

When Mothers' Worth Depends on Their Children's Achievements: The Mediation of Mothers' Interactions in Preschoolers' Math Interest

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Abstract

Mother-child interactions during the learning process significantly influence children's learning interests. However, limited research has examined how mothers' cultural beliefs shape children's learning interests, mediated by the quality of parental interaction. This study examines the relationship between Korean mothers' child-based self-worth and preschool children's math interests, mediated by the mothers' interaction during math activities. A total of 203 mothers of children aged 3 to 5 years ($Mean = 41.11$ months, $SD = 9.77$) reported on their mothers' interactions during math activities. The result from Structural Equation Modelling (SEM) indicated that the mothers' child-based worth was negatively related to the children's math interests. Specifically, the mothers' mastery-oriented interactions mediated the association between the mothers' child-based worth and preschool children's interest in math. The findings highlight how Korean culture, where a mother's identity is closely tied to children's academic success, interferes with mothers' positive interactions and affects children's intrinsic motivation.

Keywords : *child-based self-worth; South Korea, preschool; children's math interests; mastery-oriented interactions; performance-oriented interactions*

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Introduction

Young children's math interests represent an inherent drive, expressed through positive emotions, motivation, and persistent effort (Lee & Kim, 2018). Specifically, mathematical interest refers to a child's motivation for learning mathematics, supported by an internal drive that activates and sustains participation in math-related activities. Prior studies have shown that children with higher math interests devote more effort and time to math activities, which in turn predicts later achievement (Hwang & Son, 2020; Im, 2020), which can have a significant impact on children's mathematical achievement in elementary school and beyond (Daucourt et al., 2021; Im & Lee, 2016; Rawlings et al., 2023; Skwarchuk et al., 2014). However, despite extensive research on mathematical achievement (Huang et al., 2017; Lee & Kim, 2016; LeFevre et al., 2009; Lerner & Grolnick, 2020; Napoli & Purpura, 2018), research on the importance of fostering math interest in early childhood remains limited.

Young children's interest in math often begins to develop during home math activities with mothers (Cankaya & LeFevre, 2016; Ko & Kim, 2019; Oh & Kim, 2021). Previous studies consistently show that the quality of mathematical interactions with mothers significantly influences the development of mathematical interest in young children. Skwarchuk et al. (2014) found that the frequency of informal math activities at home (e.g., board games, measuring and comparing numbers, grocery shopping, cooking, etc.) predicted children's math interests, with activities related to spatial reasoning and number games showing the strongest association. Similarly, a study by Im (2020) involving 204 Korean preschool children also found that frequent mathematical interactions with mothers during daily activities (e.g., cooking, shopping, etc.) showed a significant correlation with children's math interests. Lee (2018) expanded on these findings, demonstrating the importance of early mathematical interest formation. She showed that mathematical experiences shaped by mothers who encouraged mathematical thinking and problem-solving during play activities have a lasting impact on subsequent academic achievement and mathematical ability. Kim (2020b) demonstrated that mathematical interactions supporting autonomy increase children's mathematical competence, predicting sustained mathematical interest.

Meanwhile, according to Cankaya and LeFevre's (2016) cross-cultural study, sociocultural

factors among mothers in East Asian countries (e.g., China, Korea, Japan) and those in Europe and North America can be seen to influence the quality of their interactions with their children. East Asian mothers with collective cultural values tend to have their children acquire mathematical knowledge through memorization and repetition due to cultural beliefs that value academic achievement (Leung, 2001; Ng et al., 2019; Yang & Hahn, 2002). In contrast, Western mothers with individualistic cultural values may provide their children with room for failure due to cultural beliefs that emphasize children's interests, preferences, and autonomy (Ng et al., 2019; Pomerantz et al., 2008; Rudy et al., 2015; Yang & Hahn, 2002).

One of the unique cultural beliefs found within collectivism, particularly in Asian countries such as Korea and China, is the emphasis on child-based self-worth. Child-based self-worth can be defined as a mothers' self-worth contingent upon a child's academic performance (Ng et al., 2014). Child-based self-worth is linked to collective/social identities, where mothers value children's academic achievement because they believe that their own identities are justified and solidified when their child performs well at school (Eccles, 2009). While child-based self-worth can also be found within Western culture, studies have demonstrated that mothers' child-based self-worth may be more vigilant in a society that highlights interdependence and academic achievements in countries like Korea, Hong Kong, or China (An, 2014; Kyeong et al., 2024; Lee & Kim, 2016; Ng et al., 2014). In other words, mothers with a higher degree of child-based self-worth may value children's academic achievement because their status depends on their academic scores.

Moreover, mothers' child-based self-worth has been consistently shown to impair children's psychological well-being and learning motivation through several interconnected mechanisms. Zhang et al. (2019) found that higher child-based self-worth significantly predicted internalizing problems in children among 285 Chinese mothers, suggesting a heightened sense of responsibility for their children's outcomes and a tendency toward controlling interactions. These adverse outcomes appear to operate when parent-child interaction patterns are disrupted (Hong, 2022). When a mothers' self-worth fluctuates based on her child's performance, she tends to engage in more controlling and less mastery-oriented supportive behaviors, which may hinder fostering intrinsic motivation (Deci & Ryan, 2000). However, while it is known that child-based self-worth weakens school-age children's

socioemotional development and general academic motivation (Ng et al., 2021; Pomerantz et al., 2006; Seol et al., 2015), the mechanisms by which these cultural beliefs influence domain-specific interests, particularly math interests in early childhood, require systematic investigation. Therefore, empirical research is needed to determine whether maternal cultural beliefs, such as child-based self-worth mediated by maternal interactions, may also relate to children's learning motivation.

Sociocultural contexts in South Korea present a compelling opportunity to examine the relationship between mothers' child-based self-worth and their children's interest in math. South Korea, known for its strong emphasis on academic achievement within its collectivistic societal values, often ties a mothers' identity closely to children's success. While South Korea remains above the OECD average in math achievement (PISA, 2022), scores have declined since their peak in 2012, and math anxiety persists, suggesting that students' learning experiences may not always be positive. Although these findings focus on school-aged children, they underscore the importance of understanding how mothers' cultural beliefs shape preschoolers' math interests. The present study examines how Korean mothers' beliefs in child-based self-worth impact their preschoolers' math interests, both directly and indirectly through mother-child interactions. Filling this research gap is particularly significant, given that early math engagement not only predicts later academic achievement but also shapes long-term attitudes toward learning.

Child-based self-worth and children's math interests

Existing studies have primarily focused on how a mothers' child-based worth is related to children's social and emotional development. For example, Zhang et al. (2019) examined the values of 285 Chinese mothers and the interactions of their preschoolers. The study revealed that a mothers' child-based self-worth was significantly related to young children's internalizing interactions. In the same context, Korean mothers with a higher degree of child-based self-worth are related to adolescents' low self-worth and feelings of helplessness (Hwang, 2016; Lee & Jung, 2019). When mothers have a higher degree of child-based self-worth, it is negatively related to children's emotional and social development.

However, little is known about how child-based self-worth is directly linked to children's learning interests. Given that child-based self-worth is geared toward children's academic achievements rather than social success (Grolnick et al., 2007), it may have a direct impact on children's learning motivations, likely more so than social interactions. Mothers' child-based self-worth has been mainly researched, focusing on psychological factors such as problem interactions (Zhang et al., 2019), psychological control (Ng et al., 2014), academic achievements, emotional adaptation (Cheung & Pomerantz, 2011; Ng et al., 2019), and self-worth and subjective well-being (Ga, 2017). The existing research also targeted children, secondary school students, or adults, rather than preschool children (An, 2014; Cheung & Pomerantz, 2011; Ga, 2017; Kim, 2020c; Lee, 2021; Ng et al., 2014, 2019).

Therefore, this study aims to explore whether a mothers' cultural beliefs (child-based self-worth) significantly impact children's math interests in early childhood.

The mediating role of mothers' interactions

There is a growing awareness that child-based self-worth may impact mothers' interactions (Kyeong et al., 2024). Mothers' interactions constitute direct child-rearing practices that function as a mediating mechanism between maternal beliefs and children's developmental outcomes (Zippert & Rittle-Johnson, 2020). Muenks et al. (2015) categorized the quality of mothers' mathematical interactions into mastery-oriented and performance-oriented interactions and validated their influence. In prior research, mastery-oriented interaction refers to creating an environment that focuses on "intrinsic interest" and "focuses on their internal learning processes within the competitive environment." Mothers pursuing mastery-oriented interaction emphasize process over performance, encourage effort and persistence, provide opportunities for exploration, and value their child's autonomy and intrinsic interest within the context of math learning (Doctoroff et al., 2016; Lerner & Grolnick, 2020; Pomerantz et al., 2006). Such mastery-oriented interactions are important because they lead to children's active engagement, concentration, and interest in learning (Lee, 2010; Park, 2015).

In contrast, mothers who engage in performance-oriented interactions prioritize

achievement outcomes, social comparison, and external evaluation over the learning process (Muenks et al., 2015).

A performance-oriented approach emphasizes “performance goals,” and in parenting, it can negatively impact children’s intrinsic motivation and learning attitudes by imposing psychological control or achievement pressure when children fail to meet expectations (Jeong, 2019; Kim, 2021b; Moorman & Pomerantz, 2010). Considering the results of research in which the development of mathematical ability could be hindered when mothers of five-year-old children preferred direct teaching methods like home-study materials (Kim & Kim, 2014), the performance-oriented interactions could make children experience academic burnout and psychological maladjustment, and also have adverse effects on their math interests (Im, 2020). Previous research (Hong, 2022) explored the relationships between mothers’ mathematical interactions, child-based self-worth, and preschool children’s math interests. The results indicated that the frequency of mathematical interactions and mastery-oriented supportive interactions had a positive influence on children’s math interests. While mothers’ child-based self-worth showed a negative correlation with mastery-oriented supportive interactions, the direct or indirect effects of child-based self-worth on children’s math interest were not clearly identified. Hong (2022)’s findings suggest that maternal interactions may mediate maternal child-based self-worth and child math interest. It is theoretically crucial to understand the mechanisms linking child-based self-worth, mothers’ mathematical interactions, and children’s math interests. However, this field lacks insight into how these variables function as a system. It is essential to investigate the pathway through which a mothers’ cultural beliefs influence a child’s interest in math by examining the relationship between the two variables (MacKinnon et al., 2009).

Structural Equation Modeling (SEM) is essential for determining whether maternal interaction serves as an active mechanism linking child-based self-worth and math interest, or if child-based self-worth exerts a direct influence. This is because indirect effects suggest targeting parenting behaviors, while direct effects imply addressing maternal beliefs directly. Understanding distinct pathways is crucial, as it reveals the unique pattern in which collectivist values, a cultural context in Korea, both support and constrain parenting. However, it is scarce to find research on the effects of mothers’ child-based self-worth on

children's math interests mediated by the quality of interaction with children. This study addresses Hong (2022)'s recommendation for 'further research' using a Structural Equation Modeling (SEM) approach, providing a sophisticated analysis of direct and indirect effects and extending the research in this area.

Aims and research hypotheses

This study examines how Korean mothers' child-based self-worth affects children's math interests, exploring the mediating role of mother-child interactions during math activities. The research questions are as follows: 1. What are the direct effects of a mothers' child-based self-worth and the quality of mathematical interactions (mastery-oriented and performance-oriented interactions) on children's math interests? 2. What are the indirect effects of a mothers' child-based self-worth and the quality of mathematical interactions (mastery-oriented and performance-oriented interactions) on children's math interests? In the research question, "Direct effect" refers to the direct influence of a mothers' child-based self-worth on her child's interest in math, controlling for the mediating variable of the quality of the mothers' mathematical interactions. "Indirect effect" refers to the influence of a mothers' child-based self-worth on her child's interest in math, mediated through the quality of the mothers' mathematical interactions with her child. Figure 1 presents the hypothesized relationships between the variables included. As shown in Figure 1, the hypothesis is as follows.

H1. A mothers' child-based self-worth is negatively associated with the mothers' mastery-oriented interactions during math tasks.

H2. A mothers' child-based self-worth is associated with mothers' performance-oriented interactions

H3. A mothers' child-based self-worth is unrelated to children's math interests.

H4. Mastery-oriented interactions are positively associated with children's math interests.

H5. Performance-oriented interactions are negatively associated with children's math interests.

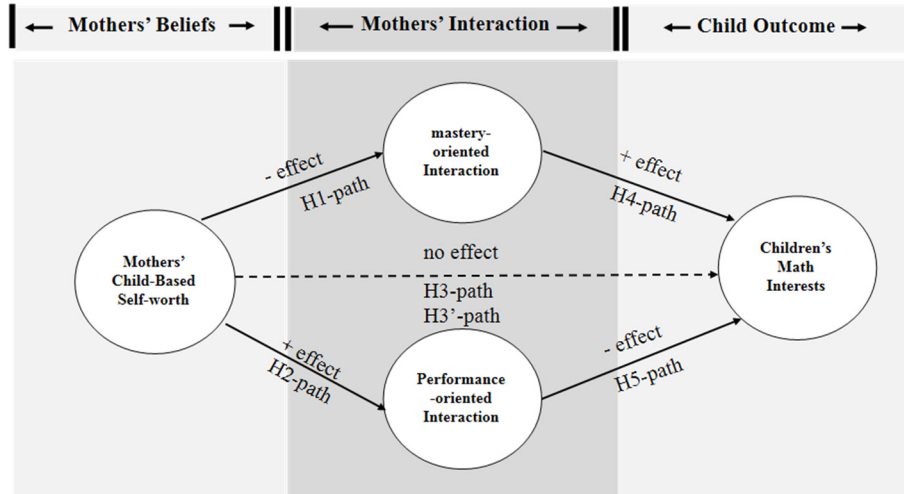


Figure 1. Conceptual Model of the Impact of Mothers' Child-based Self-worth on Children's Math Interests Through the Mediating Effects of Mothers' Behaviors.

Note: + - effect= positive or negative effect; x effect= no effect; A-E=paths

Methods

Context

South Korea is known for being one of the countries with a particular emphasis on learning (Lee & Eom, 2020). Korean math education for young children can be understood only when looking at both the national curriculum and the private education system. Early childhood education in South Korea has a national curriculum called the "Nuri-curriculum" that sets common, general standards for preschoolers aged 3 to 5 years old. Revised in 2019, it aims to promote the whole child and child-oriented play-based education. The Nuri Curriculum framework encompasses five developmental domains: physical activities and health, communication, social relationships, artistic experiences, and nature exploration. Within this holistic approach, mathematical elements are woven throughout all domains rather than existing as isolated subjects. These mathematical elements, including number sense, understanding and distinguishing locations, directions, and forms of objects, comparing properties such as length and weight in everyday life, finding repeated patterns, and

classifying objects, emerge naturally as children engage in developmentally appropriate activities across all five domains, supporting integrated learning experiences.

On the other hand, Korean children often begin private math education early in life, in addition to attending preschool. In South Korea, 20.5% of preschoolers aged 3 to 5 years old reported receiving math education through home visits from teachers, and 3.1% reported receiving math education at an academy specializing in early childhood math (Lee & Han, 2019). In more recent data, 41.7%. Four- and five-year-old children learn math from private tutors at home (Im & Kang, 2023). Depending on whether their children participate in private tutoring, mothers may exhibit performance-oriented interactions with their children as educational competition intensifies (Kowen et al., 2019; Oh et al., 2020). Therefore, including private tutoring participation as a control variable will provide important insights into the mediating effect of mathematical interactions on mothers' child-based self-worth, specifically its influence on children's math interests.

Participants

The study included 203 mothers of children aged 3 to 5 years ($M = 2.92$, $SD = 0.82$) residing in the Gangnam area of Seoul, a region with relatively high income. The more affluent the household, the more frequently mothers discuss their children's education and actively engage in their children's achievements, such as monitoring their activities (Lim, 2019). In this context, Seoul's Gangnam district is crucial for interpreting research findings on mother-child interactions and assessing their broad applicability, as it is an educationally competitive and socioeconomically advantaged area in Korea. The children attended daycare centers in Seoul, with 70.4% enrolled in private centers and 28.2% in public centers. The sample consisted of 47.1% boys and 51.5% girls. The age distribution was as follows: 36.4% were under 3 years old, 33% were under 4 years old, and 29.1% were under 5 years old. Among the mothers, 68.4% reported having a bachelor's degree or higher. Occupations were diverse, with 28.6% being stay-at-home moms, 21.8% professional and technical workers, 23.3% office managers, 10.7% sales and service workers, and 14.1% production workers. Household income was reported as follows: 20.4% under \$4 million, 29.1% between \$4

million and \$ 6 million, 25.2% between \$6 million and \$ 8 million, and 23.8% over \$8 million.

Measures

Children's Math Interests

Children's interest in mathematics was measured using Im's (2020) instrument, which was adapted from Pezosa et al.'s (2019) parent questionnaire assessing children's interest in reading. The measure included one item: "Does your child enjoy playing with numbers?" Responses were rated on a 5-point Likert scale (1 = not at all, 5 = very much so). The reliability of the scale in this study was acceptable (Cronbach's $\alpha = .84$).

Child-based Self-worth

The child-based self-worth scale developed by Eaton and Pomerantz (2004) and translated and adapted into Korean by An (2014) was used to measure mothers' self-worth toward their children's achievements. Sample items include "When my child does well, I feel good about myself" and "When my child does wrong, I feel ashamed," totaling 15 items. Responses to items are rated on a 7-point Likert scale (1 = not at all true, 7 = very true), with higher scores indicating higher maternal self-worth. The instrument's reliability coefficient (Cronbach's α) was .88 in this study.

Measurement of Mathematical Mothers' Interaction Quality

Based on Muenks et al. (2015), maternal mathematical interactions were assessed using hypothetical scenarios where children encounter mathematical difficulties. Mothers self-reported their likelihood of engaging in specific behaviors, which were assessed using a 6-point Likert scale (1 = disagree, 6 = agree). The tool consists of 14 items, categorized into mastery-oriented and performance-oriented interactions. The mastery-oriented interaction had a Cronbach's α of .57. Example items include "I encourage my child to keep working hard on math problems" and "I praise my child when she works hard on math problems". The performance-oriented interaction had a Cronbach's α of .73. It consisted of the following items: "Tells the child that he/she will miss out on some opportunities if he/she does not

figure out the answer,” and “Expresses disappointment.”

Control Variables

Based on previous research showing that a mothers' interactions during math activities may vary depending on the children's age (Thompson et al., 2017), this study controlled for the children's age.

Procedure & Ethical Considerations

The survey for this study was administered to 233 mothers of preschool children attending public and private daycare centers in Seoul. Before distributing the questionnaire, participants were informed about the topic and purpose of the questionnaire, as well as how to respond to it. The questionnaires were administered over three weeks on February 3, 2022, and were collected in person. The study adhered to ethical guidelines set by the Korean Association of Institutional Review Boards, aligning with international standards. These guidelines stressed the importance of obtaining explicit written consent from mothers. Efforts were made to communicate the study's purpose to participating mothers. Mothers were informed that they could withdraw their participation from the research at any moment if they wished to do so.

Analysis

Descriptive statistics and Pearson correlation analysis were utilized in SPSS. Before the analysis, we checked the skewness and kurtosis of the variables used. We found that the absolute values did not exceed 2 and 7, respectively, which satisfied the assumption of normal distribution. Before mediation analysis, we tested assumptions such as normality and multicollinearity. Structural Equation Modelling (SEM) analyses were conducted using Mplus 8.0 (Muthén & Muthén, 1998–2017). In this process, we utilized item parcelling techniques to improve model fit. Specifically, we used the eigen variance isolation method (Lee & Kim, 2016; Little et al., 2013). Specifically, in this study, we applied the item-parceling procedure introduced by Little et al. (2013). All latent variables met the assumption of strict unidimensionality; therefore, the uniqueness-distributed strategy was employed. The

uniqueness-distributed strategy involves conducting a confirmatory factor analysis (CFA), ranking items in descending order of their factor loadings, and then evenly distributing the items across parcels. This approach helps offset potential parcel-specific characteristics within the overall measurement model. Since all indicator variables satisfied the normality assumption, we utilized Maximum Likelihood estimation (ML) to analyse the structural equation. Finally, bootstrapping was performed 10,000 times to verify the significance of the mediating effect. Bootstrapping is a technique that utilizes multiple iterations of an operation to generate a reconstruction sample from the given data, thereby estimating path coefficients with precision and confidence intervals (Kline, 2011).

Results

The result section aligns with the research questions and hypotheses. The results are organized into two main parts: the direct effects of mothers' child-based self-worth and the quality of mathematical interactions (mastery-oriented and performance-oriented) on children's math interests and the indirect effects of mothers' child-based self-worth on children's math interests mediated by these interaction styles. A correlation analysis was conducted to check the relationship between the variables included in this study, and the results are presented in Table 1.

Table 1. *Descriptive Statistics and Correlations between Measured Variables*

	Variable Names	Mean	Standard Deviation	1	2	3	4
1.	Children's Math Interests	10.49	2.45	—			
2.	Child-based Self-worth	50.31	14.22	-.06	—		
3.	mastery-oriented interaction	29.40	3.76	.10	-.18*	—	
4.	Performance-oriented interaction	16.73	6.34	.07	.08	-.22***	—

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

In terms of correlations between variables, children's math interests were weakly positively correlated with mastery-oriented interactions ($r = .22, p < .01$) but did not have any significant

correlation with performance-oriented interactions ($r = -.10, p > .05$). Next, mothers' child-based self-worth was significantly moderately inversely correlated with mastery-oriented interactions ($r = -.37, p < .001$) and weakly positively correlated with performance-oriented interactions ($r = .23, p < .001$). Finally, mastery-oriented and performance-oriented interactions were weakly correlated but not statistically significant ($r = -.08, > .05$).

As shown in Figure 2, the direct effect is reported whether they support or contradict the hypotheses. The study's results supported H1, which proposed that a mother's child-based self-worth is negatively associated with mastery-oriented interactions. A significant negative association was found between child-based self-worth and mastery-oriented interactions ($B = -0.37, p < 0.5$). H2, which hypothesized that a mothers' child-based self-worth is associated with performance-oriented interactions, was also supported, as child-based self-worth significantly predicted higher levels of performance-oriented interactions ($B = 0.23, p < 0.5$). However, H3, which posited that a mothers' child-based self-worth is unrelated to children's math interests, was supported, as no significant direct relationship was found between child-based self-worth and children's math interests ($B = 0.03, p > 0.05$). H4 was supported, with

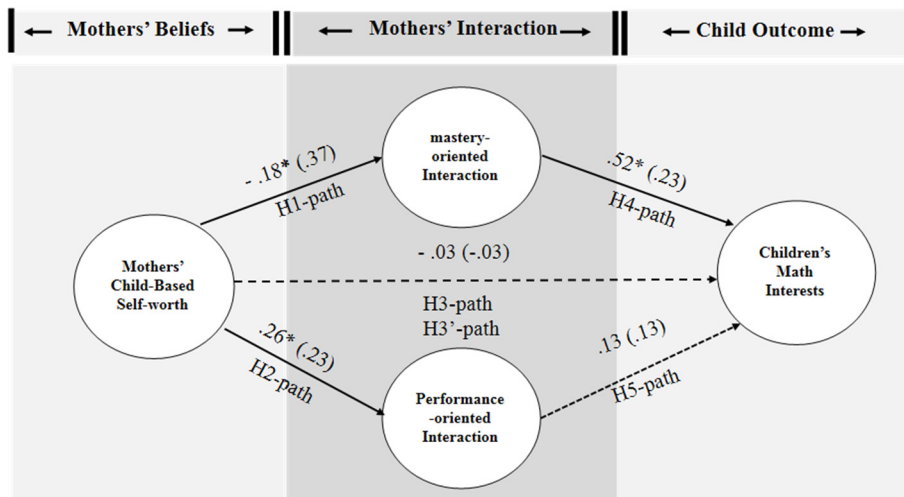


Figure 2. Results from Indirect Effect of Child-based Self-worth and Children's Math Interests through Mothers' Behaviors during Mask Task

Notes: Model Fit: Chi-Square Test 73.10; Degrees of Freedom 38; CFI .96; TLI .94; RMSEA 0.07; SRMR, 0.06, Showing Unstandardized Path Coefficients (Standardized Coefficients in Parentheses).

* $p < .05$, ** $p < .01$, *** $p < .001$

mastery-oriented interactions significantly positively associated with children's math interests ($B = 0.52, p < 0.5$). Finally, H5 was contradicted, as performance-oriented interactions were not significantly associated with children's math interests ($B = -0.13, p > 0.05$).

As shown in Table 2, the results from the indirect effect of mothers' interaction via mothers' child-based self-worth on children's math interests. The mediating effect of mastery-oriented interactions between child-based self-worth and children's math interests reveals a negative indirect relationship. Specifically, higher levels of child-based self-worth are associated with reduced mastery-oriented interactions, negatively affecting children's math interests.

Table 2. *Pathways Predicting Math Interests*

Pathways	β	SE	B
H1-path	-.18*	.08	-.37
H2-path	.26*	.10	.23
H4-path	.52*	.25	.23
H5-path	.13	.07	.13
H3-path(direct)	-.03	.07	-.03
H3'-path (indirect) through mastery-oriented interaction	.04	.027	.034
H3'-path (indirect) through performance-oriented interaction	-.12*	.048	-.09

Note. * $p < .05$. ** $p < .01$ *** $p < .001$

Table 3 suggests that the 95% bootstrapped confidence intervals for the indirect effect ranged from -0.21 to -0.04, excluding the value of zero. This suggests that higher child-based self-worth reduces mastery-oriented interaction, negatively impacting children's interest in math.

Table 3. *Boot-strapping 95% Confidence Interval of mediation*

Pathways	β	SE	95% CI	
			Lower 2.5	Upper 2.5
Child-Based Self-worth → Mastery-oriented Behaviors → Children's Math Interests	-.11	.048	-.21	-.03

Discussion

This is the first study to investigate the mediating effect of mothers' interactions on mothers' child-based self-worth and preschool children's interest in math in South Korea. The current study contributes to the existing literature by highlighting how child-based worth may impact children's math interests mediated by mothers' interactions. Given the cultural context in South Korea, where mothers' and children's self-identities are closely intertwined, the current study examines how cultural beliefs may influence the process of mother-child interaction, which, in turn, affects child outcomes. In particular, given that Korea has been characterized by cultural values of interdependence within its collective societal values (Im & Swadener, 2016), this study reveals that high cultural values may or may not impact the learning process and child outcomes. The following section presents the main findings in response to the research questions.

First, the current study found that a mothers' self-worth, based on her child's performance, indirectly affects the child's interest in math, with this relationship mediated by less mastery-oriented interaction. Specifically, when a mothers' self-worth is tied to her child's achievements, she is less likely to support her child's independent problem-solving. The more a mother focuses on her child's academic performance, the less she encourages effort and enthusiasm. This suggests that when a mothers' self-identity is intertwined with her child's success, she may prioritize results over fostering her child's autonomy. The finding that reduced mastery-oriented interactions mediate the relationship between mothers' child-based self-worth and children's math interests aligns with previous research showing that mothers' math anxiety influences children's math achievement by mediating mother-child mathematical interactions (Kim et al., 2021), Parenting behaviors mediating between parental beliefs and children's learning motivation (Wang & Wei, 2024) or self-efficacy and anxiety mediating between parenting style and children's math achievement (Macmull & Ashkenazi, 2019) are consistent with these findings. Studies examining cultural contexts, such as the impact of mothers' identity formation on parenting behaviors through their children's achievement (Chun et al., 2022), also support this pattern.

Second, the study shows that a mothers' self-worth influences her child's interest in math

through the quality of mothers' interactions, consistent with Hypothesis 2. While no direct relationship was found between a mothers' self-worth and the child's math interests, the mothers' focus on achievement significantly affects the mothers' interaction. In particular, when a mother emphasizes outcomes, the child may lose interest and develop a sense of disconnection from learning (Cheung et al., 2023). These findings highlight that child-based self-worth can have unintended negative consequences. The study's results raise important questions about how cultural beliefs impact mothers' interactions and children's outcomes. Within the Korean cultural context, this creates a paradox: the very cultural value that emphasizes academic achievement can inadvertently weaken the psychological conditions necessary for sustained learning engagement. Therefore, mothers must recognize that child-based self-worth can lead to unintended negative consequences and consciously separate their own sense of success from their children's achievements in a culture that measures maternal success through children's accomplishments. Furthermore, educators should emphasize the need for programs that help mothers understand, based on research findings, how the quality of parental interaction affects children's interest in math.

Third, the finding suggests that a mothers' child-based self-worth has a significant impact on the interactions of performance-oriented mothers. This finding is consistent with Hypothesis 3. Studies have indicated that controlling mothers may have difficulty providing the child room for failure and mistakes. Previous studies have also indicated that a mothers' child-based self-worth is correlated with controlling mothers' interactions (Lee & Jung, 2019). Previous studies have shown that mothers tend to interfere with and control their children's schoolwork, or express frustration and anger when they are unsatisfied with their children's achievements (Yoo, 2021). In the same context, Zhang and colleagues (2019) examined the impact of child-based worth on children's problem interactions in a sample of 285 Chinese mothers of preschool children. When their children's performance drives mothers' self-worth, they feel a high level of responsibility for their children's achievements. Mothers with a higher degree of child-based self-worth are more likely to interact with their children in a controlling manner, which can lead to stress, emotional problems, and peer problems (Seol et al., 2015).

Fourth, the finding showed that performance-oriented interactions did not mediate the

relationship between child-based self-worth and a child's math interest. Although child-based self-worth significantly impacts increased performance-oriented interactions, this mothers' interaction was not linked to hampering a child's math interest. This result is inconsistent with Hypothesis 5. While the researchers expected that performance-oriented interactions would mediate a decrease in a child's math interests, they did not. This suggests that mothers may have been less likely to describe themselves as engaging in mastery-oriented interactions due to their beliefs that performance-oriented interactions are desirable in mothers' interactions. The descriptive statistics indicated that mothers rated themselves as more fit in mastery-oriented interactions than in performance-oriented interactions. The standard deviation of mastery-oriented interactions is lower, indicating uniformity in reporting their mothers' interactions in surveys. Therefore, it is possible that performance-oriented interactions may not work as a significant mediator due to the tendency to report socially desirable answers in the survey methods (Bornstein et al., 2015; Kwon & Lee, 2020). Studies have indicated a gap in mothers' perceptions and interactions (Kim & Seo, 2017).

Limitations and Future Directions

While the present research sheds light on the cultural dynamics whereby mothers' beliefs, such as the self-worth derived from their children, indirectly influence young children's math interests by hindering mothers' ability to offer mastery-oriented interactions during math activities, it is essential to acknowledge several limitations within this study.

First, most participating mothers hailed from the upper-middle-class demographic in a socio-economically affluent Province, Seoul, Korea's capital city. Studies have highlighted the presence of regional disparities in South Korea, particularly regarding early childhood educational experiences (Choi & Yang, 2022). Consequently, future investigations should incorporate mothers from diverse geographical regions to grasp the cultural nuances prevalent across South Korea.

Second, the current study measured mothers' interactions during math activities by mothers' self-reports. Thus, the parent may have reported their interaction with their child in a socially desirable manner. For example, the descriptive statistics indicate that mothers rated mastery-

oriented interactions *significantly higher than performance-oriented interactions*. This tendency is inconsistent with the previous literature, which indicates that mathematics education in Asian culture tends to emphasize products over processes (Leung, 2001). It is possible that mothers may have rated their interactions more highly on mastery-oriented interactions due to socially desirable expectations. The low reliability of the subscale also indicates that the mother-reported behaviors may not be reliable in Korean cultural contexts. As such, we suggest future researchers may use observational measures to examine mother-child interaction during math activities.

Third, one limitation of this study is the relatively lower reliability of the mastery-oriented interaction measure, with a Cronbach's α of 0.57, compared to the higher alpha reported in the original study by Muenks et al., 2015 (e.g., $\alpha = .76$). This difference may reflect cultural or contextual factors that influence how mastery-oriented interaction is perceived or enacted in this sample. Future research should aim to refine this measure and explore its validity across various contexts to ensure greater consistency and reliability.

Finally, this study did not include essential variables, such as mothers' mathematical expectations for children and mothers' judgments of children's achievement, that might have impacted the quality of mothers' interactions. Studies have shown that the higher mothers hold their children's expectations for achievement, the more likely children are to engage in self-directed learning (Loughlin-Presnal & Bierman, 2017). Therefore, further studies are needed to investigate how mothers' expectations and beliefs may influence child outcomes through mother-child interaction.

In conclusion, the empirical findings of this study highlight the need to reevaluate cultural beliefs that overly associate mothers' identities with their children's academic success. Notably, Korea is a high-context, collectivistic society. Thus, mothers may probably value the evaluation of group members within society more than the individual child's interests. Furthermore, collectivistic societies emphasize interdependence over independence, and boundaries between parent and child are often vague and intertwined. The latest research indicates that mothers who derive their self-worth from their children's achievements, successes, or failures may harm their children's well-being. The latest research reveals that when mothers base their self-worth on their children's success, it inadvertently hampers the

quality of mother-child interaction. However, the more mothers tie their sense of worth to their children's accomplishments, the more likely they are to impede their children's autonomy in learning from mistakes and setbacks, ultimately hindering their interest in mathematics. In other words, mothers who overly rely on their children's achievements to validate their worth tend to be more inflexible and controlling in their children's learning journey (Ng et al., 2021). To challenge entrenched cultural norms, it is essential to question whether these beliefs align with desired outcomes or support the process effectively (Kambil, 2016).

References

- An, Y. S. (2014). Examining the mediating effects of child attachment values and anxiety on the relationship between maternal self-differentiation and psychological control parenting [Unpublished Master's Thesis]. Ewha Woman's University.
- Balestrini, D. P., & Stoeger, H. (2018). Substantiating a special cultural emphasis on learning and education in East Asia. *High Ability Studies*, 29(1), 79-106.
<https://doi.org/10.1080/13598139.2017.1423281>.
- Bornstein, M. H., Putnick, D. L., Lansford, J. E., Pastorelli, C., Skinner, A. T., Sorbring, E., Tapanya, S., Uribe Tirado, L. M., Zelli, A., Alampay, L. P., Al-Hassan, S. M., Bacchini, D., Bombi, A. S., Chang, L., Deater-Deckard, K., Di Giunta, L., Dodge, K. A., Malone, P. S., & Oburu, P. (2015). Mother and father socially desirable responding in nine countries: two kinds of agreement and relations to parenting self-reports. *International Journal of Psychology*, 50(3), 174-185. <https://doi.org/10.1002/ijop.12084>.
- Cankaya, O., & LeFevre, J. A. (2016). The home numeracy environment: What do cross-cultural comparisons tell us about how to scaffold young children's mathematical skills? *Early Childhood Mathematics Skill Development in the Home Environment* (pp. 87-104). https://doi.org/10.1007/978-3-319-43974-7_6.
- Cheung, c. ss., Pomerantz, E. M. (2011). Parents' involvement in children's learning in the United States and Chiana: Implications for children's academic and emotional

- adjustment. *Child Development*, 82(3), 932-950.
https://doi.org/10.1111/j.1467_8624.2011.01582.x.
- Cheung, S. K., Chan, W. W. L., & Fong, R. W. T. (2023). Parents' perfectionistic tendencies and children's early numeracy competence: the mediating roles of children's executive functions and numeracy interest. *European Journal of Psychology of Education*, 38(3), 1185-1200. <https://doi.org/10.1007/s10212-022-00640-x>.
- Choi, J., & Yang, J.-H. (2022). Expenses and cost determinants for childcare and private education for children. *Korean Association for Learner-Centered Curriculum and Instruction*, 22(18), 589-608. <https://doi.org/10.22251/jlcci.2022.22.18.589>.
- Daucourt, M. C., Napoli, A. R., Quinn, J. M., Wood, S. G., & Hart, S. A. (2021). The home Math environment and Math achievement: A Meta-Analysis. *Psychological Bulletin*, 147(6), 565-596. <https://doi.org/10.1037/bul0000330>.
- Doctoroff, G. L., Fisher, P. H., Burrows, B. M., & Edman, M. T. (2016). Preschool children's interests, social-emotional skills, and emergent mathematics skills. *Psychology in the Schools*, 53(4), 390-403. <https://doi.org/10.1002/pits.21912>.
- Eason, S. H., Scalise, N. R., Berkowitz, T., Ramani, G. B., & Levine, S. C. (2022). Widening the lens of family math engagement: A conceptual framework and systematic review. *Developmental Review*, 66.
<https://doi.org/10.1016/j.dr.2022.101046>. <https://doi.org/10.1016/j.dr.2022.101046>.
- Eaton, M. A. M., Pomerantz, E. M. (2004). Parental Contingent Self-Worth Scale. Unpublished manuscript, University of Illinois at Urbana-Champaign.
- Eccles J. (2009). Who Am I and What Am I Going to Do With My Life? Personal and Collective Identities as Motivators of Action. *Educational Psychologist*, 44(2), 78-89.
<https://doi.org/10.1080/00461520902832368>
- Ga, B. U. (2017). The relationship between self-worth entailment, self-esteem, and subjective well-being: A comparison of Chinese and Korean college students [Unpublished Master's Thesis]. Youngnam University Graduate School.
- Grolnick, W. S., Price, C. E., Beiswenger, K. L., & Sauck, C. C. (2007). Evaluative pressure in mothers: effects of situation, Maternal, and Child characteristics on autonomy-supportive versus controlling behavior. *Developmental Psychology*, 43(4), 991-1002.

<https://doi.10.1037/0012-1649.43.4.991>.

- Hong, M. H. (2022). Mother's mathematical interactions, Child-based self-worth and children's interest in mathematics between child-based self-worth and children's interest in mathematics [Unpublished Master's Thesis]. Duksung Women's University.
- Huang, Q., Zhang, X., Liu, Y., Yang, W., & Song, Z. (2017). The contribution of parent-child numeracy activities to young Chinese children's mathematical ability. *British Journal of Educational Psychology*, 87(3), 328-344. <https://doi.10.1111/bjep.12152>.
- Hwang, E. J. (2016). *The effects of parental psychological control on learned helplessness and procrastinatory behavior in middle school girls* [Unpublished Master's Thesis]. Department of Brain Education International Graduate School of Brain Education.
- Hwang, S. H., & Son, T. K. (2020). Analyzing the effects of elementary school teachers' math instructional quality, teaching efficacy, and students' math interest on math achievement. Analyzing the impact of math achievement: application of multilevel structural equation modeling. *Education of Primary School Mathematics*, 23(4), 175-189. <https://doi.10.7468/jksmec.2020.23.4.175>.
- Im, H. (2019). The relationship between parental expectations of young children's math skills and parental math attitudes and young children's math skills: the mediating effect of parental mathematical interactions. *Research in Early Childhood Education*, 39(6), 177-200. <https://doi.10.18023/kjece.2019.39.6.008>.
- Im, H. (2020). Early childhood education provider-parent communication, parental mathematical interaction, and children's math interest-structural equation modeling. *Research in Early Childhood Education*, 40(2), 129-154. <https://doi.10.18023/kjece.2020.40.2.005>.
- Im, H., & Kang, S. J. (2023). The relationship between parents' math expectations and children's math achievements: mediating effects of home math practices by difficulty level and dependency on private math education. *Korean Journal of Child Studies*, 44(4), 457-470. <https://doi.10.5723/kjcs.2023.44.4.457>.
- Im, H., & Swadener, E. B. (2016). Children voice their kindergarten experiences: A cross-cultural exploratory study in Korea and the US. *Australasian Journal of Early Childhood*, 41(1), 28-35. <https://doi.org/10.1177/183693911604100105>.

- Im, S. A., & Lee, J. S. (2016). Validating defining factors as predictors of math achievement: a comparative study of the top 10 OECD countries in math achievement. *Journal of Educational Evaluation*, 29(2), 357-382.
- Jeong, Y. Y. (2019). Effects of parental psychological control on adolescents' self-defense making: the mediating effects of failure fear and achievement goal orientation [Unpublished Master's Thesis] [Unpublished Master's Thesis]. Ewha Woman's University.
- Kambil, A. (2016). Culture shift: changing beliefs, behaviors, and outcomes. <https://www2.deloitte.com/us/en/pages/finance/articles/cfo-insights-culture-shift-beliefs-behaviors-outcomes.html>.
- Kim, C. H. (2020a). The moderating effect of math teacher positivity on the effects of early childhood teachers' constructivist beliefs on young children's mathematical dispositions [Unpublished Master's Thesis]. Graduate School of Education, Yonsei University.
- Kim, E. B., & Kim, J. S. (2015). The effects of verbal feedback based on praise-punishment preferences on elementary school students' intrinsic motivation. *Educational Psychology Research*, 29(2), 285-301. doi:10.17286/KJEP.2015.29.2.06.
- Kim, H. K. (2021a). *Effects of A+ praise and encouragement on elementary school students' self-confidence and school adjustment* [Unpublished Master's Thesis]. Graduate School of Education, Gwangju National University of Education.
- Kim, H. S. (2020b). *The effects of mothers' math mindset on math anxiety and mathematical interactions with their children* [Unpublished Master's Thesis]. Choongbuk National University, Graduate School of Education.
- Kim, J. E., & Seo, E. J. (2017). Mothers' perceptions, practices, and needs for early childhood math education. *Journal of Learner-curriculum and Instruction*, 17(22), 75-93. <https://doi.10.22251/jlcci.2017.17.22.75>.
- Kim, J. H., & Kim, J. M. (2014). Perceived importance and Mathematical interaction of 5-year-old's Mothers according to Contents of Mathematics Education. *Journal of Korean Child Care and Education*, 10(2), 175-192. <https://doi.10.14698/jkce.2014.10.2.175>.
- Kim, M. E. (2021b). The effects of academic, emotional regulation, academic achievement goal orientation, and parental involvement in learning on middle school students' self-

- directed learning [Unpublished Master's Thesis]. Graduate School of Education, Dongguk University.
- Kim, Y. A. (2020c). The Mediating Effects of Self-Differentiation and Child-Carried Self-Worth on the Relationship between Mothers' Origin Family Experience and Psychological Control: A study of Mothers with Elementary School Children [Unpublished Master's Thesis], Graduate School of Living Environment, Yonsei.
- Kline, R. B. (2011). Principles and practice of structural Equation Modeling (third ed.). The Guilford Press.
- Ko, E. S., & Kim, Y. S. (2019). The relationship between mother's attitude toward mathematics, math activities at home, and intentional control that influence children's mathematical skills is analyzed. *Early Childhood Education Association*, 39(1), 171-194.
- Kowen, M. R., Jang, M. K., Lee, N. K. (2019). Transforming in awareness of relationship problems due to excessive private education in Korea. *International Journal of Qualitative Studies on Health and Well-being*, 14.
<https://doi.org/10.1080/17482631.2019.1586624>
- Kwon, H., & Lee, H. (2020). The effect of social desirability bias on the measurement of self-reported response. *Studies on Korean Youth*, 31(4), 251-282.
<https://doi.org/10.14816/sky.2020.31.4.251>
- Kyeong, Y., Seol, K. O., Park, J. E., & Varghese, A. M. (2024). Roles of Korean mothers' child-based self-worth and psychological control in child outcomes. *Family Relations*, 73(2), 720-736. <https://doi.10.1111/fare.12930>. <https://doi.org/10.1111/fare.12930>.
- Lee, E. J. (2018). The influence of home environment quality, math learning perspective, and math attitudes on mothers' mathematical interactions in early childhood [Unpublished Master's Thesis]. Myongji University.
- Lee, E. J., & Kim, J. H. (2018). Influence of maternal attitudes and math learning perspectives on maternal mathematical interactions in early childhood. *Korean Journal of Human Development*, 25(2), 99-113. <https://doi.10.15284/kjhd.2018.25.2.99>.
- Lee, H. K. (2020). Moderated mediation effect analysis with process macros. Gyeonggi-do, Republic of Korea: shin young-sa, inc.

- Lee, H. J., & Eom, J. A. (2020). Relationships between parental attitudes toward play and learning, educational aspirations, and toddler routines. *Journal of Educational Studies*, 51(4), 43-62. <https://doi.10.15854/jes.2020.12.51.4.43>.
- Lee, H. J., & Kim, J. M. (2016). A structural analysis of Korean young children's mathematical ability and related children's and mothers' variables. *Early Child Development and Care*, 186(10), 1675-1692. <https://doi.10.1080/03004430.2015.1122597>.
- Lee, I. Y., & Jung, Y. S. (2019). Mothers' child-entailed self-worth, psychological control, and its relationship to young adults' subjective well-being: the mediating effects of children's autonomy needs and socially imposed perfectionism. *Korean Journal of Developmental Psychology*, 32(4), 103-121. <https://doi.10.35574/KJDP.2019.12.32.4.103>.
- Lee, J. H. (2010). Analysis of the structural relationships among self-determination motivation to learn, metacognition, self-directed learning ability, learning flow, and school achievement. *Korean Journal of Educational Research*, 48(2), 67-92.
- Lee, J. H., & Han, J. H. (2019). Parent's perception towards early childhood mathematics education, storytelling math education and current status of home mathematics education. *Journal of Children's Literature and Education*, 20(3), 287-311. <https://doi.10.22154/JCLE.20.3.11>.
- Lee, J. H., & Kim, S. J. (2010). Analysis of variables affecting the defining domain of mathematics in PISA 2003 results. *Journal of Korea Society of Educational Studies in Mathematics*, 12(2), 219-237.
- Lee, W. K. (2021). The impact of maternal intrapsychic narcissism on psychological control over children in late childhood: the mediating effects of child concomitant self-worth and emotional dysregulation [Unpublished Master's Thesis], Graduate School of Counseling Psychology, The Catholic University.
- LeFevre, J. A., Skwarchuk, S. L., Smith-Chant, B. L., Fast, L., Kamawar, D., & Bisanz, J. (2009). Home numeracy experiences and children's math performance in the early school years. *Canadian Journal of Behavioural Science / Revue Canadienne des Sciences du Comportement*, 41(2), 55-66.

- <https://doi.org/10.1037/a0014532>.
- Lerner, R. E., & Grolnick, W. S. (2020). Maternal involvement and children's academic motivation and achievement: the roles of maternal autonomy support and children's affect. *Motivation and Emotion*, 44(3), 373-388.
<https://doi.org/10.1007/s11031-019-09813-6>.
- Leung, F. K. S. (2001). In search of an East Asian identity in mathematics education. *Educational Studies in Mathematics*, 47(1), 35-51.
<https://doi.org/10.1023/A:1017936429620>.
- Lim, J. H. (2019). A Study on the Lives of High-Income Children in Gangnam: Focusing on Kindergarten and Elementary School Years. *Korean Journal of Education Administration*, 37(3), 1-31
<http://dx.doi.org/10.22553/keas.2019.37.3.1>
- Little, T. D., Rhemtulla, M., Gibson, K., & Schoemann, A. M. (2013). Why the items versus parcels controversy needn't be one. *Psychological Methods*, 18(3), 285-300.
<https://doi.org/10.1037/a0033266>.
- Loughlin-Presnal, J. E., & Bierman, K. L. (2017). Promoting parent academic expectations predicts improved school outcomes for low-income children entering kindergarten. *Journal of School Psychology*, 62, 67-80. <https://doi.org/10.1016/j.jsp.2017.05.001>.
- MacKinnon, D. P., Fairchild, A. J. (2009). Current Directions in Mediation Analysis. *Curr Dir psychol Sci*, 18(1), 16-20. <https://doi.org/10.1111/j.1467-8721.2009.01598.x>.
- Moorman, E. A., & Pomerantz, E. M. (2010). Ability mindsets influence the quality of mothers' involvement in children's learning: an experimental investigation. *Developmental Psychology*, 46(5), 1354-1362. <https://doi.org/10.1037/a0020376>.
- Muenks, K., Miele, D. B., Ramani, G. B., Stapleton, L. M., & Rowe, M. L. (2015). Parental beliefs about the fixedness of ability. *Journal of Applied Developmental Psychology*, 41, 78-89. <https://doi.org/10.1016/j.appdev.2015.08.002>.
- Napoli, A. R., & Purpura, D. J. (2018). The home literacy and numeracy environment in preschool: cross-domain relations of parent-child practices and child outcomes. *Journal of Experimental Child Psychology*, 166, 581-603.
<https://doi.org/10.1016/j.jecp.2017.10.002>

- Ng, F. F. Y., Pomerantz, E. M., & Deng, C. (2014). Why are Chinese mothers more controlling than American mothers? "My child is my report card". *Child Development*, 85(1), 355-369. <https://doi.org/10.1111/cdev.12102>.
- Ng, F. F., Pomerantz, E. M., Lam, S., & Deng, C. (2019). The role of mothers' Child-based Worth in their affective responses children's performance. *Child Development*, 90(1), 165-181. <https://doi.10.1111/cdev.12881>.
- Ng, J., Ng, F. F., & Pomerantz, E. M. (2021). Mothers' goals influence their responses to children s performance: an experimental study. *Child Development*, 92(6), 2317-2334. <https://doi.10.1111/cdev.13554>.
- Oh, B. C., Yeon, J. Y., Lee, H. S., Lee, D. W., Park, E. C. (2020). Correlation between private education costs and parental depression in South Korea. *BMC public Health*, 20, 972. <https://doi.org/10.1186/s12889-020-09058-w>
- Oh, H. S., & Kim, J. H. (2021). The mediating effect of home environment quality on the impact of parental engaged play beliefs on parental mathematical interactions in early childhood. *Journal of Learner-Centered Curriculum and Instruction*, 21(5), 475-487. <https://doi.10.22251/jlcci.2021.21.5.475>.
- Park, G. S. (2015). The effects of self-determination motivation and self-efficacy on learning engagement: focusing on the mediating effect of subject interest [Unpublished Master's Thesis]. Ewha Woman's University, Graduate School of Education.
- Pezoa, J. P., Mendive, S., & Strasser, K. (2019). Reading interest and family literacy practices from prekindergarten to kindergarten: contributions from a cross-lagged analysis. *Early Childhood Research Quarterly*, 47, 284-295. <https://doi.org/10.1016/j.ecresq.2018.12.014> j.
- Pomerantz, E. M., Ng, F. F. Y., & Wang, Q. (2006). Mothers' Mastery-oriented involvement in children's homework: implications for the well-being of children with negative perceptions of competence. *Journal of Educational Psychology*, 98(1), 99-111. <https://doi.10.1037/0022-0663.98.1.99>.
- Pomerantz, E. M., Ng, F. F., & Wang, Q. (2008). Culture, parenting, and motivation: the case of East Asia and the United States. *Social Psychological Perspectives Advance in Motivation and Achievement*, 15, 209-240.

[https://doi.10.1016/S0749-7423\(08\)15007-5](https://doi.10.1016/S0749-7423(08)15007-5).

- Rawlings, A. M., Aunola, K., Koponen, T., Poikkeus, A.-M., Lerkkanen, M.-K., & Vasalampi, K. (2023). Primary-school students' motivational profiles, antecedents, and connections with arithmetic Achievement. "Preprint1_primary_students_ motivational profiles." PsyArXiv. <https://doi.10.2139/ssrn.4628060>.
- Rudy, D., Sheldon, K. M., Li, Y., Kamble, S., Bi, X., & Palermo, F. (2015). Who chooses best? Explaining the interactive effect of culture and decision maker on children's intrinsic motivation. *Journal of Cross-Cultural Psychology*, 46(4), 471-488. <https://doi.org/10.1177/0022022115572684>.
- Seol, K. O., Kyung, Y. N., & Park, J. E. (2015). The effects of mothers' child-entailment self-worth on parenting behavior and children's psychological adjustment. *Korean Journal of Psychology*, 34(1), 109-131.
- Skwarchuk, S. L., Sowinski, C., & LeFevre, J. A. (2014). Formal and informal home learning activities in relation to children's early numeracy and literacy skills: the development of a home numeracy model. *Journal of Experimental Child Psychology*, 121, 63-84. <https://doi.org/10.1016/j.jecp.2013.11.006>.
- Thompson, R. J., Napoli, A. R., & Purpura, D. J. (2017). Age-related differences in the relation between the home numeracy environment and numeracy skills. *Infant and Child Development*, 26(5). <https://doi.10.1002/icd.2019>.
- Yang, C. K., & Hahn, H. M. (2002). Co-Sleeping in young Korean children. *Journal of Developmental and Behavioral Pediatrics*, 23(3), 151-157. <https://doi.org/10.1097/00004703-200206000-00004>.
- Yoo, S. Y. (2021). The relationship between mothers' child-rearing self-worth and depression: the mediating effect of parent-child relationship moderated by harmonious passion [Unpublished Master's Thesis]. Graduate School of Counseling Psychology, Hanyang University.
- Zippert, E., Rittle-Johnson, B., (2020). The home math environment: More than numeracy. *Early Childhood Research Quarterly*, 50(3), 4-15. <https://doi.org/10.1016/j.ecresq.2018.07.009>
- Zhang, H., Song, J., & Hong, X. (2019). The relation between Chinese parents' child-based

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worth and young children's behavioral problems: a serial multiple mediator model.

European Early Childhood Education Research Journal, 27(6), 902-917.

<https://doi.10.1080/1350293X.2019.1678934>.