The validity of the parental academic support scale: associations among relational and family involvement outcomes

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Abstract: This study compiled validity evidence for the parental academic support scale (PASS), a multi-dimensional instrument that measures parent-teacher communication across five factors (child's academic performance, classroom behaviour, preparation, hostile peer interactions and health). Confirmatory factor analysis (CFA) demonstrated close model fit and replicated previous CFA tests, providing further content validity evidence. Associations between parental academic support, relational closeness, relationship satisfaction and family involvement illustrate that the PASS construct is related to similar constructs, offering further evidence for construct validity. Implications and areas for future research are addressed.

Keywords: confirmatory factor analysis; parental academic support; P-12 level; relationship outcomes; validity.

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1 Introduction

Parental involvement at the P-12 level has a rich history (Rury, 2002). Decades of empirical research have examined associations between parental involvement and student success (Chen et al., 2007; Cutrona et al., 1994; Fantuzzo et al., 2004; McKay et al., 2003; Rodriguez, 2002; Seitsinger et al., 2008). Recent research has begun to document fundamental changes to parental academic involvement due to advances in communication technologies (Mazer and Thompson, 2016; Thompson et al., 2015).

In order to assess the changes in parent-teacher communication due to the use of new communication technologies, Thompson and Mazer (2012) developed the parental academic support scale (PASS), a multi-dimensional measure that assesses parent-teacher communication across five factors - academic performance, classroom behaviour, preparation for a child's academic or social challenges, hostile peer interactions (e.g. aggressive encounters between students) and health issues affecting a child's work. Social support constitutes a major body of research across contexts, with a great deal of that research producing measurement scales over the last four decades (Burleson and MacGeorge, 2002; Tardy, 1985). Although a small number of social support scales emphasise the educational context (e.g. the Child and Adolescent Social Support Scale - Demaray and Malecki, 2003), Thompson and Mazer's (2012) PASS differs by focusing exclusively on parental academic support communicated across modes of communication. Grounded in Cutrona and Suhr's (1992) social support typology, the PASS categorised parent-teacher communication topics into action-facilitating academic support (communication that directly assists a student with a problem) and nurturant academic support (communication aimed at offering comfort to cope with stress related to a problem; Thompson and Mazer, 2012).

The PASS has demonstrated strong reliability and generated initial validity evidence by addressing connections between parental academic support and student success (Mazer and Thompson, 2016). However, given the changes in approaches to parent-teacher communication, it is important to examine how parental academic support might influence parent-child relationship outcomes. Given that forms of social and academic support have been shown to lead to increased relational closeness (Burleson and MacGeorge, 2002; Mazer and Thompson, 2011), exploring parental academic support within the parent-child relationship is vital, as ongoing closeness facilitates relational

longevity (Ledbetter et al., 2007). Therefore, the present study examined the relationship between parental academic support, relational closeness between parents and children, relationship satisfaction, and family involvement to build additional validity evidence for the PASS.

2 Content validity

Content validity refers to how well an instrument reflects a specific content domain and covers the range of meaning or dimensions included within a particular construct (Cronbach and Meehl, 1955). Thompson's (2008a) findings related to parent-teacher communication topics at the elementary, junior high and high school levels uncovered the frequency of supportive behaviours to advance a measure of parental academic support. From this content domain, 35 specific academically supportive behaviours emerged in the qualitative data, which formed the initial item pool (Thompson and Mazer, 2012). A visual inspection of these items suggested that requirements for face validity - a standard necessary for content validity (Cronbach and Meehl, 1955) - appear to be met. Baxter and Babbie (2004) argue that content validity can also be established through factor analysis procedures to analyse the multi-dimensional structure of measures. In the first of a series of studies, exploratory factor analysis produced the five-factor solution: academic performance, classroom behaviour, preparation, hostile peer interactions and health (Thompson and Mazer, 2012), and in follow-up studies (Mazer and Thompson, 2016; Thompson and Mazer, 2012), confirmatory factor analysis confirmed this dimensional structure. Considering this evidence, the standards for content validity appear to be satisfied (Cronbach and Meehl, 1955).

3 Construct validity

Construct validity refers to how well a construct fits hypothesised associations with other constructs (Cronbach and Meehl, 1955). Using prior theory and research as guidelines for expected associations, a construct validity evaluation requires that the correlations of a measure be assessed in relation to measures for variables that are perceived to be related to the construct (Cronbach and Meehl, 1955). Building construct validity evidence for the PASS, recent research indicates that parental academic support is inversely associated with parents' perceptions of their child's success in school (Mazer and Thompson, 2016), suggesting that parents who communicate more frequently with a teacher might also perceive that their child is struggling in school.

Although research suggests a positive association between parental involvement and student academic outcomes (Mazer and Thompson, 2016; Chen et al., 2007; Cutrona et al., 1994; Fantuzzo et al., 2004; McKay et al., 2003; Rodriguez, 2002; Seitsinger et al., 2008), parental involvement might also influence the parent-child relationship. Studying relationship development represents a cornerstone of social support research (Braithwaite et al., 2003; Burleson et al., 1994; Leatham and Duck, 1990).

Vangelisti and Caughlin (1997) note that relational closeness is a key variable across relationship types, including families. Past research has linked social and academic support to relational closeness (Burleson and MacGeorge, 2002; Mazer and Thompson, 2011) due to connections between on-going closeness and relational longevity (Ledbetter et al., 2007). Parents who provide academic support for their children by communicating with teachers might also experience greater closeness to their children and satisfaction with their relationship. On the other hand, parents who provide academic support may do so because their child is struggling in school. Poor performance on the part of the child could place undue stress on the parent-child relationship and lead to reduced closeness and satisfaction.

H_1: Parental academic support will be related to parents' perceptions of relational closeness to their child.

H_2: Parental academic support will be related to parents' perceptions of relationship satisfaction with their child.

Research on family involvement has documented positive relationships between parental participation behaviours and student outcomes. For example, Stevenson and Baker (1987) found that parents' involvement in school activities was positively associated with students' academic performance, while Reynolds (1994) detected a positive association between parental involvement and students' reading and math scores. Chiu and Xihua (2008) detected similar results between parental support and students' math achievement. Research also suggests that parents in the USA can more strongly influence their children's academic goals when compared to parents in other countries where students are placed into school types early on by the school system (Buchmann and Dalton, 2002). It seems reasonable to argue that parents who communicate academic support for their children would also be involved in supportive activities at home (e.g. working with the child on reading and writing skills) and at school (e.g. volunteering the child's classroom).

H_3: Parental academic support will be positively related to parents' involvement in their child's education.

4 Methods

4.1 Participants and procedures

In all, 445 parents of students at the elementary, junior high and high school levels comprised the sample, which was part of a larger dataset (N = 890) collected from a school district in the Midwestern USA. The 445-parent sample, randomly drawn from the larger dataset, was primarily Caucasian (90.1%) and included 93 fathers and 352 mothers with an average age of 41.35 (SD = 8.05). A majority of the sample participants were college educated: associate's degree: 9.5%, bachelor's degree: 41.7%, master's degree: 25.5%, doctoral degree: 5.5%. Three and one-half percentage did not continue their

education after the high school diploma and 14.3% completed some college. Students (238 males and 207 females) of parent participants came from primary and secondary grade levels (elementary school: $N = 167$; junior high school: $N = 150$; high school: $N = 128$). Parents rated their children's educational success: (A) exceptional students (37.8%), (B) above average (43%), (C) average (16.5%), (D) below average (2.5%) and (F) deficient (0.2%). The participating school district provided a list of parent e-mail addresses. Institutional Review Board (IRB) and the participating school district's board approved the research procedures. In all, 22,390 potential parent participants received an e-mail flyer that contained a link to an online informed consent form, which directed them to the survey.

4.2 Measurement

4.2.1 Parental academic support

The 16-item PASS was used to assess parental academic support (Thompson and Mazer, 2012; see Table 1). Participants reported how often each type of support occurred over the last month by responding on a five-point Likert-type scale (*not at all, once or twice, about once a week, several times a week, about every day*). The scale was reliable: academic performance $\alpha = 0.85$ ($M = 9.21$, SD = 2.91); classroom behaviour $\alpha = 0.78$ ($M = 3.38$, SD = 1.07); preparation $\alpha = 0.84$ ($M = 2.16$, SD1 = 0.49); hostile peer interactions $\alpha = 0.84$ ($M = 2.19$, SD = 0.57) and health $\alpha = 0.85$ ($M = 2.35$, $SD = 0.81$). Confirmatory factor analysis tested the overall structure of the PASS using LISREL 8.80. Since the chi-squared test is especially sensitive to sample size, additional indices assessed model fit: the root mean square error of approximation (RMSEA), the non-normed fit index (NNFI) and the comparative fit index (CFI). Kline (2005) considers model fit acceptable if CFI and NNFI values are above 0.90 (and preferably above 0.95) and the RMSEA statistic does not exceed 0.08 (and preferably 0.05). Following guidelines for testing multiple theoretically relevant models (Holbert and Grill, 2015; Kline, 2005), we first computed a model comprised of the five lower-order latent variables (academic performance, classroom behaviour, preparation, hostile peer interactions and health), consistent with prior research (Mazer and Thompson, 2016; Thompson and Mazer, 2012). This model demonstrated close fit, $d_f = 94$, RMSEA = $0.053_{[90\% \text{ CI} = 0.047:0.062]}$, NNFI = 0.97, CFI = 0.98. We then calculated a second model with a single higher-order latent variable and five lower-order latent variables. This model yielded poor fit, $d_f = 99$, RMSEA = $0.111_{[90\% \text{ CI} = -0.017:0.091]}$, NNFI = 0.93, CFI = 0.94, with a chi-square difference test indicating a significant decline in fit relative to the initial model, $\Delta\chi^2(5) = 15.05$, $p < 0.05$, which suggested that the initial model was appropriate. We also calculated a third model comprised of a single latent variable with 16 indicators. This model also produced poor fit, $d_f = 103$, RMSEA = $0.121_{[90\% \text{ CI} = -0.017:0.079]}$, NNFI = 0.93, CFI = 0.94, with a chi-square difference test indicating a significant decline in fit relative to the initial model, $\Delta\chi^2(9) = 19.58$, $p < 0.05$, suggesting the initial model was appropriate.

Table 1 Parental academic support scale items

	This past month, I communicated with my child's teacher about…	λ	*SE*
1	my child's grades in the class. [AP]	0.91	0.05
2	why my child has a missing assignment. [AP]	0.90	0.04
3	how my child can improve his/her grade. [AP]	0.81	0.05
4	why my child received the grade he/she did. [AP]	0.86	0.06
5	why my child was not completing assignments. [AP]	0.83	0.04
6	learning more about homework assignments. [AP]	0.89	0.04
7	a question I had about an assignment. [AP]	0.83	0.05
8	solutions to address my child's behaviour in class. [CB]	0.84	0.06
9	my child talking back to the teacher. [CB]	0.80	0.04
10	my child goofing off in class. [CB]	0.78	0.05
11	my child's ability to make/maintain friendships with peers. [P]	0.77	0.05
12	how my child was not bringing materials to class. [P]	0.84	0.06
13	my child being picked on by his/her classmates. [HPI]	0.84	0.04
14	a major classroom behavioural incident (fight, racial slur). [HPI]	0.81	0.04
15	a temporary health issue that my child is experiencing. [H]	0.85	0.05
16	a major physical health issue that my child is experiencing. [H]	0.84	0.06

Note: AP, academic performance; CB, classroom behaviour; P, preparation; HPI, hostile peer interactions; H, health

All factor loadings are standardised and significant at $p < 0.01$

4.2.2 Relational closeness

Vangelisti and Caughlin's (1997) seven-item instrument measured relational closeness between parent and child. Sample items included 'How close are you to your child?' and 'How much do you enjoy spending time with your child?' The participants recorded responses on a seven-point Likert-type scale with options ranging from 1 (not at all) to 7 (very much). The measure demonstrated strong reliability (α = 0.93; M = 45.88, SD = 3.49).

4.2.3 Relationship satisfaction

Hendrick's (1988) six-item measure of relationship satisfaction assessed satisfaction in the parent-child relationship. Sample items included 'In general, how satisfied are you with your relationship with your child?' and 'How good is your relationship with your child compared to most?' Parents responded on a five-point Likert-type scale. The measure demonstrated strong reliability (α = 0.82; M = 25.79, SD = 3.55).

4.2.4 Family involvement

Family involvement was measured using Fantuzzo et al. s' (2000) 36-item multi-dimensional scale. This measure assesses how involved a parent is in school-based (e.g. 'I volunteer in my child's classroom') and home-based (e.g. 'I spend time working with my child on reading/writing skills') contexts and in home-school conferencing (e.g. 'I talk to my child's teacher about his/her difficulties at school') settings. Participants responded using a four-point bipolar scale (1 = rarely to 4 = always). The scale was reliable: school-based involvement $\alpha = 0.88$ (M = 26.01, SD = 6.23); home-based involvement $\alpha = 0.87$ (M = 44.65, SD = 8.18) and home-school conferencing $\alpha = 0.84$ (M = 20.55, SD = 5.51).

5 Results

Pearson correlations assessed the associations between parental academic support and perceptions of relational closeness (H1), relationship satisfaction (H2) and family involvement (H3). All correlations were corrected for attenuation (Table 2). Table 2 features the associations among the five dimensions of parental academic support, relational closeness, relationship satisfaction and family involvement. Classroom behaviour ($r = –0.23$, $p < 0.01$) and preparation ($r = –0.27$, $p < 0.05$) were inversely related to parents' perceptions of relational closeness with their child (H1). Pearson correlations revealed inverse associations between academic performance ($r = –0.22$, $p < 0.01$), classroom behaviour ($r = –0.34$, $p < 0.01$), preparation ($r = –0.26$, $p < 0.01$) and parents' perceptions of relationship satisfaction with their child (H2). Academic performance ($r = 0.25$, $p < 0.01$) and health ($r = 0.22$, $p < 0.01$) were positively related to school-based involvement, whereas classroom behaviour ($r = 0.20$, $p < 0.05$), preparation ($r = 0.19$, $p < 0.05$), hostile peer interactions ($r = 0.21$, $p < 0.01$) and health ($r = 0.20$, $p < 0.01$) were positively associated with home-based involvement. All dimensions of parental academic support were positively related to home-school conferencing: academic performance ($r = 0.34$, $p < 0.01$), classroom behaviour ($r = 0.37$, $p < 0.01$), preparation ($r = 0.32$, $p < 0.01$), hostile peer interactions ($r = 0.29$, $p < 0.01$) and health ($r = 0.26$, $p < 0.01$). Associations between all variables are reported in Table 2.

Table 2 Descriptive statistics and Pearson product-moment correlations for all variables

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. Academic performance	9.22	2.91	-								
2. Classroom behaviour	3.38	1.07	0.31 (0.38)**	-							
3. Preparation	2.16	0.49	0.41 (0.49)**	0.53 (0.65)**	-						
4. Hostile peer interactions	2.19	0.57	0.19 (0.22)**	0.49 (0.61)**	0.43 (0.51)**	-					
5. Health	2.35	0.81	0.16 (0.19)**	0.21 (0.26)*	0.25 (0.30)**	0.29 (0.34)**	-				
6. Relational closeness	45.88	3.49	−0.03 (−0.03)	−0.21 (−0.23)**	−0.27 (−0.28)*	0.02 (0.02)	0.06 (0.07)	-			
7. Relationship satisfaction	25.79	3.55	−0.20 (−0.22)**	−0.29 (−0.34)**	−0.23 (−0.26)**	−0.06 (−0.07)	−0.04 (−0.05)	0.65 (0.74)**	-		
8. School-based involvement	26.01	6.23	0.23 (0.25)**	0.02 (0.02)	0.05 (0.06)	0.00 (0.00)	0.20 (0.22)**	0.17 (0.19)**	0.21 (0.25)**	-	
9. Home-based involvement	44.65	8.18	0.04 (0.05)	0.18 (0.20)*	0.18 (0.19)*	0.19 (0.21)**	0.19 (0.20)**	0.33 (0.37)**	0.34 (0.40)**	0.53 (0.61)**	-
10. Home-school conferencing	20.55	5.51	0.34 (0.40)**	0.37 (0.46)**	0.32 (0.38)**	0.29 (0.35)**	0.26 (0.31)**	0.04 (0.05)	0.00 (0.00)	0.38 (0.44)**	0.44 (0.51)**

*Correlations are significant at $p < 0.05$; **Correlations are significant at $p < 0.01$

Note: Disattenuated correlations appear within parenthesis

6 Discussion

Building upon prior efforts (Mazer and Thompson, 2016), the present study offers additional validity evidence for Thompson and Mazer's (2012) Parental Academic Support Scale. CFA of the PASS revealed close model fit, replicated prior CFA tests (Mazer and Thompson, 2016; Thompson and Mazer, 2012) and provided additional content validity evidence. Associations between parental academic support and parents' perceptions of relational closeness, relationship satisfaction and involvement suggest that the PASS construct is related to theoretically similar constructs, providing additional evidence for construct validity. The results also reveal moderate associations between the five support types, suggesting that parents made appropriate distinctions between the dimensions of parental academic support.

The present study detected inverse relationships between classroom behaviour and preparation and parents' perceptions of relational closeness to their child. This finding suggests that as parents communicate more with teachers about a child's poor classroom behaviour and lack of preparation their perceptions of closeness to their child tends to decrease. Poor behaviour at school on the part of the child might also manifest itself at home and adversely affect the parent-child relationship. Similar findings were detected for relationship satisfaction. The results indicated an inverse association between academic performance support, classroom behaviour, and preparation and parents' perceptions of relationship satisfaction with their child. Parents who frequently communicate with their child's teacher about the child's academic progress, poor classroom conduct and lack of preparation appear to experience a reduced degree of relationship satisfaction. In essence, parents' increased communication with their child's teacher about these issues appears to place a certain degree of strain on the parent-child relationship. The results extend prior research that drew connections between social and academic support and relational closeness and longevity (Burleson and MacGeorge, 2002; Ledbetter et al., 2007; Mazer and Thompson, 2011). A further possibility in relation to increased parental support is that this can be the result of over-anxious or ambitious parents. This could offer an additional explanation for why increased parental academic support is deleterious to the parent-child relationship.

The present study's findings appear to contradict prior research reporting positive associations between college student academic support and relationship satisfaction (Mazer and Thompson, 2011). Although greater academic support between college friends tends to lead to greater relationship satisfaction, increased parental academic support appears to be deleterious to the parent-child relationship. Although prior research indicated that frequent parent-teacher communication could enhance parent-teacher relationships (Thompson, 2008b), the present findings seem to suggest an inverse association for the parent-child relationship. This represents an important finding by addressing calls to assess the ramifications of changes in parental involvement (Epstein, 1996; Lewis, 2002; Thompson, 2009).

Parents who exhibit a high degree of school-based involvement might volunteer in their child's classroom, go on class trips with their child, and participate in parent and family social activities with the teacher (Fantuzzo et al., 2000). The results revealed a positive association between academic performance support, health support and parents' school-based involvement. It appears that parents who communicate with their child's teacher about specific academic and health matters tend to be more involved and physically present at their child's school. Future research might examine how parental

academic support and parents' school-based involvement might differ across elementary and high school grade levels. Buchmann and Dalton (2002) found that parents in the US can more strongly influence their children's academic goals when compared to parents in other countries where students are placed into school types by the school system. While this practice is not a feature of the US education system, it does, in a way, happen by default. Students from poor socio-economic backgrounds can attend very different schools than students from middle-class backgrounds. The curriculum and teaching quality might be different from school-to-school and can result in students from poor backgrounds being given little opportunity to advance to college. Future research should investigate these important issues.

Parents' home-based involvement can involve how frequently they work with their child on specific homework tasks, share stories about their school experiences, and review their child's homework and graded assignments (Fantuzzo et al., 2000). In the present study, positive associations among classroom behaviour, preparation, hostile peer interactions, health support and parents' home-based involvement were detected. This finding suggests that parents of children who are engaging in poor classroom behaviour and experiencing health concerns tend to be more deeply involved in their child's education at home. These significant classroom concerns likely contribute to greater home-based involvement on the part of parents.

Parents who practice home-school conferencing involvement regularly talk with their child's teacher about homework assignments, the child's difficulties at school, and how the child gets along with classmates (Fantuzzo et al., 2000). Highly involved parents might also communicate with the teacher via phone and exchange written notes (Fantuzzo et al., 2000). The results indicated positive associations between all dimensions of parental academic support and home-school conferencing involvement and provided validity evidence for the PASS, as home-school conferencing involvement refers to specific communication behaviours on the part of parents.

All studies contain limitations associated with the research design. Parents offer an important perspective on the frequency of parent-teacher communication since they typically initiate the communication. Parents who regularly initiate communication with teachers could be naturally more involved in their child's education. Those same parents could have comprised a majority of the sample and could have contributed to a possible sampling bias, as there were 22,390 potential participants in the school district. Future research should not highlight parents as the sole perspective. It is critical that researchers broaden the understanding of the effects of parental academic support by examining student perspectives. Student participants can provide further evidence for the connections between parental academic support and parent-child relational outcomes. Although the self-report nature of these instruments can pose challenges for researchers attempting to study students at the P-12 level, this is a necessary step to directly assess parent-child relational outcomes.

Another limitation of the present research relates to the duration of the study. Longitudinal research can provide a broader picture of the parental academic support process and offer the ability to assess its influence on the parent-child relationship over time. This can lead to a richer understanding of how parental academic support may function differently across grade levels, offer direct connections between parental academic support and relational longevity (Ledbetter et al., 2007), and identify associations between parental academic support and relevant student learning outcomes.

Considerable research into the parent-child relationship has overwhelmingly concluded that mothers not only wield considerable influence over their children (Morman and Whitely, 2012), but the interpersonal quality of the mother-child relationship is consequential. In fact, studies have suggested that emotional intimacy is a source of significant influence in the mother-child relationship and this is likely a factor that contributed to the high means for relational closeness and satisfaction in the present study that featured a sample comprised mostly of mothers. Future research might examine how the parental academic support process functions in specific family dyads (e.g. mother-daughter/son, father-daughter/son, etc.). Do fathers who communicate more with their son's teacher experience the same degree of relational closeness and satisfaction as mothers who do the same with their son's teacher? Although prior research suggests that, compared to fathers, mothers develop closer and more emotional relationships with their children (Lawton et al., 1994; LeCroy, 1988), research in this area can further inform how parental academic support influences these vital relationships. This can provide useful insight into the parental academic support process and highlight potential relational benefits and consequences that could influence parent-child relationships in the longer term.

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