disorders (SSBD; Walker & Severson, 1990). The first gate involved teachers' nominations and ratings of five students in their classrooms with the greatest degree of disruptive behaviors (e.g., Noncompliance, Aggression). These students entered the second gate, wherein teachers completed (a) the SSBD rating scale (i.e., Adaptive and Maladaptive Student Behavior subscales), and (b) a researcher-developed measure assessing the frequency and severity of externalizing behaviors (on a scale of 1 to 9) and the need for additional intervention (on a scale of 1 to 5; Glover, Sheridan, Garbacz, & Witte, 2005). The latter demonstrated sound reliability and validity evidence: The internal consistency reliability of the three-item composite was .84, and the composite was negatively correlated with the SSBD Adaptive Student Behavior subscale ( $r = -.58, p < .001$ ) and positively correlated with the SSBD Maladaptive Student Behavior subscale ( $r = .41, p < .001$ ). Students who (a) scored in the "elevated" or "extremely elevated" risk categories on the Maladaptive Student Behavior subscale, (b) were reported to exhibit externalizing behaviors that interfered with learning at a moderate to extremely severe level, moderate to extremely frequent level, or demonstrated moderate to significant need for additional services, or who met both criteria were initially targeted for inclusion. A total of 383 children were nominated by teachers for participation. Of those, 284 (74%) met the screening criteria. Parents of these students were contacted and invited to participate, were provided information about the study, and consented for their own and their child's participation. Of these, 206 (72.5%) provided consent and comprised our final participant pool.<sup>1</sup>

Participating parents and teachers completed questionnaires. Due to the continuous recruitment of participants throughout the school year, questionnaires were completed at various times during the year. Parent questionnaires were distributed by trained graduate assistants either in person, through the mail, or were sent home with children from school. Parents were asked to return their questionnaires through these same avenues. Teacher questionnaires were distributed by graduate assistants in person at the school. Detailed instructions were provided regarding completion procedures along with specific instructions for each questionnaire. Parents and teachers returned their completed questionnaires at their convenience, generally within two weeks. All measures were translated into Spanish for parents for whom this was their primary language and were read aloud to them by school-recommended interpreters.

## 2.3. Measures

### 2.3.1. Parent motivational beliefs

Parent motivational beliefs, the primary predictor variable in this study, were represented through two indicators: Parent Role Construction and Self-Efficacy. Role construction, reflecting parents' beliefs about their responsibility to be involved in children's schooling (e.g., "I believe it is my responsibility to volunteer at school"), was assessed using the 10-item Parent Role Construction Scale (Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005). Parents' agreement with statements regarding perceptions of their role was rated on a 6-point Likert scale (1 = Disagree very strongly to 6 = Agree very strongly). A mean across the 10 items was computed with higher numbers reflecting parents' heightened role construction. Internal consistency reliability for the present sample at this baseline assessment was  $\alpha = .79$ . Parental self-efficacy involves parents' feelings of efficacy regarding their involvement in their children's schooling (e.g., "I know how to help my child do well in school"). It was assessed using the Parent Efficacy for Helping the Child Succeed in School scale (Hoover-Dempsey et al., 1992; Walker et al., 2005), on which parents reported their agreement with 12 statements using a 6-point Likert scale (1 = Disagree very strongly to 6 = Agree very strongly). A mean across the 12 items was created with higher numbers reflecting more parental efficacy. The internal consistency of this measure for the present sample at baseline was  $\alpha = .82$ . Scores on the Parent Role Construction and Self-Efficacy scales have been shown to be positively associated with parents' academic involvement behaviors in prior research (Anderson & Minke, 2007; Green et al., 2007).

### 2.3.2. Parent-teacher relationships

Teacher-reported parent-teacher relationships were investigated as a potential mediating variable in this study. It was assessed with the Parent-Teacher Relationship Scale (PTRS; Vickers & Minke, 1995). The PTRS is a 24-item measure using a 5-point Likert scale response format (1 = Almost never to 5 = Almost always). Two subscales, gleaned from early factor analyses, are yielded by the measure (see Vickers & Minke, 1995). The Joining subscale consists of 19 items assessing the degree to which parents and teachers are interpersonally connected, including sharing expectations, supportiveness, and availability (e.g., "We trust each other."). The Communication subscale reflects the degree to which teachers interact with parents in an effective and flexible manner (e.g., "I tell this parent when I am pleased."). Due to the focus of the current study on overall relationship quality and the positive correlation between the two subscales ( $r = .51$ ), we used the mean across the 24 items ( $\alpha = .95$  at baseline) to measure the parent-teacher relationship construct in this study with higher numbers indicating greater teacher-reported relationship quality. Scores on the PTRS have been shown to be significantly associated with parents' and teachers' global ratings of their relationship quality (Vickers & Minke, 1995).

### 2.3.3. Child functioning

Teachers completed two norm-referenced measures to assess adaptive functioning and externalizing problems as outcome variables. First, teachers completed the Behavior Assessment System for Children—Second Edition (BASC-2; Reynolds & Kamphaus, 2004) Teacher

Rating Scale (TRS). The BASC-2 TRS is a norm-referenced measure. General combined-sex norms are provided by the test developers and were used to derive scores in the present study. T scores are generated for the BASC-2 TRS, with a mean of 50 ( $SD = 10$ ). Of the several subscales and composite scales included on the BASC-2 TRS, Adaptive Skills and Externalizing Problems were of interest in the present study. Teachers also completed the Social Skills Rating System–Teacher Questionnaire (SSRS-T; Gresham & Elliott, 1990), which assesses cooperation, assertion, and self-control. Gender-specific norms (for boys and girls) for elementary students were used in the scoring of the SSRS-T. Total scores on the SSRS-T are based on responses across all subscales, and are standardized with a mean of 100 and a standard deviation of 15.

**2.3.3.1. Child adaptive functioning.** Two composite scores were used as indicators of children’s adaptive functioning: Adaptive Skills as reported on the BASC-2 TRS and Social Skills as reported on the SSRS-T. Adaptive skills reflect positive behaviors including adaptability, social skills, leadership, and study skills. Internal consistency reliability coefficients for the BASC-2 TRS Adaptive Skills, as supported in prior research, are .90 for children ages 4 to 5, .96 for children ages 6 to 7, and .97 for children ages 8 to 11 (Reynolds & Kamphaus, 2004). The correlation between the BASC-2 TRS Adaptive Skills composite and the Externalizing Problems composite on the Achenbach System of Empirically Based Assessment (ASEBA) Teacher Report Form (TRF; Achenbach & Rescorla, 2001) was  $r = -.49$ , providing divergent validity evidence (Reynolds & Kamphaus, 2004).

Social skills reflect prosocial behaviors including appropriate responses, taking responsibility, and sharing. An internal consistency reliability coefficient for the SSRS-T, as supported in prior research, is .97 for children ages 3–12 (Gresham & Elliott, 1990). Consistent with the convergent and divergent validity evidence demonstrated in the manual (Gresham & Elliott, 1990), in the current sample, the SSRS-T Social Skills composite was positively correlated with the BASC-2 TRS Adaptive Skills composite ( $r = .71$ ) and negatively correlated with the BASC-2 TRS Externalizing Problems composite ( $r = -.51$ ).

**2.3.3.2. Child externalizing problems.** The BASC-2 TRS Externalizing Problems was used to measure children’s externalizing problems. This composite reflects children’s disruptive behaviors as manifested as hyperactivity, aggression, and conduct problems; internal consistency reliabilities of .94 for children ages 4 to 5, .93 for children ages 6 to 7, and .95 for children ages 8 to 11 have been supported in prior research (Reynolds & Kamphaus, 2004). Evidence of convergent validity has been demonstrated with an  $r = .75$  between the BASC-2 TRS Externalizing Problems and the ASEBA TRF Externalizing Problems composite (Achenbach & Rescorla, 2001; Reynolds & Kamphaus, 2004).

### 3. Results

#### 3.1. Analysis overview

Intercorrelations among study measures as well as their means and standard deviations are presented in table 1. Figure 1 illustrates a standard path diagram in which ovals repre-

sent latent variables, rectangles represent manifest variables, and arrows define the hypothesized direction of relationship among variables. As depicted in our conceptual model (see fig. 1), Parent Motivational Beliefs, PTRS Parent-Teacher Relationship, and children's functioning (Adaptive Functioning, BASC-2 TRS Externalizing Problems) served as an independent variable, a mediator, and an outcome variable, respectively. Parent Motivational Beliefs and child Adaptive Functioning were modeled as latent variables. Parent Motivational Beliefs consisted of two indicators: Role Construction and Self-Efficacy. Child Adaptive Functioning was indicated by SSRS-T Social Skills and BASC-2 TRS Adaptive Skills composite scores. Although it is preferable to have at least three indicators per latent construct, we felt that conceptually, there were only two measures administered during data collection that reflected each latent construct of interest. The remaining constructs were represented as manifest variables.

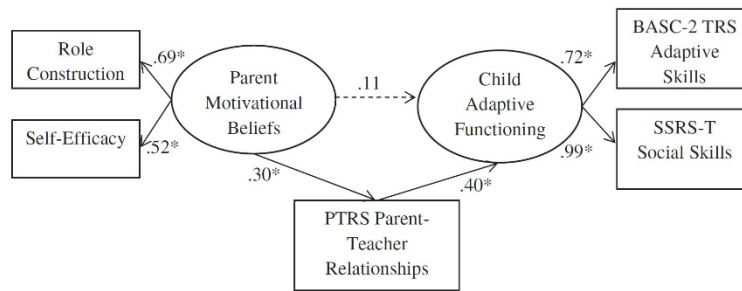
In assessing mediation, we followed the procedural guidelines suggested by Shrout and Bolger (2002). First, we examined the association between Parent Motivational Beliefs and children's Adaptive Functioning (fig. 1, panel A) and BASC-2 TRS Externalizing Problems (fig. 1, panel B) (Research Question 1a). Although this first step is not required (Shrout & Bolger, 2002), this association was of substantive interest given that the effect of parent motivational beliefs on children's functioning has not been thoroughly established. Second, we tested the effect of Parent Motivational Beliefs on PTRS Parent-Teacher Relationships (fig. 1, panels A and B) (Research Question 1b). Third, we tested the effect of PTRS Parent-Teacher Relationships on child Adaptive Functioning (fig. 1, panel A) and BASC-2 TRS Externalizing Problems (fig. 1, panel B) (Research Question 2). Finally, we tested the indirect effect of Parent Motivational Beliefs on child Adaptive Functioning (Fig. 1, Panel A) and BASC-2 TRS Externalizing Problems (fig. 1, panel B) through PTRS Parent-Teacher Relationships (Research Question 3). The significance of the indirect effects was tested with Sobel's test (Sobel, 1982).<sup>2</sup> An alpha of .05 was used for determining significance of statistical tests.

Research questions were addressed using structural equation modeling (SEM) in Mplus Version 6.1 (Muthén & Muthén, 1998–2010). Given that two to three children were nested within each classroom, we estimated the proportion of the variance in the dependent variables between the classrooms. Specifically, the intraclass correlation was .11 for Parent Role Construction, .04 for Parent Self-Efficacy, .27 for PTRS Parent-Teacher Relationships, .35 for both the BASC-2 TRS Adaptive Skills and the SSRS-T Social Skills, and .26 for the BASC-2 TRS Externalizing Problems. Accordingly, the Mplus "TYPE=COMPLEX" and "CLUSTER" options<sup>3</sup> were specified to adjust the standard errors and chi-square tests for dependency among the data. Missing data were dealt with by means of a full information maximum likelihood (FIML) estimation procedure. FIML uses all available information such that a case is included in parameter estimation even when the case has some missing data (Enders, 2010). FIML procedures have shown to be more efficient and yield less biased estimates as compared to listwise deletion, pairwise deletion, and similar response pattern imputation methods (Enders & Bandalos, 2001). The percentage of missing cases ranged from 1.94% for SSRS-T Social Skills composite to 14.08% for the BASC-2 TRS Adaptive Skills composite. Models were estimated separately for child Adaptive Functioning and Externalizing Problems. Given that the latent variables for Parent Motivational Beliefs and

child Adaptive Functioning included only two indicators, both unstandardized factor loadings (within a construct) were fixed at one to ensure proper model identification.<sup>4</sup> Factor variances were freely estimated, and factor means were fixed at zero. In order to obtain a positive definite residual covariance matrix for the child Adaptive Functioning model, it was necessary to linearly transform the BASC-2 TRS Adaptive Skills composites to have a mean of 100 ( $SD = 15$ ) to correspond to the scale of the SSRS-T Social Skills composite. Such a linear transformation does not influence the relations among variables; rather, it helps avoid problematic estimates such as negative residual variances that may occur when two indicators of a latent variable are on noticeably different scales. Model fit was evaluated based on the chi-square test statistic, the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Guidelines suggest that CFI values greater than .95, RMSEA less than .06, and SRMR less than .08 indicate good model fit (Hu & Bentler, 1999).

### *3.2. Child adaptive functioning*

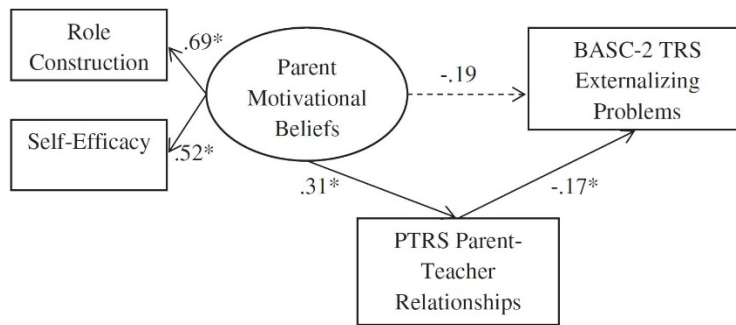
The total effect of Parent Motivational Beliefs on teacher-reported child Adaptive Functioning at school was positive and significant ( $\beta = .22, p = .02$ ), suggesting that children whose parents had higher levels of motivational beliefs also displayed higher levels of adaptive and social skills. This model fit the data very well,  $\chi^2(3) = 1.95, p = .58$ ; CFI  $> .99$ ; RMSEA  $< .001$ ; and SRMR = .02. The mediation model with the indirect pathway of Parent Motivational Beliefs on child Adaptive Functioning through PTRS Parent-Teacher Relationships is presented in figure 2. The proposed model demonstrated excellent fit to the data,  $\chi^2(5) = 2.04, p = .84$ ; CFI  $> .99$ , RMSEA  $< .001$ ; and SRMR = .02. Parent Motivational Beliefs were positively and significantly associated with PTRS Parent-Teacher Relationships ( $\beta = .30, p = .02$ ), and PTRS Parent-Teacher Relationships were positively and significantly associated with child Adaptive Functioning ( $\beta = .40, p < .001$ ). Finally, there was a significant and positive indirect effect ( $\beta = .12, p = .02, 95\% \text{ CI } [.03, .20]$ ); higher levels of Parent Motivational Beliefs were associated with higher levels of child Adaptive Functioning via enhanced PTRS Parent-Teacher Relationships. The size of the indirect effect ( $k^2$ ) was estimated based on the ratio of the observed indirect effect to the maximum possible indirect effect that is contingent on the sample variance as well as the strength of the associations among variables (Preacher & Kelley, 2011). The size of the indirect effect of Parent Motivational Beliefs on child Adaptive Functioning via PTRS Parent-Teacher Relationships was  $k^2 = .12$ . That is, the observed indirect effect is 12% as large as the maximum possible indirect effect. This effect is deemed medium-sized (Preacher & Kelley, 2011).



**Figure 2.** The effect of parent motivational beliefs on teacher-reported child adaptive functioning mediated by parent-teacher relationship. Coefficient estimates are standardized. PTRS is the Parent-Teacher Relationship Scale. BASC-2 TRS is the Behavior Assessment System for Children–Second Edition, Teacher Rating Scale. SSRS-T is the Social Skills Rating System–Teacher Questionnaire. \* $p < .05$ .

### 3.3. Child externalizing problems

Results indicated a significant and negative total effect of Parent Motivational Beliefs on child BASC-2 TRS Externalizing Problems at school: Children whose parents had higher levels of Motivational Beliefs showed significantly lower levels of BASC-2 TRS Externalizing Problems ( $\beta = -.25, p = .03$ ). This model fit the data very well,  $\chi^2(1) = .06, p = .81$ ; CFI  $> .99$ ; RMSEA  $< .001$ ; and SRMR = .01. The mediation model with the indirect pathway of Parent Motivational Beliefs on child BASC-2 TRS Externalizing Problems through PTRS Parent-Teacher Relationships is presented in figure 3. The proposed model demonstrated excellent fit to the data:  $\chi^2(2) = .06, p = .97$ ; CFI  $> .99$ ; RMSEA  $< .001$ ; and SRMR = .01. Parent Motivational Beliefs were positively and significantly associated with PTRS Parent-Teacher Relationships ( $\beta = .31, p = .02$ ), and PTRS Parent-Teacher Relationships were negatively and significantly associated with child BASC-2 TRS Externalizing Problems ( $\beta = -.17, p = .03$ ). Finally, there was a significant and negative indirect effect of Parent Motivational Beliefs on child BASC-2 TRS Externalizing Problems ( $\beta = -.05, p = .04, 95\% \text{ CI } [-.10, -.00]$ ), indicating that higher levels of Parent Motivational Beliefs are associated with decreased levels of children's BASC-2 TRS Externalizing Problems via enhanced PTRS Parent-Teacher Relationships. A small effect size was detected for the indirect effect with a  $k^2 = .05$ , which suggests that the observed indirect effect is approximately 5% as large as it could have possibly been (Preacher & Kelley, 2011).



**Figure 3.** The effect of parent motivational beliefs on teacher-reported child externalizing behaviors mediated by parent-teacher relationship. Coefficient estimates are standardized. PTRS is the Parent-Teacher Relationship Scale. BASC-2 TRS is the Behavior Assessment System for Children–Second Edition, Teacher Rating Scale. \* $p < .05$ .

#### 4. Discussion

This research examined parent-teacher relationship quality as a mediator of the relation between parents’ motivational beliefs and teachers’ reports of children’s functioning among a sample of children with behavioral concerns. When parents reported it was their role to be involved in children’s education and felt efficacious in doing so, participating children were rated by teachers as higher in adaptive functioning and lower in externalizing behaviors. Parents’ role construction and efficacy were also associated with teachers’ reports of relationship quality with parents. Moreover, results of the mediation models (fig. 1) supported the notion that parents’ motivational beliefs have effects on children’s adaptive functioning and externalizing behaviors through high-quality parent-teacher relationships.

This study built on prior research in several key ways. First, the current research demonstrated that parents’ role construction and efficacy were associated with children’s heightened adaptive functioning and diminished externalizing behaviors, suggesting that such beliefs may be beneficial not only for parents’ interactions with schools but for children as well. Little research has examined a direct link between such beliefs and children’s functioning outside of the academic domain; a recent study that examined a direct link with academic adjustment demonstrated equivocal results (Ice & Hoover-Dempsey, 2011). This finding is particularly significant given that this research was conducted among a sample of children for whom disruptive behavioral concerns were present. The positive impact on such skills may have important implications for school practitioners developing interventions for children exhibiting heightened problem behaviors and concomitant deficits in adaptive and social skills. Given the documented links between children’s social and behavioral functioning and their academic adjustment (Bub et al., 2007; Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000; Lopes, 2007; Reinke et al., 2008), family-school interventions supporting parents’ motivational beliefs and family-school relationships seem prudent.

Second, this research expands our knowledge of the function of parents' motivational beliefs. Given multidimensional conceptualizations of school-family interactions (Kohl et al., 2000; Wong & Hughes, 2006), this research highlights the potential that parents' cognitions about their involvement with schools play a role not only in their behaviors in support of children's learning at home and school (Hoover-Dempsey & Sandler, 1997) but also in the quality of relationships they establish with children's teachers. Future research will be needed to clarify the relation between parents' motivational beliefs, parents' involvement behaviors, and parent-teacher relationship quality. It may be the case that parents' motivational beliefs enhance parents' involvement, thus providing additional opportunities for parents to establish relationships with teachers. In line with this notion, when asked about important factors for increasing trust between parents and teachers, both teachers and parents reported that increased communication was a necessary condition (Adams & Christenson, 2000). Alternatively, it may be that motivational beliefs help parents establish high-quality relationships with teachers and provide the context for parent involvement to flourish. Future research utilizing longitudinal designs is necessary to disentangle these possibilities.

Third, the current research examined a mechanism by which the benefits of parents' motivational beliefs may be transmitted to children through enhanced parent-teacher relationship quality. It has been suggested that such relationships enhance the consistency between children's home and school environments (Adams & Christenson, 2000). Thus, parents may be more likely to share expectations and values for children with teachers when they have close relationships with them, thus making these expectations consistent for children across home and school contexts. This sharing of expectations could also extend from teachers to parents. For instance, if parents have an established relationship with teachers, teachers may be more likely to communicate with parents regarding behavioral expectations, and parents may thus reinforce these expectations at home. Such consistency may help children to establish desirable behavioral and social competencies across settings.

In the current research, guided by prior theoretical models (Hoover-Dempsey & Sandler, 1997; Hoover-Dempsey et al., 2005; Hoover-Dempsey et al., 2009), we hypothesized that parents' motivational beliefs are related to parent-teacher relationship quality. Given the concurrent design employed in this research, however, it is not possible to discern the direction of effects in this relation. It could also be the case that high-quality relationships between parents and teachers engender more positive beliefs toward parent involvement (see Knopf & Swick, 2007). In the context of a high-quality parent-teacher relationship, parents may develop positive attitudes regarding their involvement. These beliefs may be carried over to future relationships that parents establish with teachers. Whereas prior research indicates that motivational beliefs feed forward to influence parents' involvement at home and school (Green et al., 2007), the direction of effects remains unclear for parent-teacher relationship quality. Longitudinal research will be necessary to elucidate the manner in which parents' beliefs and parent-teacher relationship quality are related.



This research examined parents' beliefs as a predictor of the quality of their relationships with teachers. Teacher beliefs, however, may also be an important precursor to parent-teacher relationship quality (for a discussion, see Kohl et al., 2000). For example, when teachers feel it is important and appropriate to establish high-quality relationships with parents, they may be more likely to do so. Indeed, parent and teacher beliefs may jointly contribute to the quality of the relationships they establish. It would be of interest in future research to examine the concordance of parent and teacher beliefs and how this plays a role in the relationships they establish.

This research examined teachers' perceptions of parent-teacher relationship quality. Relationships between parents and teachers are inherently bidirectional. Thus, taking into account the joint perspectives of both parents and teachers regarding their relationships will be an important direction for future research. Indeed, the degree to which decision making between parents and teachers is conjoint is a vital factor in the success of such interactions (Sheridan & Kratochwill, 2008).

#### ***4.1. Limitations and future directions***

Consistent with prior research on children with behavioral problems (e.g., Lumley, McNeil, Herschell, & Bahl, 2002), more boys (73.8%) than girls (26.2%) were identified for inclusion in the study. As a result, the sample included predominantly boys. Parents of girls report higher relationship quality with teachers than do parents of boys on average (Hughes et al., 2005). However, models could not be compared across boys and girls because of the small sample size for girls; thus, it is not clear whether these models apply equally well for boys and girls. It will be of interest in future research to examine this model in a sample with a more balanced distribution of boys and girls.

Moreover, this sample was relatively homogeneous in terms of ethnicity, with the majority of students being reported as White. This limits the conclusions that can be drawn about the appropriateness of these models across ethnicity groups, given that ethnicity can influence the quality of the relationships that parents report with teachers (Minke, 2006). In line with this notion, lower parent-teacher relationship quality has been reported for African American families than for White or Hispanic families (Hughes & Kwok, 2007; Hughes et al., 2005; Kohl et al., 2000). Because of the limited diversity in the current sample, models could not be compared across different ethnic groups of families. Future research will be necessary to examine whether parents' motivational beliefs are related to children's functioning and parent-teacher relationships similarly across diverse cultural groups.

Future longitudinal research would allow us to speak to the developmental nature of parent motivational beliefs and parent-teacher relationships. Parent-teacher relationship quality reportedly declines over time (Adams & Christenson, 2000), with the highest levels being reported in the elementary school years and declining toward the high school years. Indeed, parents may have fewer opportunities to establish relationships with teachers as children progress through school. As children move through middle and high school, they often have multiple teachers each year. The changing structure of schools across grades may also create challenges for teachers' abilities to establish relationships with parents, as they become responsible for many different students in a given year. Future longitudinal

research would allow for the examination of changes in parents' motivational beliefs, relationships with teachers over time, and whether such changes are related to children's functioning, revealing developmental differences as well as a window into the direction of these effects.

This analysis relied on teachers' reports of the quality of their relationships as well as their reports of children's functioning. Thus, the relation between parent-teacher relationships and children's functioning could be accounted for, in part, by shared method variance. However, it should also be noted that the models are strengthened by the inclusion of parents' reports of their motivational beliefs, thereby limiting bias due to the same reporter rating both motivational beliefs and parent-teacher relationship quality. Future research including observational measures of parent-teacher relationship quality is needed for objective appraisals of this construct, assessed within a multimethod framework. Such data would not only circumvent the issue of shared method variance but also provide objective evidence regarding the degree to which teachers' views of their relationships with parents are in accordance with those beliefs when interacting with parents.

Finally, both latent variables included in our analysis were limited to two indicators, which made it impossible to test the fit of the hypothesized measurement models. Additional indicators are necessary to provide structural validity evidence for the latent variables. Cost and time permitting, future research should utilize a battery of assessments to measure each construct.

#### ***4.2. Implications for practice***

Research on parent motivational beliefs, parent-teacher relationships, and their relation with child adaptive functioning and externalizing behaviors is particularly relevant when considering the opportunities it affords for school-based and home-school intervention practice. The significant association of parents' motivational beliefs with parent-teacher relationship quality and teachers' reports of children's social and behavioral adjustment highlight the importance of understanding how to promote these important processes. School psychology consultation practice may be benefitted by strategies that purposefully promote parents' motivational beliefs or parent-teacher relationships as precursors to or concomitant to child-focused interventions. Specifically, practitioners might integrate specific strategies (e.g., explicit invitations, bidirectional communication practices, school programs promoting parental expectancies, and support for involvement) to enhance parents' motivational beliefs over time. Evidence for strategies to strengthen parent-teacher relationships is emerging (for results of a randomized trial of CBC for this purpose, see Sheridan et al., 2012). Given the present research demonstrating the significant relations between parental motivational beliefs, parent-teacher relationships, and important child outcomes, this area is clearly fruitful for both practice and research.

#### **5. Conclusions**

This research represents a first step in understanding the role of parents' motivational beliefs in children's social and behavioral functioning and parent-teacher relationship quality. A conceptual model was tested wherein parent-teacher relationship quality mediated

the relation between parents' motivational beliefs and children's adaptive functioning and externalizing behaviors. Findings generally supported our proposed model, suggesting that parent-teacher relationship quality may be one mechanism by which parents' motivational beliefs are transmitted to children.

## Notes

1. For practical purposes, the number of participants per classroom was limited to three. In cases where more than three students in a classroom met criteria for inclusion, three were randomly selected for participation. For those students meeting criteria for inclusion but not randomly selected, typical school procedures were invoked wherein referrals for school-based services are available should they be requested by the teacher.
2. A bootstrapping method, which has shown to be superior to Sobel's test (Shrout & Bolger, 2002), is not available in Mplus when using "TYPE=COMPLEX."
3. We chose this approach over a multilevel SEM approach because the latter resulted in improper solutions (e.g., negative between-level variances) for the model involving externalizing behaviors. There were no improper solutions for the model involving adaptive functioning, but all between-classroom pathways and variances were nonsignificant, suggesting that it was unnecessary to model the relationships among variables at both the within- and between-classroom levels.
4. Assuming the indicators are positively correlated, constraining the two factor loadings at one creates a just-identified model that perfectly reproduces the observed correlation among the indicators (Kline, 2005).

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