Paternal Influence on the Developmental Pathways of Maternal Parenting Stress, Home Learning Stimulation, and Children's Social Skills in the U.S. and Korea: A Moderated Mediation Model[1]

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Abstract: To increase the specificity in paternal influence as the importance caregiving context on mothers and children, we aimed to test 1) whether the mediation effect of maternal parenting stress at age 3 on children's social skills at age 9 via home learning stimulation at age 5 was significant; 2) whether this mediation effect varied according to paternal involvement and depression at age 3; and 3) whether this proposed path was culturally generalizable. To examine causal pathways and compare differences between two cultures, we analyzed the proposed moderated mediation models using nationally representative longitudinal data from the U.S. (the Fragile Families and Child Wellbeing Study) and Korea (the Panel Study on Korean Children) using SPSS 25 and PROCESS. We found that in both countries, higher maternal parenting stress at age 3 hindered the development of school-aged children's social skills through lower levels of home-learning stimulation. We also found cultural differences: paternal involvement significantly buffered the negative effects of maternal parenting stress in Korea, while paternal mental health (i.e., non-depression) played that buffering role in the U.S. This study illustrates both the cross-cultural generalizability and culture-specific aspects of family processes, then discusses some theoretical implications and potential practices that would better support families in promoting their children's social development.

Keywords: maternal parenting stress, paternal influence, home learning stimulation, children's social skills, cultural difference, moderated mediation

Résume : Afin d'accroître la spécificité de l'influence paternelle dans le contexte de la prise en charge sur les mères et les enfants, nous avons cherché à tester 1) si l'effet de médiation du stress parental maternel à l'âge de 3 ans sur les compétences sociales des enfants à l'âge de 9 ans par la stimulation de l'apprentissage à la maison à l'âge de 5 ans était significatif; 2) si cet effet de médiation variait en fonction de l'implication paternelle et de la dépression à

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l'âge de 3 ans; et 3) si ce chemin proposé était généralisable culturellement. Afin d'examiner les liens de causalité et comparer les différences entre deux cultures, nous avons analysé les modèles de médiation modérée proposés à l'aide de données longitudinales représentatives au niveau national provenant des États-Unis (l'étude sur les familles fragiles et le bien-être des enfants) et de la Corée (l'étude sur les enfants coréens) en utilisant SPSS 25 et PROCESS. Nous avons constaté que dans les deux pays, un stress parental plus élevé chez la mère à l'âge de 3 ans entravait le développement des compétences sociales des enfants d'âge scolaire en raison de niveaux inférieurs de stimulation de l'apprentissage à la maison. Nous avons également constaté des différences culturelles: l'engagement paternel a considérablement atténué les effets négatifs du stress parental maternel en Corée, tandis que la santé mentale paterne (c'est-à-dire l'absence de dépression) a joué ce rôle d'amortisseur aux États-Unis. Cette étude illustre à la fois la généralisabilité interculturelle et les aspects spécifiques à la culture des processus familiaux, puis examine certaines implications théoriques et pratiques potentielles qui permettraient de mieux aider les familles à promouvoir le développement social de leurs enfants.

Mots-clés : stress parental maternel, influence paternelle, stimulation de l'apprentissage à domicile, compétences sociales des enfants, différence culturelle, médiation modérée

Introduction

Children's social skills, including their ability to assert their opinions positively, empathize with others' emotions, and solve problems in interpersonal contexts, have meaningful implications for their adjustment during childhood, adolescence, and beyond (Bornstein et al., 2010). Studies have consistently suggested that caregiving environments, including positive parenting behaviors (e.g., warmth, responsivity, and sensitivity), (Mensah and Kuranchie, 2013) and stimulating home environments (e.g., access to reading materials, outings, and activities) play a significant role in shaping children's social skills. According to the parenting stress model (Abidin, 1995), parental risk factors such as family hardships, depression, low spousal involvement in parenting, and high parenting stress (Hobfoll, 2002) negatively affect the quality of parents' interactions with their children. This leads to poor stimulation at home and consequently, to the children having poor social development (Kent and Pitsia, 2018; Kim et al., 2019). For instance, mothers with limited psychological resources (e.g., high levels of depression and/or parenting stress) often exhibited harsh and intrusive parenting behaviors (Choi and Yeon, 2016; Crnic et al., 2005; Wilson and Durbin, 2010) and were unable to provide a developmentally appropriate home environment (Baker and Iruka, 2013; Chung et al., 2013), all of which can contribute to deficits in their children's social skills (Gershoff et al., 2007).

While this negative cascading process has been well researched, the family processes–especially the role of fathers within the family–are not fully understood. Most studies have focused primarily on the mother's influence alone, or on father-child dyadic relationships that did not consider the mother's influence at all (e.g., Wilson and Durbin, 2010). However, in two-parent families, parents consistently exchange influences within the system (Deater-Deckard, 2004), and

paternal involvement and mental health are particularly crucial determinants of mothering quality (Cabrera et al., 2007; Habib, 2012). That is, paternal involvement and depression can be thought of as important components of the caregiving environment, and they are likely to interact with the mother's functioning within the family.

At the same time, the role of a father's involvement and mental health within a family can vary across different cultures (Chen and Liu, 2016; Habib, 2012; Harkness and Super, 2002). Although Korea has made nationwide efforts to support dual-earner families and to promote involvement by fathers (Lee and Yang, 2020), the level of Korean paternal involvement is still very low (Guryan et al., 2008). Compared to Korea, the U.S. has acknowledged the important role fathers play relatively well (Guryan et al., 2008). Similarly, while prevention and intervention programs aimed at improving a child's adjustment by supporting the father's involvement and mental health are well developed in the U.S. (Cowan et al., 2009), similar efforts in Korea remain limited (Choi and Kim, 2020). Therefore, characterizing the cross-cultural generalizability and cultural-specific cascading processes within families in the two countries may offer important insights into efforts to shape public policies and intervention programs in order to support families in Korea more effectively. This study examines cross-cultural differences and similarities in the dynamic processes through which caregivers' psychological limited resources (i.e., maternal parenting stress, lack of paternal involvement, and depression) influenced child-rearing settings (i.e., home learning stimulation) and child development (i.e., social skills) by comparing data from the U.S. and Korea.

Maternal Parenting Stress, Home Learning Stimulation, and Children's Social Skills

Social skills allow early school-aged children to initiate and sustain positive interactions with peers and teachers, leading to better academic achievement (Denham, 2006). Children with limited social skills during the transition to school have been found to be at increased risk for poor academic achievement, school dropout, antisocial behavior, and psychopathology during their later developmental stages (Berry and O'Connor, 2010; Sørlie et al., 2008). However, although extensive research has investigated the various developmental mechanisms that lead to the development of social skills in children, most studies have focused on parenting behaviors with less attention paid to the effects of the family environment (e.g., Hart et al., 2003; Landry et al., 2006). Although limited, cultivating stimulating home learning environments that involved reading, playing, and other activities during the transition to school have been shown to promote school readiness in children (Gershoff et al., 2007).

In contrast, in line with the parenting stress model (Baker and Iruka, 2013; Gershoff et al., 2007), parenting stress has been shown to disrupt parents' positive parenting practices, leading to negative adjustment in their children (Ceballo and McLoyd, 2002; Mistry et al., 2002). Furthermore, the negative effect of maternal

parenting stress spills over, creating a less stimulating learning environment at home and leading children to experience adjustment problems (Baker and Iruka, 2013; Chung et al., 2013; Gershoff et al., 2007; Mistry et al., 2002). Several cross-sectional and longitudinal studies have suggested that parenting stress, either directly or indirectly, closely associates with child outcomes via parenting practices (Anthony et al., 2005; Crnic et al., 2005; Gershoff et al., 2007). For example, Gershoff et al., (2007) found that increased parenting stress was associated with decreases in positive parental behaviors, including poor engagement in providing extracurricular activities, cognitive stimulation, and warm parenting, which in turn decreased the children's social competences. Similarly, a national survey in the U.S. indicated that increases in maternal stress were significantly linked to shortages in cognitive and maternal home learning stimulation, which contributed to children's negative adjustment (Baker and Iruka, 2013; Gershoff et al., 2007).

Paternal Involvement as a Protective Factor, Paternal Depression as a Risk Factor

Although the deleterious effects of maternal parenting stress on child development have been well established, little is known about the role of fathers in buffering or exacerbating the adverse effects of that stress. From a family systems perspective, partners influence each other's behaviors and family dynamics, reinforcing their partners' positive support or involvement (Murphy et al., 2017). Thus, the effects of the mother's psychological difficulties (e.g., depression and parenting stress) and parenting behaviors on family processes will vary according to their differential interactions with paternal involvement and mental health. A few studies have found evidence that paternal involvement may mitigate the negative effects of maternal psychological symptoms and poor parenting behaviors on children's social development (Fletcher, 2009; Kim and Kim, 2013; Marchand and Hock, 2003). For example, mothers with high levels of parenting stress exhibited inadequate responses towards their children when the mothers perceived a discrepancy between the burdens of childcare and the availability of paternal support and involvement (Deater-Deckard, 2004). Additional evidence suggests that paternal involvement moderates the effects of contextual risks and maternal depression on children's adjustment (Boyce et al., 2006). Similarly, Jo and Park (2017) found that Korean paternal involvement in childrearing buffered the effects of maternal parenting stress on withdrawn and anxious/depressive behaviors in preschoolers. In addition, a few studies have examined whether paternal depression aggravates the negative effects of poor maternal functioning within the family. For example, paternal depression during infancy exacerbates the negative effects of maternal depression on children's behavioral problems (Mezulis et al., 2004). However, the current understanding of how paternal involvement and depression levels interact with maternal psychological difficulties to influence children's development remains incomplete. Furthermore, some studies have shown that paternal depression aggravates the negative effects of maternal depression when fathers spend more time with their children (Mezulis et al., 2004). That result raised the

question of whether paternal involvement could have different effects on family dynamics under specific conditions, such as when the father experiences mental health issues. Given this, examining the additive moderating effects of paternal involvement and depression may help clarify more nuanced family processes associated with mothers' and fathers' influence on children's adjustment.

Comparison of the U.S. and Korea

The family context throughout the global has been changing, due in part to the growth of female employment, and has led to increased expectations and changes in the values with respect to fathers' roles in childrearing (Cabrera, 2010). Accordingly, the U.S. has put a great deal of effort into increasing paternal involvement through policies and programs since the 1990s (Cabrera, 2010). Similarly, efforts in Korea to develop and implement effective policies that support dual-earner families have been growing rapidly over the past decade (Hong et al., 2009). Many of these programs and policies seek to reduce maternal parenting distress and career disruption by implementing both maternal and paternal leave and providing various childcare services and parenting programs. However, despite these efforts, Korean fathers still spend remarkably less time on child rearing (1.5 hours per week) than U.S. fathers (5.62 hours per week) (Guryan et al., 2008; Statistics Korea, 2013), and Korean mothers continue to show higher levels of parenting stress than U.S. mothers (Chung et al., 2013). This evidence suggests that the levels of paternal involvement and maternal parenting stress in the two countries might vary due to cultural values. Furthermore, the culture-specific socialization of gender roles in the two countries influenced the expectations and beliefs of their mothers and fathers differentially (Hofferth, 2003). Prior cross-cultural studies have found that perceptions of fatherhood (whether fathers should provide parental support and be involved in childrearing) (Hofferth, 2003), mothers' parenting stress (Chen and Liu, 2016; Krulik et al., 1999; Oh et al., 2002), and the effects of paternal depression on mothering (Wilson and Durbin, 2010), differed according to people's racial and cultural backgrounds (Cabrera, 2010; Habib, 2012). For example, there is evidence of racial differences in the fact that paternal depression was more strongly associated with increased negative parenting behaviors and poorer children's outcomes in non-Caucasian families and minority racial groups (Wilson and Durbin, 2010).

Taken together, this evidence documents various levels of maternal parenting stress, paternal involvement, and mental health, along with a diversity of social and cultural values across cultures (Hofferth, 2003). It suggests the possibility that the extent to which paternal involvement and depression exert an influence on the well-known mediating path from maternal parenting stress to home learning stimulation to children's social skills may vary in the U.S. and Korea.

The Present Study

Using data from the U.S. and Korea, this study sought to understand whether maternal parenting stress at child age 3 would influence children's social skills at age 9

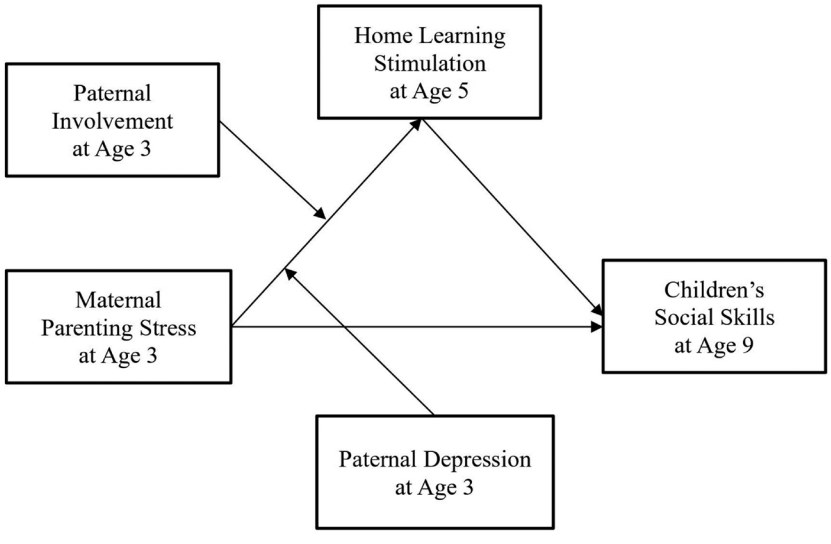
via the level of home learning stimulation provided at age 5. It also examined and whether paternal involvement and depression at child age 3 affected those mediating pathways (Figure 1). Utilizing two longitudinal national surveys, this study extends the literature by examining: 1) the mediating effects of maternal parenting stress during early childhood on children's social skills at school age through home learning stimulation, emphasizing the importance of the home environment during the transition to school; 2) the dual moderating effects of paternal involvement and depression on the proposed mediating pathway, emphasizing the importance of the father's role during early childhood; and 3) the similarities and differences in the hypothesized model between the U.S. and Korea. We expected the hypothesized mediating path to be generalizable to both countries, although the paternal role in the process would vary in the U.S. and Korea. This effort will help expand and refine the parenting stress model, and identify the cross-cultural generalizability and specificity of paternal roles within families.

Methods

Participants

U.S. participants. We used data from the Fragile Families and Child Wellbeing Study (FFCWS), a longitudinal study of 4,898 children, born between 1998 and 2000, in cities with populations of over 200,000 throughout the U.S. (Reichman et al., 2001). Families were recruited and assessed at the child's birth, and data were collected at ages 1, 3, 5, 9, and 15.

Figure 1: Overview of the hypothesized additive multiple moderated mediation model



The attrition rates ranged from 0.11% to 15.08% over time. The FFCWS oversampled births from unmarried parents in order to better understand the multiple contexts and factors for at-risk families (Reichman et al., 2001). The present study used the data from two-parent families at the baseline, resulting in 1,076 children (boys N = 573, 53.3%) and their mothers and fathers. The parents included in the analytic sample tended to have higher household incomes, and were younger than those excluded from the analysis [t (2087) = 13.95 for income, t (2792) = 14.99, father's age, t (2790) = 19.17, for mother's age, ps <.001). The present study used the data collected through surveys and in-person interviews conducted at ages 3, 5, and 9. At the baseline, the average ages of the mothers and fathers were 29.31(SD = 5.61, range = 16 – 43 yrs) and 31.60 (SD = 6.45, range = 18 – 53 yrs), respectively. The mean household income was $57,231.06 ($SD$ = $41,321.66). Approximately 35.3% of the mothers and 31.0% of the fathers had a bachelor's degree or higher. The sample included non-Hispanic Whites (42% fathers, 41.9% mothers), non-Hispanic Blacks (26.6% fathers, 25.1% mothers), Hispanics (24.8% fathers, 25.2% mothers), and other ethnic groups (6.7% fathers, 7.6% mothers). The average age of the children at the age 3 assessment was 35.40 months (SD = 2.52, range = 30 – 50 months), (Table 1).

Korean participants. We used data from the Panel Study on Korean Children (PSKC), a nationally representative longitudinal study of 2,150 children born in 2008 in six major Korean provinces (Korea Institute of Child Care and Education [KICCE], 2016). The focal children and their parents completed the baseline assessment at birth, with annual follow-ups for 9 years. Attrition rates ranged from 2.41% to 8.37% over time. The present study used an analytic sample that, at baseline, included 2,041 children (boys, N = 1,040, 51.0%) and their married parents.

Table 1: Demographic Variables in the U.S. and Korea

	The U.S. (N=1,076)		Korea (N=2,041)	
Variable	*n*	%	*n*	%
Child Sex				
Boy	573	53.3	1,040	51.0
Girl	503	46.7	1,001	49.0
Relationship Status				
Married, Living Together	855	96.8	2,041	100
Not Married but Living Together	14	1.6	-	-
Not Married and Not Living Together	14	1.6	-	-
Mother's Education Level				
Less than High School	208	19.3	10	.4

(Continued)

Table 1: Continued

	The U.S. (*N*=1,076)		Korea (*N*=2,041)	
Variable	*n*	%	*n*	%
High School or Equivalence	190	17.7	609	30.0
Some College Level	298	27.7	1,94	63.9
Higher than College	380	35.3	114	5.6
Father's Education Level				
Less than High School	187	17.4	20	1.0
High School or Equivalence	255	23.7	529	27.0
Some College Level	300	27.9	1,213	61.9
Higher than College	334	31.0	197	10.1
Mother's Race				
White	452	42.0	-	-
Black	270	25.1	-	-
Hispanic	271	25.2	-	-
Other	82	7.6	-	-
Father's Race				
White	451	41.9	-	-
Black	286	26.6	-	-
Hispanic	267	24.8	-	-
Other	72	6.7	-	-
Household Income ($)				
≤ 30,000	259	26.5	796	42.4
30,000 <, ≤ 54,000	232	23.8	772	41.1
54,000 <, ≤ 87,000	242	24.8	278	14.8
87,000 <	243	24.9	32	1.7
Relationship Status				
Married, Living Together	855	96.8	2,041	100
Not Married but Living Together	14	1.6	-	-
Not Married and Not Living Together	14	1.6	-	-

Note: Household annual income before tax was coded as a continuous variable in both countries, 1US dollar = approximately 1,000 Korean won.

The present study used data collected through surveys and in-person interviews conducted at ages 3, 5, and 9. At the baseline, the average ages of the mothers and fathers were 31.31 (*SD* = 3.68, range = 19 – 46 yrs) and 33.88 (*SD* = 4.04, range = 19 – 51 yrs), respectively. The mean annual household income was $35,033 (*SD* = $16,331). Approximately 40.6% of the mothers and 50.4% of the fathers had a bachelor's degree or higher. The average age of the children at the age 3 assessment was 38.76 months (*SD* = 1.47, range = 35 – 43 months).

Measures

Maternal parenting stress at age 3. U.S. mothers' parenting stress was assessed using four items from the Child Development Supplement of the Panel Study of Income Dynamics (Hofferth et al., 1997). Sample items included "I feel trapped by my responsibilities as a parent" and "I often feel tired, worn out, or exhausted from raising a family." Mothers rated items on a 4-point scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*), and all items were reverse-coded. As suggested by the FFCWS scoring guideline (Bendheim-Thoman Center for Research on Child Wellbeing, 2018), all items were summed up and divided by the top value of the Likert scale to create a composite score (α =.65). Korean mothers' parenting stress was assessed using 11 items from a parenting stress scale originally developed by Kim and Kang (1997) and modified for the KICCE (2007). Sample items included "Sometimes I feel like I want to run away from my child" and "I am not confident that I can raise my child well." Mothers rated items on a 5-point scale ranging from 1 (*almost always untrue*) to 5 (*almost always true*). The composite score was computed by averaging all the items (α =.87). In both the U.S. and Korean samples, higher scores indicated higher levels of maternal parenting stress.

Paternal depression at age 3. Paternal depression in the U.S. was assessed using the Major Depressive Episode items derived from the Composite International Diagnostic Interview-Short Form (Kessler et al., 1998). Following criteria from the Fourth Edition of the Diagnostic and Statistical Manual of Mental Disorders for major depressive episodes, fathers answered three items that concerned whether they had had feelings of depression (dysphoria), (e.g., "In the past year, have you felt sad/depressed for two or more weeks in a row?") or had experienced an inability to enjoy what used to be pleasurable (anhedonia), (e.g., "How long each day did your loss of interest usually last?"). Fathers who reported having experienced two weeks of any of the given symptoms of dysphoria or anhedonia for at least half of each day were asked seven additional questions about their symptoms, such as "During those two weeks, did you lose interest in most things?" All items were rated on a 2-point scale, ranging from 0 (*no*) to 1 (*yes*). In the present study, we used the constructed variable provided by the FFCWS coded as 1 (*meeting the depression criteria*) or 0 (*not meeting the depression criteria*). Similar to the U.S. sample, paternal depression in the Korean sample was assessed using six items from the Psychological Distress Scale developed by Kessler et al. (2002). Sample items included "Have you felt depressed?" and "Have you felt unworthy of yourself?" All items were rated on a 5-point scale ranging from

1 (*never*) to 5 (*always*). The composite score was created by summing every item and then recoding them as 1 if the total was 14 or more, or 0 if the total was 13 or less, as suggested by Kessler et al., (2002).

Paternal involvement at age 3. In the U.S. sample, fathers answered 13 items that asked whether they were involved in typical activities with the child as a parent (e.g., "How many days a week do you sing songs or nursery rhymes with the child?" or "How many days a week do you let the child help you with simple household chores?"). Responses ranged from 0 (*0 days per week*) to 7 (*every day*). Fathers' responses were summed up, with higher scores representing higher levels of paternal involvement (α =.76). In the Korean sample, paternal involvement was assessed using four items derived from the family role performance scale developed by Hong & Yoo (1997). Mothers rated their husbands or partners on how involved they were in activities with their children (e.g., "My husband/partner feeds our child" and "My husband/partner gives our child a bath"). All items were rated on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). Mothers' responses were summed up, with higher scores representing higher levels of paternal involvement (α =.81).

Home learning stimulation at age 5. The U.S. sample's learning stimulation at home was assessed using 16 items from the Home Observation for Measurement of the Environment (HOME) scale, which included items from both the Early-Childhood Home (EC-HOME) inventory for children aged 3–6 and the old age HOME scale (Lenventhal et al., 2004). We used two subscales: the developmental stimulation subscale with 10 items (e.g., "About how many toys, books, or games does child have that are helping him/her to learn about animal names or behaviors?"), and the outing and activity subscale with 6 items (e.g., "In the past, how often have you/family member done outdoor activities with child?"). Primary caregivers rated every item on a 4-point scale ranging from 1 (*none*) to 4 (*5 or more*) for the developmental stimulation subscale and from 1 (*less than once a month*) to 4 (*at least a few times a week*) for the outing and activity subscale. The items for each subscale were summed up (α =.82). The two subscales were significantly inter-correlated, at.44 (p <.001), and were therefore combined. Similar to the U.S. sample, the Korean sample's home learning stimulation was assessed by caregivers' answers to 20 items from the EC-HOME scale (Caldwell and Bradley, 2003). We used two subscales: one with 11 items that measured the availability of learning materials (e.g., access to toys, books, and games to stimulate learning motivations for both children and parents), and one with 9 items that measured the variety of activities (e.g., family daily lifestyle to provide children with various experiences and activities). The correlation between the two subscales was.36 (p <.001). Items were rated as 0 (*no*) or 1 (*yes*). All 19 items, except for one item with poor item-total correlation ("The child has a real or toy musical instrument"), were summed up (α =.61). In both the U.S. and Korean samples, higher scores indicated higher levels of home learning stimulation for children.

Children's social skills at age 9. The social skills of the U.S. children at age 9 were assessed via primary caregivers' answers to 13 items adapted from the

Express Subscale of the Adaptive Social Behavior Inventory (Hogan et al., 1992). Sample items included "Child understands others' feelings, when happy, sad, and mad" and "Child is sympathetic toward other children's distresses." All items were rated on a 3-point scale ranging from 1 (*not true*) to 3 (*very true or often true*). As suggested by the FFCWS scoring guidelines (Bendheim-Thoman Center for Research on Child Wellbeing, 2018), items were re-coded on a 0–2 scale before being summed up (α =.91). Korean children's social skills at age 9 were assessed via teachers' reports on seven items derived from the school adjustment inventory (Chi and Jung, 2006). Sample items included "Child comforts his/her friends when the friends are sad" and "Child expresses his/her opinions clearly." Responses were rated on a 5-point scale ranging from 1 (*almost always untrue*) to 5 (*almost always true*). All items were summed up (α =.95), with higher scores representing higher levels of children's social skills at age 9.

Analytical Strategies

To test the hypothesized additive multiple moderated mediation effects of maternal parenting stress on children's social skills through home learning stimulation by paternal involvement and depression, we utilized the PROCESS macro (PROCESS model 9) (Hayes, 2013) in SPSS 25.0 (IBM, 2020). First, before analyzing the dual moderating effects on the mediating pathway, we analyzed the mediating pathway from maternal parenting stress at age 3 on children's social skills at age 9 via home learning stimulation at age 5 (PROCESS model 4). Then, we tested the dual moderating effects of the two moderators (paternal involvement and depression) on the mediating pathway (PROCESS model 9). We performed these processes on the U.S. and Korean samples separately. Listwise deletion in PROCESS handled missing data. The sample size used in the moderated mediation analysis was reduced (N = 478 for the U.S. model, N = 567 for the Korean model). The analytic sample in the U.S. had a higher household income [t (487) = 2.25, p <.05] and a higher level of home learning stimulation (t (487) = 2.86, p <.01) than the excluded samples, but lower household income (t (567) =-1.97, p <.05) and higher levels of social skills (t (567) = 2.09, p <.05) in Korea. We also examined the statistical significance of the hypothesized moderating mediation effects using bootstrapped 95% confidence intervals (CIs) (Cummings and Fidler, 2010), which provide more robust estimates by considering skewed distributions and bias due to the sample reduction resulting from the listwise deletion (Cummings and Fidler, 2010).

Results

Descriptive Analysis

Table 2 presents the bivariate correlations and descriptive statistics of the study variables. In the U.S. sample, maternal parenting stress at age 3 was negatively associated with paternal involvement at age 3, as well as home learning stimulation at age 5. Paternal involvement at age 3 was positively associated with home learning stimulation at age 5. There were no statistically significant associations between paternal depression and any other study variable.

Table 2: The Means, Standardized Deviations and Correlations of All Study Variables

Variable		1	2	3	4	5	*M* (Korea)	*SD* (Korea)
1. Maternal Parenting Stress (Y3)		–	–.19***	–.25***	–.16***	–.08	2.79	.64
2. Paternal Depression (Y3)		–.02	–	–.17***	–.07***	.06	.77	.42
3. Paternal Involvement (Y3)		–.17***	.08	–	.15***	.06	14.44	3.23
5. Home Learning Stimulation (Y5)		–.14***	.04	.21***	–	.14**	23.86	1.97
6. Child's Social Skill (Y9)		–.06	–.09	.06	.26***	–	68.78	12.32
U.S. (*N*=1,076)	*M(U.S.)*	2.25	.07	50.04	41.93	19.83	Korea (*N* = 2,041)	
	SD(U.S.)	.63	.25	16.90	7.11	5.55		

Note: Father's depression: 0 (No), 1 (Yes).
Values above and below the diagonal represent correlation for Korea and the U.S, respectively.
44.42%, 27.78% of data were missing respectively in the U.S. and Korea, and listwise deleted (U.S. analytic sample *N* = 478; Korea analytic sample *N* = 567).
*p <.05, **p <.01, ***p <.001.

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As expected, home learning stimulation at age 5 was positively associated with children's social skills at age 9. In the Korean sample, maternal parenting stress was negatively associated with paternal depression, involvement, and home learning stimulation. Unlike in the U.S. sample, Korean paternal depression at age 3 was negatively associated with paternal involvement at age 3 and home learning stimulation at age 5. In Korea, home learning stimulation at age 5 was positively associated with children's social skills at age 9.

Mediating Effects of Maternal Parenting Stress on Children's Social Skills Through Home Learning Stimulation

We first examined the mediating pathway of maternal parenting stress at age 3 to children's social skills at age 9 through home learning stimulation at age 5 (Model 4 in PROCESS). In the U.S. sample, maternal parenting stress at age 3 was significantly and negatively associated with home learning stimulation at age 5 (b =-1.23, p <.01), and home learning stimulation was significantly and positively associated with children's social skills in the U.S. (b =.21, p <.001). The direct effects of maternal parenting stress on children's social skills at age 9 were not statistically significant (b = −.47, p>.05). The mediating pathway from maternal parenting stress to home learning stimulation, and thus to children's social skills, was statistically significant (b =-.25, 95% CI = [-.51,-.04]) (R^2 =.07, F = 20.32, p <.001).

Similarly, Korean maternal parenting stress at age 3 was significantly and negatively associated with home learning stimulation at age 5 (b =-.46, p <.001), and home learning stimulation was significantly and positively associated with children's social skills (b =.94, p <.01). Maternal parenting stress was not directly associated with children's social skills at age 9 (b =-1.02, p>.05). The mediating pathway from maternal parenting stress to home learning stimulation, and subsequently to children's social skills was statistically significant (b =-.44, 95% CI = [-.83,-.14]) (R^2 =.02, F = 7.16, p <.001).

Testing for Multiple Additive Moderated Mediation by Paternal Involvement and Depression

Next, we examined whether the significant mediating pathway we tested varied according to paternal involvement and depression. In the U.S. sample, the moderating effect of paternal depression at age 3 on the pathway from maternal parenting stress to home learning stimulation at age 5 was significant (b = 4.08, p <.05), but the moderating effect of paternal involvement (b =-.02, p>.05) was not significant (R^2 =.07, p <.05). Further analysis indicated that the effects of maternal parenting stress on home learning stimulation were significant only if the fathers were not depressed when levels of fathers' involvement were held constant to the medium (49.78) (b =-1.36, 95% CI [-2.37,-.35]) or high levels(1SD above the mean = 67.07) (b =-1.66, 95% CI [-3.04,-.28], (Table 3). Given that paternal depression moderated the effect of maternal parenting stress on home learning stimulation, we further investigated the likelihood of moderated mediating effects of paternal depression, as guided by Hayes (2013).

Table 3: Moderating Effects of Paternal Involvement and Depression on Mediation Model in the U.S. (N = 1,076)

	B	*S.E*	*t*	*P*
Home Learning Stimulation(Age 5)				
Constant	40.22	3.72	10.82	*p* <.001
Maternal Parenting Stress (Age3)	–.52	1.55	–.33	*p*>.01
Paternal Involvement (Age3)	.11	.07	1.63	*p*>.05
Paternal Depression (Age3)	**–11.05**	**4.48**	**–2.47**	***P* <.05**
Interaction 1	–.02	.03	–.59	*p*>.05
Interaction 2	**4.08**	**2.02**	**2.02**	***p* <.05**
R^2 =.07, *F* = 6.92, *P* <.001				
Children's Social Skills (Age 9)				
Constant	12.91	1.86	6.94	*p* <.001
Maternal Parenting Stress (Age3)	–.56	.39	–1.44	*P*>.05
Home Learning Stimulation (Age5)	.20	.04	5.68	*P* <.001
R^2 =.07, *F* = 18.54, *P* <.001				

Moderation Effect on Home Learning Stimulation		*B*	Boot SE	Boot LLCI	Boot ULCI
Paternal Involvement	Paternal Depression				
Low	**0**	**–1.07**	**.73**	**–2.51**	**.37**
Low	1	3.01	1.94	–.81	6.83
Medium	**0**	**–1.36**	**.51**	**–2.37**	**–.35**
Medium	1	2.72	1.95	–1.11	6.56
High	**0**	**–1.66**	**.70**	**–3.04**	**–.28**
High	1	2.42	2.08	–1.67	6.52

Moderated Mediation on Child's Social Skill (Parenting Stress-> Home Learning Stimulation-> Child Social Skill)		*B*	Boot SE	Boot LLCI	Boot ULCI
Paternal Involvement	Paternal Depression				
Low	**0**	**–.22**	**.18**	**–.59**	**.13**
Low	1	.61	.34	–.06	1.29

(Continued)

Table 3: Continued

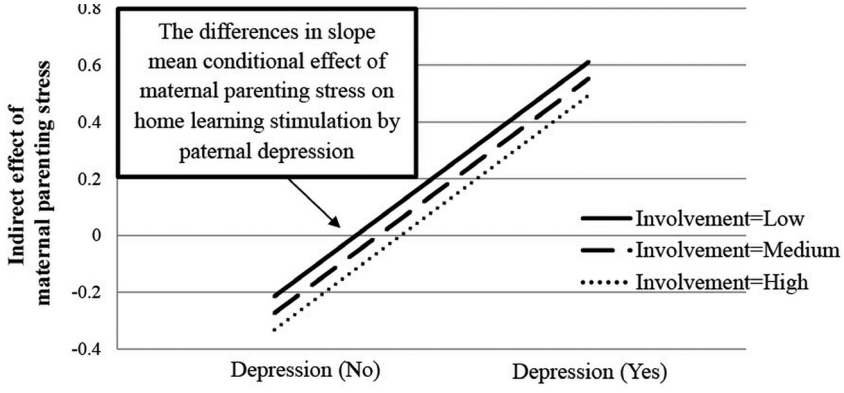
Moderated Mediation on Child's Social Skill (Parenting Stress-> Home Learning Stimulation-> Child Social Skill)		*B*	Boot SE	Boot LLCI	Boot ULCI
Paternal Involvement	Paternal Depression				
Medium	**0**	**–.23**	**.13**	**–.55**	**–.05**
Medium	1	.55	.33	–.09	1.23
High	**0**	**–.33**	**.16**	**–.68**	**–.05**
High	1	.49	.36	–.21	1.23
R^2 =.07, F = 18.54, p <.001,					
Partial Moderated Mediation Index of Paternal Involvement =-.003, C. I. [-.02,.01]					
Partial Moderated Mediation Index of Paternal Depression =.83, C.I.[.14, 1.65]					

Note: Bootstrap *N* = 5000. LL = Lower level, UL = Higher level, CI = confidence interval.Interaction 1: interaction of maternal parenting stress and paternal involvement, Interaction 2: interaction of maternal parenting stress and paternal depression. Paternal involvement: Low (32.49), Medium (49.78), High (67.07), Paternal depression: 0 (No), 1 (Yes). 44.42% of data were missing in the U.S., and listwise deleted (U.S. analytic sample *N* = 478). $^{*}p<.05$, $^{**}p<.01$, $^{***}p<.001$.

The index of partial moderated mediation of paternal involvement was not significant at-.003, 95% CI [-.02,.01], indicating that the hypothesized mediating pathway did not vary with paternal involvement in the U.S. sample. However, the index of partial moderated mediation of paternal depression was statistically significant at.83, 95% CI [.14, 1.65]. This indicated that the hypothesized mediating pathway—namely, the negative effects of maternal parenting stress at age 3 on children's social skills at age 9 through home learning stimulation at age 5—was buffered only when the fathers were not depressed (Table 3). Figure 2 presents the evidence for partially moderated mediation, the idea that maternal stress on children's social skills through home learning stimulation varied according to paternal depression when paternal involvement was held fixed at a low, medium, or high level.

In the Korean sample, the moderating effects of parental involvement at age 3 (b =.11, p <.05) and parental depression (b =.56, p <.05) on the pathway from maternal parenting stress to home learning stimulation at age 5 were statistically significant (R^2 =.05, p <.001). Further analysis indicated that the effects of maternal parenting stress on home learning stimulation were statistically significant for fathers with low (11.27, one SD below the mean) (b =–.94, 95% CI [–1.32,–.55]) or medium (14.52, the mean) (b =–.57, 95% CI [–.85,–.29]) levels of involvement, but only when the father was not depressed (Table 4).

Figure 2: The partial moderated mediation of paternal depression in the U.S.



Given that both paternal involvement and depression moderated the effect of maternal parenting stress on home learning stimulation, we investigated the likelihood of a moderated mediation effect, as guided by Hayes (2013). The index of the partial moderated mediation of paternal involvement was statistically significant at.11, 95% CI [.02,.22], indicating that the hypothesized mediating pathway from maternal parenting stress to children's social skills through home learning stimulation varied significantly with the levels of paternal involvement. The mediating pathway was significant in families whose fathers exhibited low or medium levels of involvement. However, the index of partial moderated mediation of paternal depression was not significant at.54, 95% CI [-.09, 1.32]. These findings suggest that the hypothesized mediating pathway varied according to paternal involvement, and that the negative effects of maternal parenting stress were significantly reduced when fathers had low or medium levels of involvement (Table 4). Figure 3 presents the evidence for partially moderated mediation, the idea that the effects of maternal stress on children's social skills through home learning stimulation varied according to paternal involvement when paternal depression was held constant.

Discussion

General Discussion

Although the importance of the caregiving environment in children's development has long been a question of great interest, few studies have examined how fathers interact with mothers to exert a combined parental influence on the child's social development during the school transition period. This study investigated the extent to which paternal involvement, depression, and the additive influence of these two factors moderated the negative effects of maternal parenting stress during early childhood (age 3) on children's social skills at school age (age 9) through home learning stimulation during the transition to school (age 5).

Table 4: Moderating Effects by Paternal Involvement and Depression on Mediation Model in Korea (N = 2,041)

		B	*S.E*	*t*	*P*
Mediator Model (Home Learning Stimulation)					
Constant		22.66	1.66	13.62	p <.001
Maternal Parenting Stress		-2.22	.57	-3.91	p <. 001
Paternal Involvement		-.27	.11	-2.59	p <. 01
Paternal Depression		-1.65	.81	-2.03	p <.05
Interaction 1		.11	.04	3.11	p <.01
Interaction 2		.56	.27	2.07	p <.05
R^2 =.05, F = 6.36, P <.001					
Children's Social Skills (Age 9)					
Constant		55.28	5.81	9.51	p <.001
Maternal Parenting Stress (Age3)		-.89	.82	-1.09	P>.05
Home Learning Stimulation (Age5)		.95	.29	3.27	P <.01
R^2 =.02, F = 6.69, P <.01					
Moderation Effect on Home Learning Stimulation		*B*	Boot SE	Boot LLCI	Boot ULCI
Paternal Involvement	Paternal Depression				
Low	**0**	**-.94**	**.20**	**-1.32**	**-.55**
Low	1	-.37	.25	-.87	.12
Medium	**0**	**-.57**	**.14**	**-.85**	**-.29**
Medium	1	-.01	.23	-.46	.45
High	**0**	**-.20**	**.17**	**-.53**	**.13**
High	1	.36	.27	-.17	.90
Moderated Mediation on Child's Social Skill (Parenting Stress→ Home Learning Stimulation→ Child Social Skill)		*B*	Boot SE	Boot LLCI	Boot ULCI
Paternal Involvement	Paternal Depression				
Low	**0**	**-.89**	**.34**	**-1.59**	**-.27**
Low	1	-.36	.34	-1.14	.22

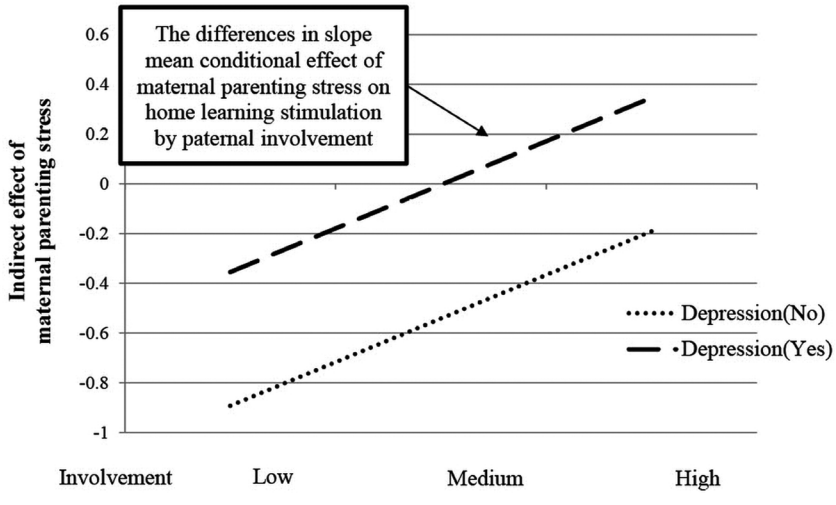
(Continued)

Table 4: Continued

Moderated Mediation on Child's Social Skill (Parenting Stress→ Home Learning Stimulation→ Child Social Skill)		*B*	Boot SE	Boot LLCI	Boot ULCI
Paternal Involvement	Paternal Depression				
Medium	**0**	**-.54**	**.22**	**-1.00**	**-.16**
Medium	1	-.01	.29	-.63	.56
High	**0**	**-.19**	**.18**	**-.58**	**.14**
High	1	.35	.33	-.29	1.04
R^2 =.02, *F* = 6.6954, *P* <.01,					
Partial Moderated Mediation Index of Paternal Involvement=.11, C.I.[.02,.22]					
Partial Moderated Mediation Index of Paternal Depression =.54, C.I.[-.09,1.32]					

Note: Bootstrap *N* = 5000. LL = Lower level, UL = Higher level, CI = confidence interval. Interaction 1: interaction of maternal parenting stress and paternal involvement, Interaction 2: interaction of maternal parenting stress and paternal depression. Paternal involvement: Low (11.27), Medium (14.52), High (17.77). 27.78% of data were missing in Korea, and listwise deleted (Korea analytic sample *N* = 567).
$^{*}p<.05$, $^{**}p<.01$, $^{***}p<.001$.

Figure 3: The partial moderated mediation of paternal involvement in Korea



The study found that higher levels of maternal parenting stress reduced home learning stimulation, which led in turn to poor social skills in the children in both countries (Baker and Iruka, 2013; Chang, 2016; Chung et al., 2013; Gershoff et al., 2007; Nievar and Luster, 2006). This finding is in line with the parenting stress model (Abidin, 1995), suggesting that high levels of maternal parenting stress disrupt a mother's ability to provide developmentally appropriate contexts (e.g., toys, books, and other activities) that stimulate the child's cognitive, linguistic, and socio-emotional development, which limits the child's opportunities to learn how to interact with peers and other adults. The findings from this study suggest that the parenting stress model may be cross-culturally generalizable.

Our findings also revealed more nuanced culturally-specific processes that underlie fathers' roles in the association between maternal parenting stress and children's social skills. In the U.S., the negative effects of maternal parenting stress on children's social skills mediated through home learning stimulation varied according to whether the father was depressed. More specifically, this mediating effect was significantly buffered only when the fathers were not depressed (Figure 2). The moderating effects of paternal involvement were not significant in the U.S., but in Korea, the negative effects of maternal parenting stress on children's social skills through home-learning stimulation varied according to paternal involvement. Specifically, the negative effects of maternal parenting stress on children's social skills were significantly buffered, even when the level of paternal involvement was low or medium, if the fathers were not depressed. Interestingly, the negative effects of maternal parenting stress were not significant when the level of paternal involvement was high (Figure 3), highlighting the importance of paternal involvement as a potent caregiving environment.

Research Implication

Overall, this study's findings, which support cross-cultural generalizability and cultural specificity, require further discussion. First, the importance of paternal mental health for home-learning stimulation was apparent in both the U.S. and Korean samples. Paternal involvement only buffered the negative effects of maternal parenting stress on home learning stimulation if the fathers were not depressed. This finding may indicate that paternal depression was an important source of family stress, that it exerted a negative influence on marital relationships and daily interactions within the family, and that it compromised developmentally stimulating home environments if combined with high levels of maternal parenting stress (Mezulis et al., 2004). Evidence has consistently shown that paternal depression closely associated with maternal depression and aggression (Huang and Warner, 2005), exacerbating the negative effects of poor maternal functioning (Mezulis et al., 2004). The finding that, in the family context, paternal mental health may serve a protective role in the presence of maternal parenting stress is in line with the work of Gere et al., (2013); when fathers had fewer depressive symptoms, maternal depression was not significantly associated

with children's adjustment (Gere et al., 2013). Taken together, our findings suggest that efforts to reduce paternal depression in early childhood are important, and that involving both mothers and fathers in intervention programs is crucial to the effective promotion of healthy family environments. In addition, our findings may indicate the possibility of additive negative effects from depressed fathers and high levels of maternal parenting stress, and future research should examine some relevant mechanisms.

Second, our findings demonstrated cultural specificity. Paternal depression in the U.S. and paternal involvement in Korea were crucial factors in buffering the negative effects of maternal parenting stress on the quality of home learning stimulation and children's social skills. Appealing to the notions of individualism and collectivism can explain this cultural difference. Individualistic Western cultures place a relatively greater emphasis on the socialization of autonomy, individuation, independence, and the acceptance of individual emotions (Friedlmeier, 2005; Harkness et al., 2011; Newland et al., 2010). Families in Western cultures tend to contain less separation of gender roles. These cultural characteristics affect parental beliefs, and subsequently lead to different levels of paternal involvement in children's everyday activities (Newland et al., 2010). In addition, inter-parental intimacy, spousal support, and co-parenting are emphasized in the U.S. (Harkness et al., 2011), and paternal involvement has become a common societal norm there. These cultural characteristics have likely contributed to the current findings that the effect of paternal depression on family processes is more profound in the U.S. when compared to the effect of paternal involvement. Additionally, in a meta-analysis of studies on paternal depression (Paulson and Bazemore, 2010), approximately 14% of fathers in the U.S. were found to have depression, which was significantly higher than the international average (8.2%). Depression in U.S. fathers could play a crucial role in hindering their ability to cooperate with their spouses and ensure a healthy, functioning family (Harkness et al., 2011). The potential negative effects of paternal depression on family processes and children's subsequent adjustments require further research.

In contrast, collectivist East Asian cultures tend to place a greater emphasis on relationships, prioritizing family and traditional gender roles rather than individual needs (Friedlmeier, 2005; Harkness et al., 2011; Newland et al., 2010). As such, Asian fathers are often less involved at home and in childrearing (Newland et al., 2010). However, Korean society has recently become more Westernized, placing greater expectations on paternal involvement in childrearing (Grossmann et al., 2002; Papp et al., 2004; Paquette, 2004; Wall and Arnold, 2007) and on women's active involvement in occupational and social domains. As described above, Korea has made a great deal of progress in facilitating paternal involvement at a national level (Hong et al., 2009); however, Korean fathers still tend to prioritize their roles as breadwinners, and their involvement in childrearing remains limited. This suggests that, in many Korean families, there may be a significant gap between maternal expectations of fatherhood due to changes

in social norms and fathers' actual parenting practices. Thus, for a given level of paternal involvement, it is possible that Korean mothers with parenting stress are particularly appreciative of the father's involvement in childrearing, which seems to be reflected in the findings that the effect of paternal involvement in family processes was likely more profound in Korea. In addition, this finding is in line with Deater-Deckard's work (2004), which reported mothers with high parenting stress tend to show fewer responses towards children when the mothers perceived the fathers' support and involvement to be insufficient. Similarly, the lack of significance of paternal depression as a moderator in the mediating pathway from maternal parenting stress to home learning stimulation, and thus to children's social skills, may suggest that Korean fathers' limited involvement significantly influenced the effects of their depression. It can be inferred that the effect of maternal parenting stress might be more sensitive to paternal involvement than paternal depression in Korea, where fathers spend less time interacting with their families (Guryan et al., 2008; Statistics Korea, 2013). The potential relationships between these two paternal factors as important caregiving environments and how the factors interact with how mothers function at multiple levels, await further research.

Policy Implications

The results of this study highlight two key points: the importance of paternal involvement in preventing negative cascades of maternal parenting processes in Korea, and the need to develop various approaches to increase the involvement of Korean fathers. Currently, due to limited empirical studies and a lack of evidence-based programs and policies, efforts to increase paternal involvement in childrearing in Korea have not been successful (Choi and Kim, 2020). Based on our findings of cross-cultural similarities and differences, cultural differences must be considered in order to implement U.S. policies and paternal education programs effectively in Korea (e.g., the Parenting Together Project, Supporting Father Involvement) (Doherty et al., 2006; Pruett et al., 2019). Furthermore, the Korean government has strongly emphasized parenting education as a family support policy, but most of those programs target mothers. Since intervention programs in which both parents participate have been found to be effective in many prior studies (Cowan et al., 2009), it is necessary to promote paternal participation in parenting education programs. In addition, in order to increase the amount of paternal involvement, it is essential to secure more family time for fathers by establishing a more family-friendly workplace culture in Korea. Thus, the efforts of the Korean government, which can encourage family-friendly workplace policies through laws and other methods in companies and public lives, are needed. Legislation for employee's work-life balance in workplaces and providing tax break for companies to adopt family-friendly policies can be suggested. Furthermore, government-sponsored studies, funding for intervention and family-oriented public services, as well as campaigns for youths, are expected to have effects on improving family-friendly cultures in Korea.

Limitations

It is important to note some limitations of this study. First, the measurements in the U.S. and Korean samples were not identical, which may have influenced the results. In addition, the FFCWS focused primarily on at-risk families, the majority of whom had lower socioeconomic statuses. To calibrate conditions between the two countries, we selected married parents a majority of both the U.S. and Korean samples in this study included middle-class families. Furthermore, the PROCESS analyses excluded participants with missing data by default (Hayes, 2018), although PROCESS allowed the examination of dual moderated models. Due to this sample-size reduction during the processes of selecting the sample and dealing with missing data, the generalizability of these findings may be limited. In the interest of parsimony, the present study did not include family income or other variables known to be general cross-cultural risk factors for children's adjustment (e.g., maternal depression), (Mowbray et al., 2000). Future research should consider the potential additive and interactive effects of multiple factors on children's adjustment that concern both mothers and fathers. In addition, the model could not control for the initial conditions of the study's variables at baseline, because they were not available. Lastly, this study focused on the moderating effects of paternal involvement and depression. However, many fathers, just like mothers, are involved in activities with their children, and are likely to have a direct influence on their children's adjustment (Grossmann et al., 2002; Paquette, 2004). Further research on the direct and indirect influence exerted by fathers on their children's development is necessary.

Conclusion

Our study examined the extent to which home learning stimulation mediated the effects of maternal parenting stress on children's social skills, and whether those mediating effects would vary as a function of paternal involvement and levels of depression. In addition, we examined families in the U.S. and Korea in order to assess the cross-cultural generalizability and cultural specificity in the expanded parenting stress model (Abidin, 1995) by incorporating both mothers and fathers. Furthermore, we used long-term longitudinal data to highlight the importance of parental psychological resources during early childhood, the home learning environment during the transition to school, and their effects on school-age children's social skills. In the U.S., only paternal depression moderated the negative cascade effect associated with maternal parenting stress in early childhood; the negative effects of maternal parenting stress on children's social skills via home learning stimulation were buffered only when the fathers were not depressed. In Korea, on the other hand, the negative effects of maternal parenting stress on children's social skills via home learning stimulation were significantly buffered by paternal involvement.

This study makes several noteworthy contributions to the literature. Its findings help expand the parenting stress model (Abidin, 1995) by taking into account both parents. In particular, our findings help further the field of cross-cultural studies on paternal roles by examining family processes in two disparate countries. Our findings also highlight the importance of incorporating paternal roles

when designing intervention programs in the U.S. and Korea. Nevertheless, several questions remain unanswered, and more studies are necessary to improve our understanding of fathers' roles within the family.

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