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Exposures and Emotional Connection of Toddlers on Mobile Screen Media Devices (MSMD): A Cross-Sectional Study

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ABSTRACT

Access to and early exposure on mobile screen media devices (msmd) as part of the growing-up environment in the early development of a child is crucial. This study explored the exposures of and emotional connection of filipino toddlers on msmd. A cross-sectional research design has been adopted with the millennial parents of toddlers as respondents who were selected purposively (n=211) andshared observations on theirtoddlers' degree of exposure to msmdthrough answering items in the researchers-made questionnaire about their toddlers' exposure and emotional attachment on msmd. It shows that mothers mostly allowed and provided access to msmd in an average of 2 hoursof exposure for educational games, watching multimedia (e.g., youtube), and listening to music nursery rhymes. Assessment of toddlers' speech and language shows that most can respond in calling their names, no stuttering issues, but do not engage in pretending to play with toys. The degree of exposure to msmd, age, and gender of a toddler has a significant relationship to their speech and language development. Thus, the degree of exposure to msmd plausibly shapes the early developmental stage of a child. An awareness campaign, proper guidance, responsible parenthood, and supportive circles of significant others are relevant.

Keywords: Mobile Screen Media Devices (MSMD), Early Childhood Development, Speech, Language.

INTRODUCTION

Rapid technological innovations in mobile screen media devices (MSMD) such as smartphones and electronic tablets as the most commonly used, popular, and convenient are getting more interesting and entertaining for all ages(Paudel, Jancey, Subedi, & Leavy, 2017). The surge of MSMDs had encroached on the environment of a child during the early developmental stage because of the multitude of features it offers and parental permission (Kabali et al., 2015; Paudel et al., 2017). It has an intuitive interface that can resemble age-appropriateinteractive plays (Geist, 2014). Studies reported that as early as 1-year-old have screen time exposure particularly smartphones (Bozzola et al., 2018; Kabali et al., 2015; Paudel et al., 2017) and can easily interact withat the age as early as two years old (Geist, 2014). Accordingly, screen time exposure increases simultaneously with age (Bozzola et al., 2018; Kabali et al., 2015; Paudel et al., 2017). Parents provided mobile devices to their children whenever they have worked at home, to provide entertainment such as playing games and watching videos, induce sleep during bedtime(Kabali et al., 2015),and to abate tantrums(Ismail, Hasan, & Mustapha, 2017; McDaniel & Radesky, 2018). The appropriate use of technology such as the integration of techno-toys and digital play promotes development in exploring innovative social skills (Ebbeck, Yim, Chan, & Goh, 2016) and has high educational value (Ernest et al., 2014; Lepicnik-Vodopivec & Samec, 2013). Studies reported thatparents who often used mobile devicesare linked to their children'shigh screen timeor exposure on MSMD(Lauricella, Wartella, & Rideout, 2015;

Paudel et al., 2017). The excessive use of mobile devices has been conveyed to have side effects such as difficulty communicating and socializing with other kids, interferes learning, callous-unemotional behavior(Bozzola et al., 2018), interrupted sleeping time (Ebbeck et al., 2016), digital addiction, and emotional dependency to screen devices and the like(Ismail et al., 2017). It has been argued that early MSMD exposure to young children particularly those at the ageof 2 years or younger has no social relevance in the child's development as they need more human touch and social interaction than digital touch. (Ebbeck et al., 2016). Indeed, some parentsclaimed that overexposure of their child to MSMD is harmful (Lepicnik-Vodopivec & Samec, 2013). While there is growing evidence of the positive and negative effects of MSMD use among children older than toddlers (Bozzola et al., 2018; Ebbeck et al., 2016; Lauricella et al., 2015; O'Bleness, 2015), a growing concern then emerges when it comes to the complicated and unexplored phenomenon in the early MSMD exposure of young children and the emotions they develop with. Thus, this study aimed at describing the exposure with and the emotional connection of toddlers in the use of mobile screen media devices.

METHODS

A cross-sectionaldesign of a study has been conducted with purposive sampling of Meranao Filipino millennial parents of toddlersor children 1 to 3 years of age who had visited selected rural health units in the municipality of Lanao del Sur, the Philippines between January to June2019. There were211millennial parents invited based on the record provided by the respective offices of rural health units, then 28 refused to participate,thus a total of 183 participated based on a selection criterion that (1) they owned at least one or more mobile devices; (2) have toddler child or children the time the study has conducted; and, (3) allows their toddler children to use mobile devices.A consent form and invitation letter have been communicated to the parents with the indicated timeline to answer the researchers-made questionnaire.

The questionnaire of the study is composed of three parts. Part 1 is the profile of the respondent's child (toddler) which includes age (in months) of the toddler, gender, and the number of siblings. Part 2 is based on the typology profile of MSMD usage of toddlers which includes the type of MSMD device used by toddlers and owned by their millennial parents, type of games played, and the educational software applications used by toddlers. Then part 3 dealt on the toddlers' exposure to MSMD which encompassed the frequency of use MSMD in a day, hours of exposure allowed by parents, and hours spend on educational applications, playing games, and rest. Lastly, part 4 is about the emotional connection of the toddlers to MSMD and is composed of 7-statement items.

The researchers-made questionnaire of this studyhas undergone content validity and reliability testing. Content validity ratio has been employedfor validating the questionnaires (Lawshe, 1975; Pangandaman, 2018; Yaghmaei, 2003) and selected 15 experts in the field of nursing (5), psychology (5), and medicine (5) which yielded a result that all items are essential, relevant, clear, simple and not ambiguous. Cronbach's alpha then has rendered reliable results(α=0.87) based on a pilot study conducted with 30 millennial parents in selected health centers at Lanao del Norte that hold similar characteristics to that of actual respondents. The researchers ensured that ethical concerns are observed in the conduct of the study and the rights of the respondents are protected. The college-based Research Ethics Committee of the College of Health Sciences (REC-CHS) approved the conduct of the study (CHS-REC-101219).

RESULTS

The environment of a child during the early developmental stage has been exposed to mobile screen media devices (MSMD) particularly smartphones and electronic tablets because of interesting and entertaining features it offers (Kabali et al., 2015; Paudel et al., 2017) as well as the involvement of their millennial parents who have explored and experienced the potentialities of MSMD as an adjunct technological tool for child-rearing. As shown in Table 1, Meranao Filipino millennial parents have a majority of female toddlers (71%), mostly within 2 to 3 years of age (58%),and have an average of 4 to 5 siblings.As shown in table 2, mostly the mother (54%) as the owner of MSMD device particularly smartphone (76%) allows their toddler children to use it for different types of gaming such as word/alphabet (45%), racing (42%), coloring (32%), arcade (32%), music (21%), action (18%), adventure (13%), card (13%), and puzzle games (12%). They also allow their toddlers to use a smartphone for the educational purpose such as using different types of educational applications including those nursery rhymes or videos (39%), animal sounds (38%), lullaby songs (29%), and matching games (27%).

Table 1. Profile of Respondents Child (n=211)

Profile of Respondent's Child (Toddler)	Frequency	Percentage
Age (in months)		
12-24 Months Old	98	46.45
25-36 Months Old	123	58.29
Gender		
Male	61	28.91
Female	150	71.09
Number of Siblings		
None (single child)	9	4.27
1 to 2 siblings	36	17.06
3 to 4 siblings	62	29.38

5 to 6 siblings	78	36.97
7 to 8 siblings	21	9.95
9 siblings or more	15	7.11

Moreover, as shown in table 3, parents shared that most of their children have two times exposure to MSMD daily with an average of 2 to 3 hours. There is an average of 2 hours spent on educational applications every exposure to MSMD which is doubled than on playing games (at least 1 hour or less). They mostly let their toddlers rest for 4 hours or more before they can use again or expose to MSMD.

Table 2. Typology Profile of MSMD Usage of Toddlers

Typology Profile of MSMD Usage of Toddlers	Frequency	Percentage
Type of MSMD used by toddlers		
Smartphone	161	76.30
iPad	32	15.17
Tablets	28	13.27
Owner of MSMD used by toddlers		
Mom	113	53.55
Dad	37	17.54
Brother	41	19.43
Sister	30	14.22
Types of games played bytoddlers*		
Action	38	18.01
Adventure	28	13.27
Arcade	68	32.23
Card	27	12.80
Racing	89	42.18
Role Play	19	9.00
Coloring	68	32.23
Music	45	21.33
Puzzle	26	12.32
Word / Alphabet	94	44.55
Type of educational apps used by toddlers*		
Lullaby songs	61	28.91
Numbers and math	32	15.17
Learning letters	26	12.32
Matching games	59	27.96
Animal sounds	82	38.86
Nursery rhymes and videos	83	39.34
Body parts name	26	12.32
Others	8	3.79

Note: n=211, *= multiple response

In terms of the emotional connection of toddlers in the use of MSMD, parents expressed that their toddlers mostly have a free choice or do not have specific or usual routines being followed in the use of MSMD (92%). In the use of MSMD, most of the toddlers have never imitated instructions heard (85%) nor apply them during interaction (60%). Some have rarely (28%) or occasionally applies it (10%) in some instances of interaction within members of the family. According to parents, their toddlers usually use MSMD together with an adult and other children but sometimes with just their parents or siblings only (adult). The reason for allowing their toddlers to use MSMD is mostly to enhance their learning (79%) and sometimes for communication (13%) or as a reward for positive reinforcement (12%). As shared by parents, more than half of toddlers did not get frustrated whenever they could not use MSMD, but some have manifested as rarely (20%), occasional (15%), and frequent (8%).

Table 3. Toddlers Exposure on MSMD (n=211)

Toddlers Exposure to MSMD	Frequency	Percentage
Toddlers' frequency of using MSMD in a day.		
Once	27	12.80
Two times	96	45.50
Three times	37	17.54
More	61	28.91

Daily hours allowed by parents to expose their toddler to MSMD.		
less than an hour	48	22.75
2 hours	57	27.01
3 hours	89	42.18
4 hours or more	27	12.80
Hours spend on educational applications every exposure to MSMD.		
less than an hour	77	36.49
2 hours	93	44.08
3 hours	49	23.22
4 hours or more	2	0.95
Hours spend on playing gamesevery exposure to MSMD.		
less than an hour	114	54.03
2 hours	63	29.86
3 hours	31	14.69
4 hours or more	13	6.16
Hours in lettingtoddler rest from using MSMD.		
less than an hour	12	5.69
2 hours	44	20.85
3 hours	67	31.75
4 hours or more	98	46.45

Table 4. Toddlers Emotional Connection on MSMD (n=211)

Emotional Connection of Toddlers on MSMD	Frequency	Percentage
During which routines does your child usually use MSMD?		
free choice	195	92.42
mealtime	18	8.53
personal care time (toileting)	5	2.37
outdoor	3	1.42
Does your child imitate the instructions she/he hears in using MSMD?		
never	180	85.31
rarely	32	15.17
occasionally	8	3.79
frequently	1	0.47
Does your child apply during interaction the things she/he hears in using MSMD?		
never	127	60.19
rarely	60	28.44
occasionally	21	9.95
frequently	13	6.16
When your child uses mobile screen media device, how do they usually use it?		
together with other children and no adults'	41	19.43
one-on-one with an adult and no children	53	25.12
together with an adult and other child	96	45.50
No one or alone	31	14.69
For what reason do you let your child use MSMD?		
to support communication	27	12.80
to enhance learning	167	79.15
to use as a reward or positive reinforcement	25	11.85
How much social interaction usually happened during MSMD use?		
a lot less	33	15.64
about the same	141	66.82
a lot more	47	22.27
Does your get frustrated or had tantrums when they cannot use MSMD?		
never	130	61.61
rarely	43	20.38
occasionally	31	14.69
frequently	17	8.06

DISCUSSION

Millennial mother parents who are mostly involved in the child-rearing are oriented in the presence and use of mobile screen media devices (MSMDs) as they allow their children as early as the transition from infancy to toddlerhood stage to be exposed or have screen time on MSMD particularly smartphones. Accordingly, the surge of technology makes smartphones cheaper in the market (Ernest et al., 2014)that becomes available and accessible in every household (Lepicnik-Vodopivec & Samec, 2013)which makes almost every member of the family to have owned at least one. Seemingly, the number of siblings who owned smartphone and tablet types of MSMD encourages more screen time exposure with members of the family including toddlers as they may model adult's behavior (Lauricella et al., 2015; Paudel et al., 2017). Based on a study, the more the circle of family members exposed to media devices is the more possible screen time for toddlers (Ernest et al., 2014; Lauricella et al., 2015; Paudel et al., 2017).

The convenience and features offered by smartphones as the most popular type of MSMD being shared by parents and siblings of their toddler child can navigate into digital interactive games and at the same time educational. The toddler's frequency of exposure to MSMD as governed by parental permission is seemingly lenient and more attuned to educational or learning development purposes. Studies shared that the involvement of parents and guidance during toddlers' use of MSMD is crucial in overweighing its negative effects (Carson & Kuzik, 2017; Duch, Fisher, Ensari, & Harrington, 2013; Lauricella et al., 2015). However, there is a potential risk of excessive exposure at an early age due to frequency of use, more than 2 hours of screen time, and the short hours' interval to rest in the use of smartphones. It exceeded the average screen time of not more than an hour daily (Carson & Kuzik, 2017; Duch et al., 2013).

Moreover, toddlers' emotional expression towards the use of smartphones is not restricted by time since parents allow them based on free choice. Toddlers may express themselves to use smartphonesby crying and uttering a few words(Carson & Kuzik, 2017; Hosokawa & Katsura, 2018). There are only a few times (rarely and occasionally) that Filipino toddlers imitate instructions they have heard and watch in smartphones since they are still at the early developmental stage which needed more milestones to achieve before being able to express themselves(Carson & Kuzik, 2017). The engagement happens mostly through the involvement of parents and siblings of toddlers and being able to control navigation of the content inclined more on enhancing the learning and at the same time socially interactive. However, some parents argued that toddler expresses some degrees of tantrums when they are not able to use or have screen time on a smartphone which could be due to their egocentric nature at their age level(Borjon et al., 2018). But it could be also a manifestation of dependency in the mood of the child due to excessive or unregulated use of screen devices because of the lacking knowledge of the parents on the frequency of exposure, the addicting interactive content installed software applications in the MSMD, the environment within family member as MSMD users that being modeled the toddler, and the presence of less social interaction between family members particularly the toddler. The use of MSMD by toddlers may not be appropriate in the parallel play milestone, though it does not require social interaction, because it can corrupt the possible opportunities in doing interactive play with toys that requires physical mobility that highly promotes motor development skills that MSMD.

Furthermore, part of the limitation of this study is the direct and actual observation of toddlers' use of MSMD in a time series. The use of an emotional connection of toddlers on MSMD has been based on the secondary source of data and information provided by their parents which could also stand as part of the weakness of this study and a gap in the in-depth understanding of the phenomenon.

CONCLUSION

The use of MSMD is constantly encroaching into the early stage of life and developmental milestone as evidenced by increasing frequency of use due to its features that can attract users as early as toddlerhood or even infancy. The early exposure of MSMD to children could influence the predefined developmental milestone particularly in the context of emotional attachment as they may develop a dependency on its use and may distort the mutual social interplays in the family members. This study recommends undertaking in-depth or observational studies in the use of MSMD among children at the early developmental stage particularly its influence on their emotional development. It is also important to promote awareness campaigns, proper guidance, responsible parenthood, and supportive circles of significant others that are relevant and timely.

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