

Mediating Effect Of Smartphone Usage On The Relationship Between Maternal Behaviour And Young Children's Playfulness During The Outbreak Of Corona Virus

Jiyoung Lee¹, Maria Fe Y. Gocotano²

¹ Lecturer, Tarlac State University, Philippines.

² Professor, Cebu Normal University, Philippines.

Abstract

This study was conducted to confirm whether smartphone usage mediates the relationship between maternal behavior and young children's playfulness during the outbreak of Corona Virus. The global pandemic has shaken all sectors and one of these is the educational sector which had several impediments in the conduct of the teaching-learning experiences, especially the young learners. Home-based learning modalities navigated the educational landscape. The use of smartphones and all other gadgets for learning became the trend for both workers and children. The respondents of this study were the 270 young children attending kindergarten in Seoul and their mothers. A survey was conducted on maternal behavior, playfulness, and smartphone usage. The final data were analyzed using the SPSS 22.0 program. The research results were as follows: First, love behavior and control behavior showed a significant negative correlation with smartphone usage, and hostility behavior showed a significant positive correlation with smartphone usage. Second, the mediating effect of smartphone usage was confirmed in the relationship between love behavior and playfulness. Based on the results of this study, methods and approaches to enhance playfulness in young children were created and recommended.

Keyword: CORONA-19, Mediating Effect, Maternal Behavior, Playfulness, Smartphone Usage.

I. INTRODUCTION

Corona Virus-19, which started in December 2019, spread rapidly through human-to-human contact and droplets, throwing the world a life threatening impact into confusion and fear about this infectious diseases. This global pandemic has shaken all sectors. Due to this, 'Social Distancing; Wearing of Face Mask; Wearing of Face Shield & Proper Handwashing' have been implemented as hygienic practices. Many people had been experiencing psychological as well as emotional effects and the difficulties in maintaining daily life struggles, such as isolation, severe illnesses that would resort to death. On the education sector, school shutdowns and suspension of classes experienced impediments in the teaching-learning. For young children who should have enjoyed playing in daycare centers or kindergarten schools, the transition to home-rearing has taken place, the burden of parenting on parents is gradually increasing (Bae, 2021). Young children naturally use smartphones in

their daily life at home, and smartphones are becoming new toy gadgets for young children (Lee, 2014). According to the 2020 smartphone overdependence survey, children's smartphone dependence increased from 19.7% in 2019 to 21.0% in 2020, and the smartphone dependence rate among children is showing an increasing trend (Ministry of Science and ICT, 2021).

These children's smartphone usage is related to the maternal parenting behavior. Although maternal behavior appear differently depending on individual values and sociocultural backgrounds, they have a profound effect on the overall development of young children, including psychological, social, intellectual, and emotional development (Han, 2020). In a previous study on parenting behavior, Young (1998) emphasized the importance of the parental role because parent-related variables have an absolute influence in the case of Internet addiction in young children. In particular, the importance of parental behavior, especially maternal behavior, was emphasized, which

informs the setting of appropriate behavioral restrictions and a clear range of possible actions in young childhood, when autonomy and initiative are developed. Rejective parenting behavior of parents were found to be a significant result with young children's overuse of smartphones. It was said that the more negative parental behavior, the higher the Internet hyperdisposition, and the more affectionate parental behavior, the lower the Internet hyperdisposition (Moon, 2007). There was also a study being reported that the more hostile and controlling parental behavior, the higher the tendency to become over-immersed in the Internet (Jeong, 2003). In addition, when mothers showed positive parental behavior such as love, autonomy, achievement, rationality, and consistency, young children's smartphone and Internet use became low. As such, it revealed that the influence of the usage of the smart phones affected the behavior of the children.

Children's excessive immersion in smartphones act as a factor that lowers playability. Play has such an important meaning in children's lives that it is presented as a basic right of children in Article 31 of the UN Convention on the Rights of the Child. For young children, play is a source of joy in life and, in terms of development, enables young children to think abstractly to enhance their cognition, learn social skills and moral rules, develop their bodies, develop flexibility and foster creativity. In addition, by practicing new skills or concepts through play, young children internalize essential things for life (Chae et al., 2015). Playfulness is an indicator of how much fun, expression, and voluntary participation a young children enjoys, expresses, and voluntarily participates in while playing important to children, and how creative and socially compatible with their peers (Barnett, 1990; Csikszentmihalyi, 1990). Therefore, observing children's playfulness is ultimately related to inferring the quality of life experienced by children and how many areas they can develop through play. Therefore, this study intends to conduct an empirical study on the mediating effect of infant smartphone addiction on the relationship between maternal behavior and young children's playfulness.

OBJECTIVES OF THE STUDY

1. To assess the relationship between maternal behavior, young children's playfulness, and the usage of the smartphone.

2. To find the mediating effect of smartphone usage in the impact of maternal behavior on young children's playfulness.

3. To assess the cultural backgrounds of the children through play

2. REVIEW OF RELEVANT LITERATURE

2.1 MATERNAL BEHAVIOR

Maternal behavior refers to the consistent attitude and behavior of a mother while raising her child. A family's customs appear differently depending on the maternal behavior or atmosphere. In addition, maternal behavior includes both external and internal behaviors as well as integrated responses. This maternal behavior has a close relationship with the infant and has an absolute influence on the young children's growth. The mother is the first human environment the young children meet, and they forms the basis of sociality through interaction with their mother (Kim, 2001). Parental behaviors of parents were first formulated by Symonds (1949). Becker (1964) stated that parenting behaviors are the attitudes and behaviors that parents or caregivers exhibit toward their young children, and include internal behaviors in which parents respond to them with a certain emotional intensity. It is also said that it is an important factor in the cognitive and emotional development of infants and that it influences the personality and behavior of young children (Lee, 2017). Fishbein & Aizen (1975) stated that parenting behavior is a cultural mode for infant growth and development, and a response pattern to infant behavior. In other words, maternal behavior is an overall attitude that includes not only the general, universal, explicit, and implicit behaviors that a mother exhibits while raising her children, but also the values and beliefs of the mother.

Schaefer & Bell (1958). classified maternal behavior as affectionate, autonomous, controlling, and rejecting parenting attitudes. According to him, the affectionate parenting attitude is a receptive and cooperative attitude, and it refers to the attitude that the parent communicates with the child with affection and respect. Autonomous parenting attitude is a permissive and autonomous attitude, and it refers to the attitude that the parent understands and empathizes with the child, and often uses encouragement and praise. And the negative

parenting attitude and the controlling parenting attitude refer to attitudes that impose a lot of restrictions on children's behavior and are not tolerant or strictly regulated. The most important social relationship in the family occurs especially in the relationship with the mother, and the intellectual and affective characteristics of children are largely attributable to the parenting attitude of the caregiver (Song & Nam, 2017). As such, maternal behavior is an important factor in a child's development and affects the child's personality and behavior.

2.2 PLAYFULNESS

For young children, play is their life and it is a part of life. Infants interact with their surroundings while exploring and learning through play. Infants express joy through play and achieve balanced development by interacting with their surroundings. In other words, for young children, play is a process of exploring oneself and adapting to the surrounding environment. It is an activity with great educational value and life itself. Through this, infants form their own attitudes and dispositions (Boyer, 1997; Hurlock, 1981; Luckey & Fabes, 2005). Young children develop a variety of skills through play. The promoted infant's function is reflected in the young children's playfulness. This reinforces the intrinsic motivation for play, and the reinforced intrinsic motivation appears as the young children's individual attitudes and dispositions in play (Rubin, Fein, & Vandenberg, 1983). This is called playfulness. Playfulness is an important factor in the holistic development of young children. Playfulness is markedly expressed in social situations, such as cooperative play and cooperative play with peers (Shaffer, 2008). In other words, young children's playfulness can be defined as a play attitude that enables young children to voluntarily and actively participate in play to become a qualitative play and an individual's inner disposition.

2.3 SMARTPHONE USAGE

Smartphone usage refers to a state in which excessive use of smartphones leads to increased smartphone salience and decreased use control, resulting in problematic outcomes (Kim, 2019). Smartphone usage consists of three sub-factors:

control failure, salience, and problematic outcomes. Control failure refers to a decrease in the ability to autonomously control the use of smartphones compared to the user's subjective goals. Prominence means that the lifestyle pattern using a smartphone is more prominent than other behaviors and becomes the most important activity in life. The problematic result refers to the continued use of a smartphone despite experiencing negative physical, psychological, and social consequences due to smartphone use (Ministry of Science and ICT, 2018). Young children's smartphone usages has been studied to be related to their emotional intelligence, playability, language development, sociality, and behavior (Kim, Cho & Lim, 2017; Ki,m, Cho, & Ko, 2020; Lee, 2021; Namgung, 2019). In this study, it is focused on the relevance of children's play performance.

This study was conducted to verify whether young children's smartphone usage has a mediating effect in the relationship between mother's parental attitude and young children's playfulness in COVID-19 situation.

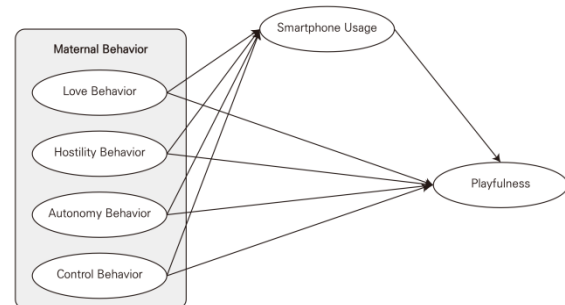


Figure 2.1 Research Framework

3. METHOD OF RESEARCH

3.1 RESPONDENTS

The subjects of this study were 270 young children (3 yrs to 5 yrs) and mothers enrolled in kindergartens in Seoul. This study was conducted through an online survey from October 20 to November 5, 2021. A total of 300 questionnaires were distributed, and 270 of the collected questionnaires were used for final analysis, excluding those in which missing values and outliers were found. The demographic characteristics of the study subjects are presented in Table 3.1.

Table 3.1 Demographic Information

| Category | | N | % |
|---------------------------------|-----------------|-----|-------|
| Young Children Gender | Boy | 118 | 43.7 |
| | Girl | 152 | 56.3 |
| Young Children Age | 3 yrs | 63 | 23.3 |
| | 4yrs | 107 | 39.7 |
| | 5yrs | 100 | 37.0 |
| Mother Age | 20's | 5 | 1.9 |
| | 30's | 180 | 66.7 |
| | 40's | 85 | 31.5 |
| Mother's employed statement | Working | 212 | 78.5 |
| | Not working | 58 | 21.5 |
| Mother's Educational Background | College | 56 | 20.7 |
| | University | 184 | 68.1 |
| | Graduate School | 30 | 11.1 |
| Total | | 270 | 100.0 |

3.2 MEASURES

3.2.1 MATERNAL BEHAVIOR

To measure a maternal behavior, Shaefer's Maternal Behavior Research Instrument (MBRI) (Shaefer & Bell, 1958) was modified and supplemented and used in this study by Jo (2021). The sub-factors consisted of a total of 48 items (12 items each) as love behavior, hostility behavior, autonomy behavior, and control behavior, and each question was measured on a 5-point Likert rating scale. Cronbach's α of the sub-factors was love bahavior .73, hostility behavior .70, autonomy behavior .74, and control behavior .73 in this study.

3.2.2 PLAYFULNESS

Children's playfulness was used as the scale used in this study by Lee (2019), using the Chidren's Playfulness Scale (CPS) developed by Barnett (1990). The sub-factor consists of a total of 25

items of 5 sub-factors: 4 items of physical spontaneity, 5 items of social spontaneity, 6 items of cognitive spontaneity, 5 items of manifest joy, and 5 items of sense of humor. Measurements were made on a 5-point Likert scale. Cronbach's α value was .89 in this study.

3.2.3 SMARTPHONE USAGE

To measure smartphone usage of infants, Jeon (2020) used the 'Young children Smart Addiction Observer Scale' of the National Information Society Agency (2016) in the study. This tool consisted of the 3 sub-factors: salience (3item), self-regulation failure (3 items), problematic outcome (3 items). It consisted of 9 questions. Measurements were made on a 5-point Likert scale. Cronbach's α value was .91 in this study.

3.3 DATA ANALYSIS

Data analysis in this study was conducted using the SPSS 22.0 program. The procedures for research analysis were as follows. First, the mean value, distribution, and standard deviation and normality test of each variable were confirmed by descriptive statistics. Pearson's correlation analysis was used to verify the correlations between variables. Mediated regression analysis suggested by Baron & Kenny (1986) was conducted to verify the mediating effect of smartphone usage in the relationship between maternal behavior and playfulness. This is a three-step mediated regression analysis. In the first step, the independent variable has a significant effect on the parameter through regression analysis, and in the second step, the independent variable must have a significant effect on the dependent variable. In the third step, the mediating effects can be verified as to

the significant effect of independent and mediation variables on the dependent variable and the influence of the independent variable on the dependent variable is lower than step 3 regression analysis. Sobel test was performed to verify the significance of each regression equation (Sobel, 1982).

4. RESULT

4.1 DESCRIPTIVE STATISTIC

Table 4.1 shows the results of descriptive statistical analysis of major variables. The mean of maternal behavior was Love behavior 3.93 (SD=.36), Hostility behavior 2.62 (SD=.39), autonomy behavior 3.66 (SD=.43), and control behavior 3.15 (SD=.41). The average of smartphone usage was 1.69 (SD = .47), and the average of playfulness was 4.25 (SD = .42).

Table 4.1 Result of Descriptive statistics

| Variables | | M | SD |
|-------------------|--------------------|------|-----|
| Maternal Behavior | Love Behavior | 3.93 | .36 |
| | Hostility Behavior | 2.62 | .39 |
| | Autonomy Behavior | 3.66 | .43 |
| | Control Behavior | 3.15 | .41 |
| Smartphone Usage | | 1.69 | .47 |
| Playfulness | | 4.25 | .42 |

4.2 CORRELATION ANALYSIS

Correlation analysis was performed and examined the relationship among maternal behavior, smartphone usage, and playfulness. The love behavior showed a significant negative correlation with smartphone usage ($r=-.28$, $p<.001$) and a significant positive correlation with playfulness ($r=.17$, $p<.01$). The hostility behavior showed a significant positive

correlation with smartphone usage ($r=-.36$, $p<.001$) and a significant negative correlation with playfulness ($r=-.22$, $p<.001$). The autonomy behavior revealed a significant negative correlation with smartphone usage ($r=-.14$, $p<.0$) and a significant positive correlation with playfulness ($r=.23$, $p<.01$). The control behavior showed a significant negative correlation with playfulness ($r=-.18$, $p<.001$).as presented in Table 4.2.

Table 4.2 Correlations between Variables

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---------|---------|---|---|---|---|
| 1 | 1 | | | | | |
| 2 | -.56*** | 1 | | | | |
| 3 | .54*** | -.48*** | 1 | | | |

| | | | | | | |
|---|---------|---------|---------|---------|--------|---|
| 4 | .12 | .21** | -.14* | 1 | | |
| 5 | -.28*** | .36*** | -.26*** | .02 | 1 | |
| 6 | .17** | -.22*** | .23*** | -.18*** | -.17** | 1 |

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

Note. 1. Love Behavior, 2. Hostility Behavior, 3. Autonomy Behavior, 4. Control Behavior, 5. Smartphone Usage, 6. Playfulness

4.3 MEDIATING EFFECTS ANALYSIS

4.3.1 LOVE BEHAVIOR, PLAYFULNESS, AND SMARTPHONE USAGE

In step 1, love behavior ($\beta = -.28$, $p < .001$) was found to have a significant negative effect on

smartphone usage. In step 2, love behavior ($\beta = .17$, $p < .01$) was found to have a significant positive effect on playfulness. In step 3, love behavior ($\beta = .14$, $p < .05$) and smartphone usage ($\beta = -.11$, $p < .05$) were found to have a significant effect on playfulness. As an addendum, the effect of love behavior on playfulness in stage 3 was lower than that in stage 2. Accordingly, it was confirmed that smartphone usage partially mediated the relationship between love behavior and playfulness ($Z = 2.496$, $p < .05$).

Table 4.3 Mediation Effect of Smartphone Usage in the Relationship between Love Behavior and Playfulness

| | IV | DV | B | β | R^2 | F |
|---|----------|----|-------------|---------------|-------|-----------|
| 1 | LB | SU | -.36 | -.28*** | .076 | 22.042*** |
| 2 | LB | PL | .20 | .17** | .030 | 8.161*** |
| 3 | LB SU | PL | .16 -.11 | .14* -.13* | .045 | 6.236** |

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

Note. IV: Independent Variable, DV: Dependent Variable, LB: Love Behavior, SU: Smartphone Usage, PL: Playfulness

4.3.2 HOSTILITY BEHAVIOR, PLAYFULNESS, AND SMARTPHONE USAGE

In step 1, hostility behavior ($\beta = .36$, $p < .001$) revealed a significant positive effect on the smartphone usage. In step 2, hostility behavior ($\beta = -.22$, $p < .001$) was found to have a significant

negative effect on playfulness. In step 3, hostility behavior ($\beta = -.18$, $p < .05$) was found to have a significant negative effect. However, smartphone usage ($\beta = -.10$, $p > .05$) did not appear to have a significant effect on playfulness, so mediated regression was not accepted ($Z = 2.362$, $p < .05$).

Table 4.4 Mediation Effect of Smartphone Usage in the Relationship between Hostility Behavior and Playfulness

| | IV | DV | B | β | R^2 | F |
|---|----|----|------|---------|-------|-----------|
| 1 | HB | SU | .43 | .36*** | .130 | 40.157*** |
| 2 | HB | PL | -.23 | -.22*** | .048 | 13.426*** |
| 3 | HB | PL | -.20 | -.18* | .056 | 7.968*** |

| | | |
|----|------|------|
| SU | -.09 | -.10 |
|----|------|------|

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

Note. IV: Independent Variable, DV: Dependent Variable, HB: Hostility Behavior, SU: Smartphone Usage, PL: Playfulness

4.3.3 AUTONOMY BEHAVIOR, PLAYFULNESS, AND SMARTPHONE USAGE

In step 1, autonomy behavior ($\beta = -.26$, $p < .001$) was found to have a significant negative effect

on smartphone usage. In step 2, autonomy behavior ($\beta = .23$, $p < .001$) was found to have a significant positive effect on playfulness. In step 3, autonomy behavior ($\beta = .23$, $p < .001$) was found to have a significant static effect. However, smartphone usage ($\beta = -.10$, $p > .05$) did not appear to have a significant effect on playfulness, so the mediated regression equation was not accept ($Z = 2.400$, $p < .05$).

Table 4.5 Mediation Effect of Smartphone Usage in the Relationship between Autonomy Behavior and Playfulness

| | IV | DV | B | β | R^2 | F |
|---|----|----|------|---------|-------|-----------|
| 1 | AB | SU | -.28 | -.26*** | .066 | 19.063*** |
| 2 | AB | PL | .22 | .23*** | .052 | 14.672*** |
| 3 | AB | PL | .20 | .20*** | .064 | 9.144*** |
| | SU | | -.10 | -.11 | | |

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

Note. IV: Independent Variable, DV: Dependent Variable, AB: Autonomy Behavior, SU: Smartphone Usage, PL: Playfulness

4.3.4 CONTROL BEHAVIOR, PLAYFULNESS, AND SMARTPHONE USAGE

In step 1, control behavior ($\beta = .22$, $p > .05$) did not significantly affect smartphone usage. In step 2, control behavior ($\beta = -.19$, $p < .05$) was found to have a significant negative effect on playfulness.

In step 3, control behavior ($\beta = -.18$, $p < .01$) and smartphone usage ($\beta = -.16$, $p < .01$) were found to have a significant negative effect on playfulness. It was confirmed that the mediated regression equation was not significant ($Z = -.284$, $p > .05$) because the condition of step 1 was mediating regression which was not accepted.

Table 4.6 Mediation Effect of Smartphone Usage in the Relationship between Control Behavior and Playfulness

| | IV | DV | B | β | R^2 | F |
|---|----|----|------|---------|-------|----------|
| 1 | CB | SU | .22 | .22 | .000 | .103 |
| 2 | CB | PL | -.19 | -.18** | .032 | 8.984** |
| 3 | CB | PL | -.18 | -.18*** | .059 | 8.318*** |
| | SU | | -.15 | -.16** | | |

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

Note. IV: Independent Variable, DV: Dependent Variable, CB: Control Behavior, SU: Smartphone Usage, PL: Playfulness

5. DISCUSSION

This study ascertained the mediating effect of smartphone usage in the relationship between maternal behavior and playfulness. These presentations were based on the findings:

First, love behavior and control behavior showed a significant negative correlation with smartphone usage, and hostility behavior showed significant positive correlation with smartphone usage. Love behavior and autonomy behavior showed significant positive correlation with playfulness, and hostility behavior and control behavior showed significant negative correlation. This was similar to the result revealed that hostility behavior had a significant positive effect on smartphone usage based from the study conducted by Kum et al. (2019) which presented a significant negative correlation with love behavior and autonomy behavior. In other words, maternal behavior is clearly and significantly related and showed an impact to young children's smartphone usage and playfulness.

Second, the mediating effect of smartphone usage was confirmed in the relationship between love, behavior and playfulness. This had the same vein as the study had revealed that maternal behavior had a significant effect on infant smartphone usage (Kim, Chung & Jeong, 2019). Lee (2021) study revealed that infants and children smartphone usage had a significant effect on play-ability. It means that when the mother shows love behavior, the infant's smartphone usage is lowered and playfulness is high. Therefore, to lower the smartphone usage of infants and children, mothers should increase playfulness, nurture, feel the children that they are loved, the need to belong, to be taken cared of, demonstrate enthusiasm for play, and find most of the time to be with them.

6. CONCLUSION & RECOMMENDATIONS

For the past two years, young children's outdoor activities had been restricted due to COVID-19. More time was spent for the indoor play and other home-based activities. Thus, more time was spent using smartphones at home which became a phenomena and the use of the gadgets were increasingly high. Therefore, guidance and counseling, monitoring, follow-up from the parents especially the mother, who is the primary caregiver, is the most essential being track to monitor the progress in using smartphones. Specifically, a mother should reasonably guide her child's smartphone usage, set clear limits, and implement rules to set things right with her children. Mothers also need to possess proper maternal behavior that allow her to respond

appropriately to their child's needs, rationalizing and explaining child's misbehavior when a mother breaks her promise. However, a study by Ryu (2014) showed that although mothers recognize the importance of their role in guiding their children to use smartphones correctly, they feel difficulties because they do not know the correct strategic methods and paradigm shift necessary for responsible parenting. Therefore, to lower the percentage of the usage of smartphones, it is deemed necessary to spend more attention and quality time, rational and appropriate parenting attitude and attributes, and the warmth needed to fill in the gap of the gadgets and smartphones. Parents especially mothers should also be professional enough when to use their smart phones so as not to be great influence to their very own children. Children imitate what they see among the elders. A parent educational program should be designed and created to help introduce correct maternal behavior for young children's using smartphone and playfulness. As an addendum, the parent education program should include specific play methods and strategies, and other educational therapies such as dance therapy, music therapy, bibliotherapy, drama therapy, literature therapy, art therapy and above all the family therapy. Specific guidance techniques and approaches, parental education program and intervention scheme are provisions to lower the smart phone usage.

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