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A MULTIDIMENSIONAL EXAMINATION OF PARENT INVOLVEMENT ACROSS CHILD AND PARENT CHARACTERISTICS

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ABSTRACT

The purpose of this study was to clarify equivocal findings in the parent-involvement literature and examine novel interactions in a New Zealand context. Specifically, this study tested direct effects of school year, parent education, family structure, and child gender on parent involvement in elementary school. In addition, interactions between parent, family, and child characteristics were explored as moderators on the relation of school year and parent involvement. Participants were 421 primary caregivers of children attending their first through final years of elementary school on New Zealand's South Island. Structural equation models were used to detect direct and interaction effects. Findings revealed statistically significant direct effects for several parent, family, and child characteristics examined. No interaction effects were found. Implications and future research directions are discussed.

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PARENT educational involvement is considered a critical element in fostering academic and social-emotional development, and has been identified as such in national policy in many countries (e.g., Ministry of Education, 2011; U.S. Department of Education, 2010). Policy initiatives advocating for increased and nuanced parent involvement are supported by numerous studies documenting positive relations between parent involvement and important child outcomes (Barnard, 2004; Fan & Williams, 2010; Fantuzzo, McWayne, Perry, & Childs, 2004; Jeynes, 2005). Specifically, evidence suggests that parent involvement is related to

improved academic achievement and school performance (Fan & Chen, 2001; Grolnick & Slowiaczek, 1994; Jeynes, 2005), lower drop-out rates (Barnard, 2004), positive classroom behavior (Fantuzzo et al., 2004), and better social-emotional functioning (Sheridan, Knoche, Edwards, Bovaird, & Kupzyk, 2010). Despite the large body of evidence supporting parent involvement, it is important to note that some studies have revealed mixed findings about whether parent involvement is uniformly associated with positive child outcomes (Domina, 2005; Fan, 2001; Kelly, 2004). Many have suggested (e.g., Jeynes, 2010) that it is important to understand unique features of parent involvement, and for whom certain parent involvement practices may be most salient. It is exactly these issues that this study addresses.

Bronfenbrenner's (1986) developmental ecological model and Epstein's (1995) heuristic for parent involvement laid the groundwork for current conceptions of parent involvement. Recent investigations have extended those frameworks by identifying empirically derived parent-involvement constructs that indicate parent involvement is a multidimensional construct (Epstein, 1995; Fantuzzo, Tighe, & Childs, 2000; Garbacz & Sheridan, 2011; Grolnick & Slowiaczek, 1994; Manz, Fantuzzo, & Power, 2004), reflecting the distinguishable ways in which parents are involved in their children's education (Fantuzzo et al., 2000; Manz et al., 2004). Specifically, three empirically derived and frequently cited dimensions of parent involvement are school-based involvement, home-based involvement, and home-school communication/conferencing (Fantuzzo et al., 2000; Garbacz & Sheridan, 2011; Manz et al., 2004). School-based involvement reflects activities that take place in the school setting (e.g., volunteering, participating in social activities). Home-based involvement includes activities engaged in by caregivers outside of school that promote children's academic competencies and skills, and supports school-based instructional activities (e.g., helping with homework, reading together). Finally, home-school communication/conferencing refers to various forms of contact between parents and school personnel (i.e., members of a child's mesosystem; Bronfenbrenner, 1986), including interacting with teachers and talking to a principal. Parent involvement has been examined in numerous studies (e.g., Manz et al., 2004), including several meta-analyses (e.g., Fan, 2001; Jeynes, 2010). However, historical inconsistency in measuring parent involvement (Fantuzzo et al., 2000) and equivocal findings across studies (e.g., Eccles & Harold, 1996; Manz et al., 2004) raise the need for clarification regarding the various parent-involvement dimensions (Jeynes, 2010), including child (school year, gender) and parent (education, family structure) characteristics. Increased understanding of these variables will inform future research directions and the development of targeted home-school interventions.

Elementary School Year

Students in elementary school typically range from age 5 to 12. Important developmental and social changes occur during this time period (Eccles, 1999). Investigations of parent involvement at different elementary school years will help to determine whether parents' involvement may change with child development (Epstein, 1996). Studies examining parent involvement from elementary to middle school have noted differences in parent volunteering at school, parent engagement with their child's learning at home (Epstein & Dauber, 1991), and changes in home-based homework-monitoring activities (Eccles & Harold, 1996). Specifically, evidence sug-

gests that parents of children in middle school engage in less volunteering at school and less engagement in some but not all home-based involvement activities than parents of children in elementary school (Eccles & Harold, 1996; Epstein & Dauber, 1991). Manz and colleagues (2004) assessed parent involvement among parents of children in school years 1 through 5 attending two high-poverty urban elementary schools and did not find differences in ratings of involvement across school years.

The findings discussed above indicate a need to clarify relations between parent-involvement dimensions and elementary school year. Because involvement was measured differently across studies, it is not clear whether apparent differences in research findings are due to variation in measurement procedures, sampling differences, or other factors that may influence the likelihood of involvement at the student, family, or school level. In addition, the magnitude of some associations is in the small to medium range (Cohen, 1988), suggesting the need for caution when interpreting findings. Historical reviews of empirical research suggest a need to explore parent involvement in ways that may help explain common associations (e.g., a possible decrease in monitoring over school years; Bierman, 1996). Moreover, quantitative analyses of parent involvement suggest a need to more completely understand family (Jeynes, 2010) and child factors that may influence parent involvement across school years (Manz et al., 2004).

Parent Education

The association between parent education and parent involvement has been the subject of many discussions and examinations (e.g., Grolnick & Slowiaczek, 1994; Kelly, 2004; Lareau, 1987, Stevenson & Baker, 1987; Waanders, Mendez, & Downer, 2007; Wylie, 2001). It is often suggested that parents with higher levels of education are more involved with their children's education. Although many findings suggest that parents with more education are more involved in certain ways, there is not a global, positive association between parent education and involvement. One investigation found that parent education (i.e., high school completion) was positively associated with home-based involvement and home-school communication, but not school-based involvement (Manz et al., 2004). Another study found positive associations between parent education and home-based involvement, but not school-based involvement or parent-teacher relationship factors (Waanders et al., 2007). In addition to clarifying inconsistent associations noted in previous literature (Waanders et al., 2007), it is important to understand how parent education interacts with other family and school factors in predicting parent involvement (Bierman, 1996).

Family Structure

The relationship between family structure and parent involvement has been studied previously, but a lack of clarity across studies precludes an ability to draw general conclusions. Specifically, Manz and colleagues (2004) and Marcon (1999) found no differences in parent involvement for single- and two-parent households. However, Fantuzzo and colleagues (2000) found that married parents were more involved in home-school conferencing and home-based involvement than other parents (e.g., single, widowed). In addition, Kohl, Lengua, and McMahon (2000) found that

single-parent status was related to fewer forms of parent involvement. Conceptually, it seems reasonable that two-adult households may have more resources (e.g., financial, time, social support), which could lead to more educational involvement (see Grolnick, Benjet, Kurowski, & Apostoleris, 1997). However, the association is likely complicated. For example, Grolnick and colleagues (1997) found that when controlling for socioeconomic status, mothers who are single exhibit less school-based involvement. Manz and colleagues (2004) specifically cited a need for research to help clarify involvement for families with different family structures, who have children of different ages.

Gender of Child

In addition to parent factors, it is also important to understand the role child factors, including gender, may have in parent involvement. Manz and colleagues (2004) found that parents of boys reported more home-school communication (but not school- or home-based involvement) than parents of girls. They attributed this increased home-school communication to findings that suggest boys are more likely to have behavior concerns than girls (Mireault, Rooney, Kouwenhoven, & Hannan, 2008). Fantuzzo and colleagues (2000), Grolnick and colleagues (1997), and Marcon (1999) found no main effect of child gender on parent involvement. However, Grolnick et al. found interaction effects of child gender and difficult home environments, where difficult home environments predicted less school-based involvement for mothers of boys. Stevenson and Baker (1987) found a positive relation between parent education and parent involvement for mothers of boys, but not for mothers of girls. Jeynes (2005) concluded in a meta-analysis that relations between parent involvement and child achievement were similar for boys and girls; however, the effect size was slightly larger for boys (.62) than for girls (.52). Additional research is necessary to help reconcile findings investigating child gender and parent involvement. In addition, to our knowledge, no studies have investigated how child gender might moderate changes in parent involvement across the elementary school years.

School Year, and Child, Family, and Parent Factors

As well as determining main effects, or direct relations between specific variables and parent-involvement dimensions, there is a need to capture complex relations in educational involvement models (e.g., Bierman, 1996; Jeynes, 2005; Manz et al., 2004) that help explain the relation between one variable and one or more outcomes (Fairchild & McQuillin, 2010). As has been suggested, parent involvement may operate differently at different elementary school years; however, child and parent factors may affect the strength of these relations. Year of elementary school has been singled out as an important area for further exploration while considering the influence of other variables (e.g., family structure; Manz et al., 2004). If the association between parent involvement and school year were found to be moderated by other factors, it would help to clarify ambiguous findings across studies. In addition, examining parent involvement across elementary school, while considering the influence of other variables, would help clarify for whom certain relations hold (Fairchild & McQuillin, 2010).

Study Context

The majority of the studies examining parent involvement discussed heretofore are based on data from the United States. It is important to investigate these constructs in other contexts to determine whether relations observed in the United States are relevant in other parts of the world. In New Zealand, the Schooling Strategy (Ministry of Education, 2011) specifically identified increasing parent involvement as a key objective. Thus, investigating parent involvement in New Zealand may be a natural extension of research in the United States due to similar national policy initiatives.

Seminal research reviews in the New Zealand educational psychology literature point to the importance of a parent's role in children's education (Biddulph, Biddulph, & Biddulph, 2003; Bull, Brooking & Campbell, 2008). Much of the work examining parent involvement in New Zealand has focused on qualitative assessments of involvement (e.g., Bull et al., 2008; Fletcher, Greenwood, & Parkhill, 2010). Multiple New Zealand researchers have called for research initiatives that examine the relations between specific parent-involvement dimensions and important family and child outcomes (Biddulph et al., 2003; Bull et al., 2008), and quantitative research describing different dimensions of parent involvement in New Zealand is an important first step of this process.

Recent factor analytic findings of parent involvement in New Zealand suggest that the three primary dimensions of parent involvement identified in the United States (i.e., school-based involvement, home-based involvement, and home-school communication) have relevance for understanding parent involvement in New Zealand (Garbacz & Sheridan, 2011). Similarly, preliminary quantitative work in New Zealand revealed that family-involvement practices engaged in by teachers and principals were consistent with Epstein's (1995) parent-involvement framework (Struthers & Schaughency, 2010). Specifically, teachers endorsed communicating with families, encouraging parents to volunteer at school, and supporting child learning at home (Struthers & Schaughency, 2010). It is important to extend this quantitative work in New Zealand to determine ways in which patterns of parent involvement observed in the United States may extend to other locations with similar national policy initiatives.

Purpose of the Study and Research Questions

The purpose of this study was to clarify equivocal findings in the parent-involvement literature and examine novel interactions in a New Zealand context. Specifically, the following research questions and associated hypotheses were examined:

1. To what degree does child school year predict parent involvement? We hypothesized that child school year will be significantly negatively associated with home-based involvement and home-school communication, but not associated with school-based involvement (Eccles & Harold, 1996; Epstein & Dauber, 1991; Rimm-Kaufman & Pianta, 1999).

2. To what degree does parent education predict parent involvement? We hypothesized that there will be a statistically significant positive association between parent education and home-based involvement (Manz et al., 2004; Waanders et al., 2007).

Due to the inconsistent findings for other forms of involvement (school-based, home-school communication), hypotheses about these associations are not made.

3. To what degree does the number of adults in the home predict parent involvement? We hypothesized that there will be a significant association between parent involvement and number of adults in the home (Fantuzzo et al., 2000; Kohl et al., 2000). However, hypotheses about the specific pattern of significant findings across involvement dimensions do not seem prudent due to the somewhat unclear findings across studies.

4. To what degree does child gender predict parent involvement? We hypothesized that there will be increased school-based involvement and home-school communication by parents of boys (Grolnick et al., 1997; Manz et al., 2004).

5. How do (*a*) parent education, (*b*) family structure, and (*c*) child gender interact with child school year in predicting parent involvement? (*a*) We hypothesized that there will be a significant interaction between parent education and school year such that the strength of the negative associations of school year with home-based involvement and home-school communication will decrease when parent education is added (Eccles & Harold, 1996; Epstein & Dauber, 1991; Manz et al., 2004; Rimm-Kaufman & Pianta, 1999). (*b*) We hypothesized that there will be a significant interaction between family structure and school year suggesting that available family resources may play an important role in understanding involvement across elementary school. However, based on an unclear pattern of findings, we did not hypothesize specific associations. (*c*) We hypothesized that there will be a significant interaction between child gender and school year such that the strength of the negative association of school year on home-school communication will decrease when child gender is included (Bongers, Koot, van der Ende, & Verhulst, 2003).

Method

Participants and Setting

The primary caregivers of children who attended participating elementary schools ($N = 7$) on New Zealand's South Island were invited to participate in this study. Six of the participating schools were situated in one of the two largest cities on New Zealand's South Island; one participating school was located in one of the smaller cities on the South Island, which had a population of approximately 60,000. Participating schools served communities from low to medium socioeconomic backgrounds, as reflected in their Ministry of Education school decile ratings, which ranged from decile 2 to decile 5. In New Zealand, school deciles range from 1 to 10. Decile ratings include a variety of factors (e.g., household income, occupation). A decile rating of 1 indicates a higher proportion of students from socioeconomically under-resourced backgrounds, and a decile rating of 10 indicates a lower proportion of students from socioeconomically under-resourced backgrounds (Ministry of Education, 2011). Surveys were completed by 428 respondents, which represent a 42.80% response rate. After accounting for missing data on study outcome variables (i.e., seven cases), the final sample included 421 respondents (see "Research Design and Analysis" below). Respondents were primarily female (90.02%) and identified as New Zealand European (80.29%). Demographic data are included in Table 1.

Table 1. Participant Demographic Characteristics

Demographic Characteristic	Sample Composition (N = 421)
Child gender:	
Boys	235 (55.82%)
Girls	183 (43.47%)
Missing	3 (.71%)
Child school year:[a]	
Year 0	18 (4.28%)
Year 1	156 (37.05%)
Year 2	38 (9.03%)
Year 3	49 (11.64%)
Year 4	39 (9.26%)
Year 5	49 (11.64%)
Year 6	56 (13.30%)
Missing	16 (3.80%)
Respondent gender:	
Female	379 (90.02%)
Male	38 (9.03%)
Completed by male and female	1 (.24%)
Missing	3 (.71%)
Respondent ethnicity:[b]	
New Zealand European (NZE)	338 (80.29%)
NZE and other ethnicity/ies	29 (6.89%)
Total identifying as NZE	367 (87.17%)
Māori only	16 (3.80%)
Māori and other ethnicity/ies	27 (6.41%)
Total identifying as Māori	43 (10.21%)
Not elsewhere included	36 (8.55%)
Adults at home:	
1	92 (21.85%)
2 or more	323 (76.72%)
Missing	6 (1.43%)
Respondent education:	
No or some high school	179 (42.52%)
University entrance or some postsecondary[c]	129 (30.64%)
University degree or postgraduate	110 (26.13%)
Missing	3 (.71%)
School decile:	
Decile 2	16 (3.80%)
Decile 4	170 (40.38%)
Decile 5	229 (54.39%)
Missing	6 (1.43%)

[a] Children enter school in New Zealand on or around their fifth birthday. In general, the first year of school is referred to as Year 1. Year 0 designates those children who enter school late in the year, due to their birthdays, and will be in Year 1 in the new school year.

[b] Statistics New Zealand (2005) recommends using a total response method whereby individuals who endorse more than one ethnic group are counted for each group reported. The total number of responses may be greater than the number of ethnicities.

[c] Postsecondary includes university and nonuniversity settings.

Measures

Family Involvement Questionnaire—New Zealand Version. Family involvement in children's education was measured by the Family Involvement Questionnaire—New Zealand Version (FIQ-NZ; Garbacz & Sheridan, 2011). This measure was adapted by Garbacz and Sheridan (2011) from the Family-Involvement Ques-

tionnaire—Elementary Version (FIQ-E; Manz et al., 2004). The FIQ-E was adapted for elementary school from the Family Involvement Questionnaire—Early Childhood Version (FIQ-EC; Fantuzzo et al., 2000). To suit the New Zealand context, some changes in terminology were made, but the meaning of each item was consistent with the original elementary version. The FIQ-NZ consists of a list of 46 parent-involvement behaviors; participants are asked to rate how frequently they perform each behavior on a Likert-type scale from 1 (rarely) to 4 (always). Garbacz and Sheridan (2011) demonstrated through an exploratory factor analysis supported by orthogonal and oblique rotations that 30 of the 46 items loaded onto three factors for a New Zealand sample: school-based involvement ($\alpha = 0.83$), home-based involvement ($\alpha = 0.76$), and home-school communication ($\alpha = 0.86$). The orthogonal rotation was used due to the magnitude of the interfactor correlations (range = 0.37 − 0.47). Readers are referred to Garbacz and Sheridan (2011) for a complete review of differences across the elementary and New Zealand versions. Table 2 includes item loadings for each of the 30 items across the three factors of the FIQ-NZ. The school-based dimension refers to activities that parents engage in at their children's school

Table 2. Exploratory Factor Analysis Structure for the FIQ-New Zealand

Structure	Varimax Loadings
Factor 1: School-based involvement:	
Participate in parent and family social activities at school	.76
Attend organized family-school associations at school	.67
Attend parent workshops or training offered by school	.59
Go on class trips with my child	.55
Talk with other parents about school meetings and events	.55
Participate in fundraising activities at my child's school	.54
Volunteer in my child's classroom	.52
Take my child to the public library	.43
Arrange times at home when my child's classmates can come and play	.39
Meet with other families from my child's classroom outside of school	.39
Factor 2: Home-school communication:	
Talk to the teacher about my child's accomplishments	.69
Talk to my child's teacher about his/her difficulties at school	.68
Talk to teacher about how my child gets along with his/her classmates	.68
Contact the teacher or principal to get information	.63
Talk to my child's teacher about his/her daily school routine	.61
Call teacher if concerned about things my child tells me about school	.60
Talk with my child's teacher or principal about disciplinary problems	.53
Talk with teacher about work child should practice at home	.53
Talk to my child's teacher about the classroom rules	.50
Talk to teacher about personal matters if relevant to school	.43
Factor 3: Home-based involvement:	
Read with my child	.56
Do creative activities with my child	.55
Spend time with my child working on math skills	.53
Help my child with homework	.49
Check that my child has a place at home where school materials are kept	.46
Bring home learning materials for my child	.46
Take my child to places in the community to learn special things	.44
Talk to my child about how school has helped me	.42
Review my child's schoolwork	.41
Praise my child for his/her schoolwork in front of the teacher	.40

Note.—This table originally appeared in Garbacz and Sheridan (2011). It is reprinted with permission.

(e.g., "I attend parent and family social activities at the school."). The home-school communication dimension refers to interactions between parents and school personnel (e.g., "I contact the teacher or principal to get information."). The home-based involvement dimension refers to activities that parents engage in at home to support their children's education (e.g., "I check that my child has a place at home where school materials are kept.").

Demographic questionnaire. Respondents completed a brief demographic questionnaire to investigate participant characteristics that might influence the types of involvement engaged in by parents and caregivers. Items on the questionnaire included the predictor variables (see "Study Variables" below) and other demographic details to describe the sample (see Table 1).

Data-Collection Procedures

Data were collected in the context of two studies conducted from 2008 through 2010. One study (Study 1) was conducted to explore the psychometric aspects of the FIQ-NZ (Garbacz & Sheridan, 2011). The second (Study 2) was part of a larger study examining parent involvement and reading acquisition. In Study 1, the FIQ-NZ and a demographic questionnaire were sent home with oldest or only children in weekly school folders across three participating elementary schools. In Study 2, caregivers of children in their first year of school were invited to participate. For participants in Study 2, the FIQ-NZ and the demographic questionnaire were sent home to the caregivers of the participating children in their reading folder. Surveys in both studies were administered during the second half of the school year. Respondents completed a survey thinking about their only or oldest child in elementary school in Study 1, and in Study 2, respondents were asked to think about their child in the first year of school. Four hundred and twenty-five respondents completed paper-based versions of surveys; three respondents completed an identical survey via an online web-based survey program. Across both studies, a nonprobability sample design was used with a voluntary (i.e., self-selection) selection procedure. Respondents were acknowledged through the use of small items reflecting appreciation for their participation. These studies were conducted in compliance with the appropriate institutional review boards. Data were collected and coded by trained graduate students. A random 30% of data were reentered to assess accuracy (mean accuracy = 97.98%).

Study Variables

The predictor variables were parent education (i.e., the highest level of education of the caregiver completing the measure, treated as continuous; range = no high school to postgraduate), child school year (range = 0–6, treated as continuous), child gender (0 = female, 1 = male), and the number of adults in the home (range = 0–4). For analytic purposes and due to the small number of participants in the higher categories, the number of adults in the home was converted to a binary indicator (0 = 1 adult, 1 = 2 or more adults). The outcome variables were three empirically derived parent-involvement dimensions (Garbacz & Sheridan, 2011; Manz et al., 2004): school-based involvement, home-based involvement, and home-school communication. They were all treated as continuous.

Research Design and Analysis

Structural equation modeling (SEM) was employed using M*plus* Version 6.1 (Muthén & Muthén 1998–2010) to evaluate the model investigating relations between the four predictor variables with the three outcome variables and interaction terms (see Fig. 1). Specifically, M*plus* was used to estimate a model containing three mean parent-involvement factor scores that were predicted by child school year, parent education, child gender, and number of adults in the home. The moderating effects of parent education, child gender, and number of adults in the home on the relation between child school year and parent involvement were examined in separate models. This approach yielded the amount of additional variability in the outcome variables the interaction terms explain apart from the direct effects. The first model examined hypotheses 1–4 (e.g., the direct effect of child school year); models 2–4 examined hypotheses 5a–5c (e.g., child gender × school year).

To decrease the influence of nonresponse on items loading onto factors, mean factor scores for each parent-involvement dimension were computed and included in the sample if at least seven out of 10 items were observed. This resulted in the loss of seven respondents and a maximum of 421 respondents available for the SEM analyses. Missing data on the predictors were modeled using the full information maximum likelihood (FIML; Arbuckle, 1996) estimator in M*plus*. The FIML approach is widely considered to represent the state of the art in analyses involving SEM with missing data (Schafer & Graham, 2002) and has shown to provide unbiased estimates under a variety of conditions, including nonnormally distributed data
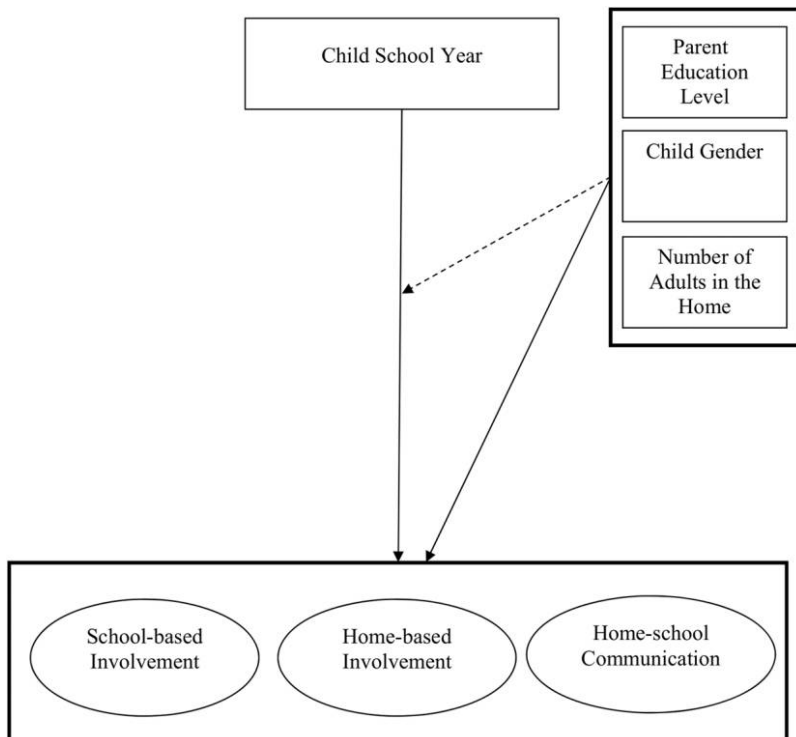

Figure 1. The direct effects (solid lines) and moderating effects (dashed line) tested in the SEM framework.

(Enders, 2001). The Yuan-Bentler (2000) correction was used in unison with FIML to adjust the model test statistic and standard errors for excess nonnormality.

The use of FIML in the SEM context only applies to missingness in the dependent variables. Therefore, to model the missingness in the predictor variables and maximize the sample size for each model, the continuous predictors were converted to single-indicator latent constructs, while the variance terms of the binary predictors were included in the model. These approaches allowed the predictors to be treated as dependent variables. The single-indicator latent constructs for child school year and parent education were created by setting the factor loadings to 1 and the variance of the error terms to 0. This, in essence, created a latent version of child year in school and parent education level that exactly matched the observed version (i.e., the same mean and variance).

Converting child school year to a latent construct added complexity to the modeling of the interaction terms (Kenny & Judd, 1984). Each interaction term involved at least one latent construct (e.g., child year in school × parent education). M*plus* incorporates a quasi-maximum-likelihood (QML; Klein & Muthén, 2007) estimation method for this type of model. Wald tests were conducted to determine if interaction terms explained a significant amount of variability in the outcomes above and beyond main effects. Interaction terms were introduced in the models in blocks. For example, Model 2 assessed the impact of the child year in school × parent education level interaction effect on each dimension of parent involvement. The sample size for interaction terms using binary predictors is smaller due to the observed nature of those variables and lack of a variance term to be modeled.

Results

Table 3 presents the covariance matrix along with mean values for the study variables. Findings reveal that respondents, on average, are engaging in the three dimensions of parent involvement between *sometimes* and *often*. A comparison of model fit statistics is included in Table 4. The direct-effects model (hereafter referred to as Model 1) assessed the direct effects of child school year, parent education level, child gender, and number of adults in the home on parent involvement. Models 2–4 assessed the moderating effects of parent education level, child gender, and number

Table 3. Covariance/Correlation Matrix and Means for Study Variables ($N = 421$)

	Child Grade	Parent Education	School-Based	Home-School	Home-Based	Child Gender	Adults in Home
Child grade	3.80	.02	.04	−.13	−.24	−.02	−.00
Parent education	.05	1.98	.13	.04	.14	.15	.12
School-based	.04	.12	.37	.43	.50	.00	.16
Home-school	−.16	.03	.17	.42	.48	.09	−.05
Home-based	−.23	.09	.15	.15	.24	−.01	.06
Child gender	−.02	.10	.00	.03	−.00	.25	.02
Adults in home	−.00	.07	.04	−.01	.01	.00	.17
Mean	2.74	3.34	2.20	2.31	2.93	.56	.78

Note.—Variance terms are provided on the diagonals; covariance terms are provided below the diagonal; correlation terms are provided above the diagonal.

Table 4. Comparison of Model Fit Statistics

	Model 1 No Moderators (N = 421)	Model 2 Child Gender (N = 418)	Model 3 Parent Education (N = 421)	Model 4 Adults in Home (N = 415)
χ^2	15.22			
df	6			
p-value	.019			
RMSEA	.06	–	–	–
90% CI	.02 − .10			
p-value	.278			
CFI	.971	–	–	–
Standardized root mean square residual	.033	–	–	–
Wald test	.278	3.80	2.67	3.11
df		3	3	3
p-value	–	.2843	.4454	.3758

of adults in the home on the relationship between child year in school and parent involvement. Unstandardized parameter estimates and standard errors for Models 1–4 are presented in Table 5. The R-squared values for each outcome indicate that the four predictors together explain a marginally significant amount of variability in home-school communication (i.e., approx. 3%; $p = .091$), and a statistically signifi-

Table 5. Comparison of Unstandardized Parameter Estimates (Standard Errors)

|	Model 1 No Moderators (N = 421)	Model 2 Gender (N = 418)	Model 3 Parent Education (N = 421)	Model 4 Adults in Home (N = 415)
School-based involvement:				
Grade	.015 (.020)	−.007 (.033)	.014 (.021)	.038 (.040)
Parent education	.103 (.044)*	.104 (.044)*	.113 (.044)**	.108 (.044)*
Gender	−.019 (.059)	−.020 (.060)	−.029 (.060)	−.019 (.060)
Adults	.215 (.069)**	.224 (.069)**	.214 (.069)**	.214 (.069)**
Grade × gender	–	.037 (.042)	–	–
Grade × parent	–	–	.037 (.029)	–
Grade × adults	–	–	–	−.033 (.047)
Home-school communication:				
Grade	−.057 (.022)*	−.037 (.035)	−.058 (.023)*	−.106 (.049)*
Parent education	.032 (.045)	.040 (.045)	.028 (.046)	.024 (.045)
Gender	.104 (.064)	.101 (.063)	.102 (.064)	.106 (.064)+
Adults	−.091 (.078)	−.068 (.078)	−.090 (.078)	−.085 (.078)
Grade × gender	–	−.032 (.045)	–	–
Grade × parent	–	–	.010 (.033)	–
Grade × adults	–	–	–	.059 (.055)
Home-based involvement:				
Grade	−.082 (.017)***	−.106 (.027)***	−.083 (.017)***	−.078 (.038)*
Parent education	.099 (.035)**	.097 (.035)**	.112 (.037)**	.096 (.036)**
Gender	−.033 (.047)	−.034 (.047)	−.044 (.047)	−.029 (.047)
Adults	.053 (.057)	.069 (.057)	.051 (.057)	.056 (.058)
Grade × gender	–	.041 (.034)	–	–
Grade × parent	–	–	.040 (.028)	–
Grade × adults	–	–	–	−.009 (.042)

+ $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

cant amount of variability in school-based involvement (i.e., approx. 5%; $p = .043$) and home-based involvement (i.e., approx. 12%; $p = .002$).

Model 1: Direct Effects of Child and Family Factors on Parent Involvement

Figure 2 provides a graphical depiction of Model 1 as the best fitting model, and includes standardized parameter estimates. The standardized estimates in Figure 2 also provide a means for determining the relative effect of each indicator. Model 1 fit statistics reveal adequate fit based on suggested cutoff values (Hu & Bentler, 1999). The exact fit hypothesis test provided by the χ^2 was significant ($p = .02$), indicating sources of misfit are present. The close fit hypothesis test provided by the root mean square error of approximation (RMSEA) is not rejected ($p = .28$), but the upper bound of the 90% confidence interval for the RMSEA suggests that the close fit hypothesis cannot be rejected. The comparative fit index (CFI) suggests that the relative fit of the model is approximately a 97% improvement over the independence model (i.e., a model assuming no covariation).

Elementary school year. Child school year exhibited a statistically significant effect on two dimensions of parent involvement. Specifically, child school year predicted home-school communication ($p < .05$), and home-based involvement ($p < .001$), but did not predict school-based involvement ($p = .469$). The results indicate an inverse relation between child school year, and home-school communication and home-based involvement. In other words, home-school communication and home-based involvement scores were on average lower by approximately 0.06 and 0.08 units, respectively, per additional child school year.

Parent education. Parent education also exerted a statistically significant effect on some, but not all, dimensions of parent involvement. Specifically, parent education
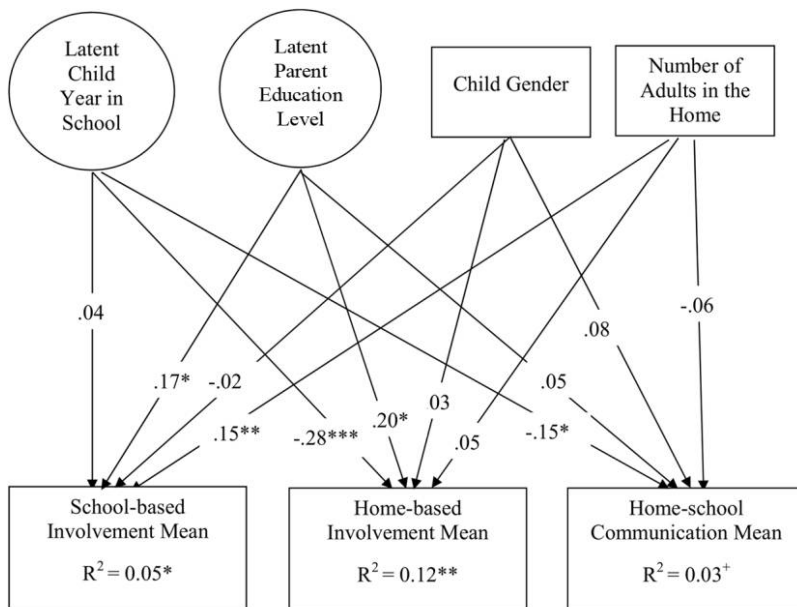
$^{+}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

Figure 2. Standardized parameter estimates obtained from Model 1.

predicted school-based involvement ($p < .05$) and home-based involvement ($p < .01$), but did not predict home-school communication ($p = .447$). The positive coefficients suggest that school-based involvement and home-based involvement scores were on average higher by approximately 0.10 units each with each additional level of parent education.

Family structure. Number of adults in the home was found to have a statistically significant positive effect on school-based involvement ($p < .01$). Specifically, scores on the school-based involvement measure are approximately 0.22 units higher in homes with two or more adults present. Adults in the home was not found to be a statistically significant predictor of home-school communication ($p = .243$) or home-based involvement ($p = .358$).

Gender of child. Statistically significant direct effects of child gender on the various measures of parent involvement were not present at the $p < .05$ level. Specifically, gender differences were not found for school-based involvement ($p = .748$) or home-based involvement ($p = .485$). The effect of gender on home-school communication approached marginal statistical significance ($p = .106$).

Relative effect of each indicator. The standardized estimates in Figure 2 provide a means for determining the relative effect of each indicator. For instance, school-based involvement exhibits a change of 0.17 standard deviation (*SD*) units per *SD* change in parent education level, but only a 0.04 *SD* unit change per *SD* change in child school year. Home-based involvement exhibits a change of -0.28 *SD* units per *SD* change in school year, but only a 0.05 *SD* unit change per *SD* unit change in number of adults in the home. Home-school communication exhibits a change of -0.15 *SD* unit change per *SD* change in school year, and a 0.05 *SD* unit change per *SD* unit change in parent education. These data allow for comparisons across each indicator in terms of the magnitude of change in *SD* units.

Models 2–4: Exploring Interactions of Child and Parent Factors on the Relation between Elementary School Year and Parent Involvement

Models 2–4 included interaction terms containing at least one latent variable. The Wald test is a χ^2 distributed test of the amount of additional variability explained in the outcome measures by inclusion of the interaction terms. All of the Wald tests are not significant, indicating that inclusion of the interaction terms does not account for a statistically significant amount of variability in parent involvement. No interaction terms reached statistical significance. Specifically, the interactions of child school year and parent education, child school year and child gender, and child school year and adults in the home were not statistically significant.

Discussion

The purpose of this study was to clarify equivocal findings in the parent-involvement literature and examine novel interactions in a New Zealand context. Statistically significant direct effects were found for all predictor variables; however, the patterns across involvement dimensions differed. No significant interactions were found. Implications are discussed below.

Elementary School Year

School year had different relations with parent involvement depending on the dimension measured. Specifically, home-based involvement and home-school communication were found to be inversely related with school year. This finding is consistent with our hypothesis. Considering all predictors, school year had the highest *SD* unit change on home-based involvement. The observed decline in home-based involvement is consistent with some studies in this area that found a decrease in parent engagement in children's learning at home (Epstein & Dauber, 1991) and changes in parent homework monitoring (Eccles & Harold, 1996). Developmentally, findings of decreased involvement in these domains could be a reflection of parents' recognition of the importance of children's growing autonomy and responsibility for their learning as they progress through their elementary education.

The nonsignificant finding for school-based involvement and school year is consistent with some other work in this area (e.g., Manz and colleagues, 2004). Previous work examining parent involvement across years and/or level of school has suggested that the structure and/or routines of schools may also play a role in observed differences in parent involvement (see Eccles & Harold, 1996). Although the data collected in this study were obtained in one type of school environment (i.e., elementary schools), it is possible that differences in school practices or routines across elementary grades may relate to the observed differences in the domains of home-based support or home-school communication, as well as the nonsignificant finding for school-based involvement. A large proportion of caregivers who had children in Year 1 were included in this study. Thus, there may be structures in place to support involvement for caregivers of beginning students at the participating schools that are affecting the findings (e.g., more prompts for caregivers to engage in home-based involvement for Year 1 students as compared to students at higher school years).

Indeed, emerging evidence suggests that there may be differences in home-based involvement and home-school communication among parents of Year 1 students in New Zealand, which may relate both to age (with parents of younger, beginning school children engaging in higher levels of these practices) and to schooling variables (Clark, 2010). Specifically, these preliminary findings suggest links between teacher/school practices to prompt parents' home-based involvement and home-school communication with child age/grade, such that the prompt format used by teachers of younger Year 1 children who began school more recently was associated with higher levels of parent involvement. Taken together, these findings suggest two hypotheses: (1) observed parent involvement (e.g., home-based involvement) may, at least in part, be related to school practices (Eccles & Harold, 1996; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005), and (2) the practices used by school personnel to encourage home-based support and/or home-school communication may also vary across grades or levels of schooling. However, these hypotheses cannot be verified with this sample. Future research should examine these hypotheses.

Parent Education

Findings from the present study revealed a statistically significant positive relation between parent education and home- and school-based involvement. Parent educa-

tion had the second highest *SD* unit change on home-based involvement (behind school year) and the highest *SD* unit change on school-based involvement. These findings are generally consistent with our hypothesis, and are congruent with research suggesting that overall parents with higher levels of education tend to be more involved in their children's education (Fantuzzo et al., 2000; Grolnick & Slowiaczek, 1994; Wylie, 2001). This study adds to the extant literature and addresses the need cited by others (Waanders et al., 2007) to further investigate the relation between parent education and parent involvement.

Although these findings are important, interpretive caution is appropriate as conclusions are limited to the practices that were included in the FIQ-NZ. It may be that parents with less education are engaging in valuable activities that were not assessed (e.g., oral language traditions; see Gardner-Neblett, Pungello, & Iruka, 2011; Leyva, Sparks, & Reese, 2012). Alternatively, it could be that parents who are more educated are more aware of the importance of parent involvement, which may influence their reporting. In addition, the observed relation between parent education and aspects of parent involvement may be influenced by other factors (e.g., psychological variables [e.g., parent self-efficacy]; Walker, Ice, Hoover-Dempsey, & Sandler, 2011).

Previous studies have found positive relations between parent education and parent involvement, at home and in home-school communication (Manz et al., 2004), and in school and with home-school conferencing (Fantuzzo et al., 2000). As parent education did not predict home-school communication in this study, an important difference may be revealed in the way caregivers and school personnel interact in New Zealand as compared to U.S. samples, at least for the samples reported in specific study findings (e.g., Manz et al., 2004). For example, there may be differences across the United States and New Zealand regarding structures and routines that facilitate communication between parents and school personnel. In New Zealand these practices may be working to reduce the difference in parent involvement in home-school communication as a function of parent educational level. For example, it may be that the physical layout of the school buildings in New Zealand enables greater parent access to children's classrooms, which encourages "brief chats" before and after school that have been reported as important by principals and teachers (Struthers & Schaughency, 2010).

Family Structure

In response to the need for additional study of the relation between family structural features and parent involvement (Manz et al., 2004), we examined whether the number of adults in the home was related to parent involvement. Findings suggested that parents with two or more adults at home engaged in more school-based involvement, but not more home-based involvement or home-school communication. This finding is generally consistent with our hypothesis that parents from families with more adults in the home would engage in more educational involvement. The positive association between adults at home and school-based involvement is consistent with Grolnick et al. (1997), but inconsistent with Manz et al. (2004). Fantuzzo and colleagues (2000) examined involvement for married parents and found they engaged in more home-school conferencing and home-based involvement than other parents. Findings from the present study and Fantuzzo et al. may not be inconsistent,

as family structure was operationalized differently across studies. Conceptually, it seems reasonable that parents who have more resources at home would be better equipped to engage in more school-based involvement since those activities require leaving home and likely necessitate alternative child-care arrangements (Grolnick et al., 1997). More research is needed that comprehensively characterizes under what conditions (e.g., social support outside the home) parent involvement fluctuates for households with more and fewer adults at home.

Gender of Child

Findings from this study suggest a trend toward greater home-school communication reported by parents of boys than parents of girls. Specifically, the relation of child gender on home-school communication was approaching statistical significance ($p = .106$). This finding is trending in the direction of our hypothesis that parents of boys would engage in more home-school communication and school-based involvement. Some caution is needed when interpreting this finding, as the reported association between gender and parent report of home-school communication is small, and because there are a number of studies that have not found an effect of gender on parent involvement (Grolnick et al., 1997; Marcon, 1999). However, this finding is in the same direction as those reported by Manz and colleagues (2004), who found that parents of boys reported greater home-school communication. As previously mentioned, it has been suggested that an increase in home-school communication for parents of boys may be due to the higher prevalence of behavior concerns observed in boys (Manz et al., 2004). Another possible explanation is that increased communication is influenced by child educational progress. Indeed, the relation between child gender and achievement is complex; investigations have yielded mixed findings (Schaughency & Reese, 2010), and some observed gender differences may be due to selection bias (e.g., with boys being selected more often for additional reading support; Prochnow, Tunmer, Chapman, & Greaney, 2001). Thus, increased home-school communication may be due to actual or perceived concerns with boys' educational progress, and/or an artifact of covarying behavior and academic concerns (Frick et al., 1991).

School Year, and Child and Parent Factors

No statistically significant interaction effects were found for the relation between child school year and parent involvement. These associations were examined in response to the cited need to add complexity to our understanding of parent involvement (Bierman, 1996) through specific examination of parent factors (Jeynes, 2010) at different child ages (Manz et al., 2004) that could help reconcile findings across studies (Waanders et al., 2007). Thus, these findings add important information to the extant literature by suggesting that (1) parent education, (2) child gender, and (3) the number of adults at home do not significantly explain different levels of parents' engagement in certain types of involvement relative to others at specific years of elementary school. Of course, replication is important, as is a consideration for study limitations (as discussed below). Nevertheless, a primary implication of these observed interaction effects is for future examinations to look toward other variables (not included herein) that may explain a significant amount of variability in the

association of elementary school year and parent involvement. Converging evidence suggests that school-level factors, such as teacher invitations and structural features of schools (Clark, 2010; Struthers & Schaughency, 2010; Walker et al., 2005), are important to consider in future work.

The *R*-squared values for each dimension of parent involvement indicated that the four predictors together explain a marginally significant amount of variability in home-school communication, and a statistically significant amount of variability in school-based involvement and home-based involvement. However, the amount of variability explained is relatively low, with the highest amount of variability explained for home-based involvement (approx. 12%). Thus it is important to consider what might explain additional variability. School-level factors may also be important to take into account at this global level. In addition, parent social support, parent time and resources (Struthers & Schaughency, 2011), and other psychological factors (e.g., parent beliefs about their role in educational activities; Walker et al., 2005) are all variables that findings suggest are valuable to include in future work.

Study Context

This study responded to a need in the New Zealand literature by quantitatively examining patterns across dimensions of parent involvement. Thus, this study adds to the literature investigating parent involvement in New Zealand (Bull et al., 2008; Fletcher et al., 2010) by extending recent quantitative psychometric work (Garbacz & Sheridan, 2011). In particular, this study demonstrated that many observed relations between parent and child factors and parent involvement in the United States held for this sample of families in New Zealand. Although national policy across the two countries has emphasized parent involvement, it is noteworthy that similar relations are found among parent and child factors and parent involvement in geographically distant locations. Some important differences across studies with U.S. and New Zealand samples were noted. For example, parent education did not predict home-school communication in the present sample. As we suggested, this may reveal a difference in the mechanisms to support interactions among caregivers and school personnel.

It is useful to weigh this study's findings in the context of the larger literature on parent involvement in the United States. However, it is important to consider some potentially important differences across the samples used in this investigation and previous research in the United States. Specifically, the sample of parents in this study is somewhat different from other studies that have examined parent involvement using the FIQ-E (Manz et al., 2004) and FIQ-EC (Fantuzzo et al., 2000). In this study, many respondents identified as New Zealand European (i.e., 80.3%) and had children attending schools in smaller urban areas on New Zealand's South Island. In a study reporting factor analytic work with the FIQ-E, Manz and colleagues (2004) indicated that the majority of respondents were African American (i.e., 96%) and had children attending school in an urban school district. These ethnic and geographic differences are important to note, as patterns of involvement may differ for parents with dissimilar backgrounds and living arrangements. This study did not include an examination of associations by cultural background. Other investigations that have examined cultural issues

have found similarities and differences in how parent involvement functions across cultures (Cheung & Pomerantz, 2011).

Limitations and Future Research Directions

Although statistically significant and conceptually important relations were found in this study, it is important to acknowledge limitations that influence confidence in the conclusions that can be drawn. This study used a correlational design to examine the relations among the variables of interest, and therefore causality cannot be inferred. In addition, specific involvement activities that may shift across the school years were not revealed. The cross-sectional nature of this study provided a snapshot of activities at different school years and not a prospective picture of the evolution of parent involvement over time. Longitudinal studies assessing various aspects of parent involvement are needed with parents of school-age children and youth (e.g., Dearing, Kreider, Simpkins, & Weiss, 2006) to capture more nuanced understandings of parent involvement over the course of development with greater sensitivity and specificity.

The sample for this study was drawn from communities in New Zealand. This study's quantitative examination adds to recent qualitative assessments of parent involvement in New Zealand (Fletcher et al., 2010) by providing evidence that parent education or children's year in school is linked with some forms of parent involvement. Nevertheless, replication is needed to examine the generalizability of these relations to other samples. Furthermore, a minority of individuals from specific cultural backgrounds (e.g., Māori) were included in this study. Future work is needed to understand parent involvement for individuals of these and other backgrounds. In addition, a disproportionate number of respondents had children attending Year 1. This affects the generalizability of the findings.

This study relied on a single self-report method to provide parent perceptions of involvement behaviors across the different dimensions. Future studies should use multiple informants and direct observations to provide convergent and objective evidence for parent-involvement practices. In addition, multisource, multimethod assessments, including direct observations and informant/self-reports, would allow researchers to better understand contributions of method and rater to descriptions of parent involvement. Finally, we hypothesize that structural features of the schools used in this study may explain a portion of the remaining variability in some observed relations. However, quantitative data about features of the schools were not collected, and thus cannot be examined. Future work should collect school-level data and include those data in future investigations.

Finally, it will be important for future work to focus on the relations examined herein and their association with child outcomes (e.g., academic performance). Although positive associations between parent involvement and child outcomes during the elementary years have been documented, more work is needed to clarify for whom (e.g., parents of children across education levels) and under what conditions (e.g., contextual factors) the effects are most relevant, particularly for malleable factors (Christenson, 2004). If empirical evidence were to suggest specific developmental patterns in parent involvement and demonstrate that these involvement behaviors result in positive child outcomes, interventions could be tailored and targeted to meet the needs of children and families at different developmental periods.

Conclusion

Parent involvement in their children's learning has been demonstrated to have a positive effect on schools, teachers, children, and parents (e.g., Barnard, 2004; Fan & Williams, 2010; Fantuzzo et al., 2004; Jeynes, 2005). This study contributes to our understanding of the relations between some child and parent factors and parent involvement in elementary school by specifically responding to cited needs to the extant literature for additional investigation in these areas (e.g., Jeynes, 2010; Manz et al., 2004; Waanders et al., 2007) in a New Zealand sample. Despite the important contributions of this study, more research is needed to learn how families support their children's learning and development, and ultimately to inform methods that encourage effective parent-involvement practices aimed at enhancing social and academic outcomes for children.

Note

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