

GADGET USAGE: TRENDS AND ITS RELATIONSHIP WITH PSYCHOSOCIAL ADJUSTMENT AMONG PRE-SCHOOLERS IN MALAYSIA

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ABSTRACT

The aim of the current study is to explore the current trends of electronic device use and its relationship with psychosocial adjustment among 5 and 6-year-old pre-schoolers in West Malaysia. The sample of the study consists of 274 parents and guardians of pre-schoolers. They were asked to complete the Gadget Usage Questionnaire which measured gadget usage habits including but not limited to type of gadgets used, favourite content, and duration of use. One key finding of the study was that a large portion of the sample had between 1 to 3 devices at home and have used between 1 to 3 devices in the past. Additionally, it was found that the most common device available at home (88.3%) and used (86.5%) was smartphones. Interestingly, 17.9% of the sample had owned tablets, the highest proportion for ownership. As for content, the most popular type of content is cartoons (46.30%) followed by music (29.56%) while the least popular type is entertainment (3.17%). It was also found that more than 48% of the participants failed to adhere to AAP recommendations. Lastly, the Pearson correlation revealed significant weak positive relationship between duration of gadget use with conduct problem ($\rho = 0.13$) and peer relationship issues ($\rho = 0.16$). The trends of gadget use are worrisome in Malaysia and have been associated with several psychosocial adjustment issues. As such there is a need for evidence-based guidelines to manage media usage in children.

keywords: trends, gadget use, pre-schooler, psychosocial adjustment

INTRODUCTION

Gadgets, such as smartphones and tablets, have become multipurpose devices taking over the roles of alarms, music and video players, calendars and gaming devices. It is becoming increasingly difficult to ignore the presence of these indispensable devices in the modern household. Baboo, Pandian, Prasad and Rao (2013) investigated media presence in Malaysian households and found that a large majority of the respondents had computers (87.4%) and mobile phones (90.8%) at home. The Malaysian Communications and Multimedia Commission (MCMC, 2017) reported that as of the third quarter of 2017, mobile-cellular penetration rate was 131.8 per 100 inhabitants while broadband penetration rates have increased steadily to 84.5% over the last 10 years. The prevalence of mobile devices in the Malaysian household makes it inevitable that children would come into contact with these devices at some point in their life.

In terms of media usage, it was found that Malaysian secondary students had the tendency to spend more time using media for non-academic activities such as watching television, internet browsing and social media (Ng, Zakaria, Lai and Confessore, 2016). In a separate study among rural teenagers, more than 80% of the respondents indicated that they were using computers for at least a few times a week while the duration of media use was between 1 to 3 hours per day (Wook, et al., 2015). To the best of the author's knowledge, little to no research has been found that surveyed media usage trends in tykes from a Malaysian perspective. The lack of research has fuelled increased popular and professional interest in trends of media usage among younger children in Malaysia.

Another phenomenon that has sparked interest in media usage among young children is the Ipad Childminder. Some parents have practiced the use of gadgets as pacifiers (Martinko, November 2013; Ho, 2012). Parents are handing their children their smartphones or tablets to keep them in check. Thompson, Adair and Bently (2013) investigated television exposure among infants and discovered that active, fussy and crying infants were associated with longer exposure to television. It has become a familiar sight in restaurants, in cars, during grocery shopping and at homes. The appeal of these devices to children is understandable, they light up and make sounds following each touch of the screen. Also, they are able to personalise the smartphones and choose the videos or contents to their liking.

Studies of media use among adults have pointed out negative aspects of heavy media use in parents such as children behaving provocatively and parents responding harshly to those provocations (Radesky et al., 2014). This suggests a negative impact of parental media use on children's behaviour. On the other hand, research in older children, aged between 8- 16 years old, have associated media multitasking in children with negative social wellbeing (Pea et al., 2012). Przybylski (2014) found that higher levels of engagement (more than 3 hours of usage/day) in children is associated with lower life satisfaction, pro-social behaviour and higher externalizing and internalizing psychosocial issues. Meanwhile, the opposite results are found for low levels of

engagement. Research among younger children, those aged between 0 to 6 years old have associated media use with poorer emotional well-being and poorer family functioning (Hinkley et al., 2014). Conners-Burrow, McKelvey and Fussell (2010) found that viewing inappropriate media content is linked to greater hyperactivity, aggression and lower social skills in young children. Additionally, Sugawara et al (2015) indicated that children with longer media viewing time had more difficult temperament.

Given the omnipresence of gadgets in our lives, children today are growing up with computers, tablets, smartphones and a host of other technological devices as their companions. Also, take into consideration the proclivity of parents to embrace and adopt these devices as a part of their parenting strategies and the potential psychosocial issues arising from the use of these devices. There is a dire need for researchers to investigate media use among young children from a Malaysian perspective.

Therefore, the objective of this study is to explore the current trends of electronic device use among 5 and 6-year-old pre-schoolers in Peninsular Malaysia. Basically, the trend will be reported in terms of the number of device available at home, used and owned by children, duration and time of device use as well as the most viewed content. The second objective is to investigate the relationship between the trends and psychosocial adjustment issues.

The remaining sections of this paper will focus on the explanation of the research method including sample characteristics and instruments. This will be followed by the presentation of the result and discussion sections. Finally, the limitations of the study as well as the suggestions for future research will be shared.

METHOD

This study employed the cross-sectional survey method. Questionnaires were distributed to the parents of pre-schoolers via the school teachers. Prior to that approval was obtained from the relevant ministries and departments. Teachers were instructed to hand out and collect the questionnaires from parents and mail them to the researcher in self-addressed envelopes. Tokens were given to the teachers, parents and pre-schoolers who were involved in the study. In all, 331 questionnaires were distributed to parents or guardians of 5 and 6-year-old pre-schoolers and 276 of them were returned, a return rate of 83.38%. However, among the returned questionnaires two were unanswered leaving 274 usable questionnaires.

Sample

The sample of this study consist of 274 parents and guardians of 5 and 6-year-old children from 22 government and private pre-schools in eight states and four zones. The zones and their respective states are; 1. Northern Region (Penang and Perak), 2. East Coast Region (Terengganu and Pahang), 3. Central Region (Selangor and Kuala Lumpur) and 4. Southern Region (Malacca and Johor). The government pre-schools involved in the study were under the purview of the Ministry of Education, Department of National Unity and Integration and the Community Development Department.

The demographic information of the sample as well as pre-schoolers can be found in Table 1. The mean age of the father and mothers are 39.03 ($SD = 6.77$) and 35.50 ($SD = 5.06$), respectively. In terms of income, the total household income ($M = RM 3669.67$, $SD = RM3462.77$) was calculated by summing up the income of both mothers ($M = RM 1533.20$, $SD = RM 1868.97$) and fathers ($M = RM 2428.94$, $SD = RM 2014.20$).

Table 1: Demographic Variables of Pre-schooler, Parents and Guardians.

Demographic Variables	<i>f</i>	%
Age [Child]		
- 5-years-old	106	38.7
- 6-years-old	168	61.3
Gender[Child]		
- Male	144	52.6
- Female	130	47.4
Relationship between Rater and Child		
- Mother	200	73.0
- Father	58	21.2
- Guardian	5	1.8
- Missing	11	4.0
Locality		
- Urban	175	63.9
- Rural	99	36.1
Occupation [Mother]		
- Public Servant	90	32.8
- Private Sector	48	17.5

- Self Employed	17	6.2
- Housewife	107	39.1
- Unemployed/Missing	12	4.4
Occupation [Father]		
- Public Servant	70	25.5
- Private Sector	104	38.0
- Self-Employed	73	26.6
- Unemployed/Missing	27	9.9

Instruments

First, the Gadget Use Survey (Kabali et al., 2015) was used to measure media use related variables such as number of devices at home, used and owned, duration of media use and favourite media contents among pre-schoolers. The survey was adapted and translated into Malay from English. The adapted version of the questionnaire consists of 17 items such as *Please ✓ the following activities which your child has used a gadget for. You may check more than one activity.* Parents can check a number of responses provided such as watching videos, playing games, listening to music, taking pictures, looking at pictures, speaking on the telephone, learning (using educational applications) and the child has never used a device before.

Besides that, parents were also asked to list down their children's favourite content. The contents parents listed were classified into either one of the following categories which are Educational, Cartoon, Game, Music and Entertainment. Educational contents are defined as contents used for educational purposes either religious or secular education. Examples of responses which fall under this category are *ABC/123, Iqra, Menghafal Surah* and *Qasidah*. Cartoon contents on the other hand consist of responses which are animated series. Responses such as *Upin dan Ipin, Boboiboy, Spongebob, Moana* and *Doraemon* fall under this category. Game categories consist of the following responses which are Counter-Strike, Puzzles and Barbie games. The contents which fall under this category are those without educational content and played for leisurely purposes. Music categorization are typically audio-visual material involving singing and dancing with little to none educational properties. Some examples of responses are *Didi and Friends, Omar dan Hana, Baby Shark* and *Voices of Ummi*. Entertainment category are those contents which do not fall under Educational, Cartoon, Game and Music categories. The contents in this category are typically videos which introduces toys, interesting activities or do it yourself (DIY) projects. Examples of responses are *EvantubeHD, DIY, Backyard Science* and *Surprise Toys*.

Second, the Strength and Difficulties Questionnaire – Malay version (SDQ-MAL) measured psychosocial adjustment in children as rated by parents. The questionnaire in English was originally developed by Goodman (1977) and is one of the most widely used questionnaire to measure psychosocial adjustment in children. The questionnaire is available online via the website <http://www.sdqinfo.com/a0.html>. The questionnaire has been translated and validated in multiple languages such as Spanish (Blumert, 2012), German (Lohbeck et al., 2015) and Dutch (Mieloo et al., 2012) which suggests that the SDQ has a stable factor structure. The SDQ has 25 items which are evenly divided among the 5 subscales which are Prosocial Behaviour, Peer Relationship Problems, Conduct Problems, Emotional Problems and Hyperactivity. Parents or caregivers were asked to respond to a 3-point scale, which are Not True, Somewhat True and Certainly True, with regards to their children's behaviour such as Considerate of other people's feelings, constantly fidgeting or squirming and easily distracted and concentration wanders. The scoring of the items involves reverse scoring the negative items which are items number 7, 11, 14, 21 and 25 and summing up the items within each subscale.

RESULTS

In regard to the first objective, the trend showed large proportions of the sample had between 1-3 devices at home and had used between 1 to 3 devices in the past. Smartphones are the most commonly available device at home (88.3%) and used (86.5%) among pre-schoolers. In terms of ownership, in general there is a small proportion of pre-schoolers having ownership of gadgets. It should be noted that almost 18% of the sample had owned tablets, the highest proportion for ownership. Table 2 summarized the results descriptively.

Table 2: Type and Number of Gadgets at Home Used and Owned

Type of Gadget	Home		Used		Owned	
	f	%	f	%	f	%
Desktop	36	13.1	36	13.1	4	1.5
Laptop	126	46.0	94	34.3	8	2.9
Tablet	110	40.1	120	43.8	49	17.9
Smartphone	242	88.3	237	86.5	34	12.4
Portable Music/Video Player (MP3/MP4)	32	11.7	20	7.3	8	2.9
Console Games (Playstation and X-Box)	17	6.2	15	5.5	3	1.1
Smartphone + Tablet	97	35.4	106	38.7	8	2.9
Smartphone + Laptop	115	42.0	84	30.7	3	1.1
Smartphone + Laptop + Tablet	62	22.6	50	18.2	2	0.7

Number of Gadgets						
None	9	3.31	10	3.70	183	69.05
1 to 3	241	88.60	236	87.41	81	30.57
More than 4	22	8.09	24	8.89	1	0.38

The most popular type of content is cartoons (46.30%) followed by music (29.56%) while the least popular type of content is entertainment (2.94%). Durations of use of a recent weekend reported by parents showed that more than 48% of the participants failed to adhere to AAP recommendations ($M_{duration}= 284.66$ minutes, $SD= 185.46$), of no more than 2 hours of gadget usage daily, while 46.35% adhered to AAP recommendations ($M_{duration}=78.31$ minutes, $SD= 34.84$). Additionally, the common times of use was in the day for schooldays, weekend, public holiday and school breaks accounting for 48.32%, 66.95%, 63.00% and 58.21%, respectively. Interestingly, percentage of use for nighttime on schooldays (44.30%) and midnight time are the highest. See Table 3 for more information.

Table 3: Frequencies and Percentage of Media Use Variables

Media Use Variables	<i>f</i>	%
Type of Content		
- Cartoon	307	46.30
- Educational	106	15.99
- Entertainment	21	3.17
- Game	33	4.98
- Music	196	29.56
Adherence to AAP Recommendations (< 2 hours/day)		
- Never Used Gadget Before	15	5.47
- Less than 2 hours	127	46.35
- More than 2 hours	132	48.18
Schoolday Time of Use		
- Daytime	72	48.32
- Nighttime	66	44.30
- Midnight	1	0.67
- Daytime and Nighttime	10	6.71
Weekend Time of Use		
- Daytime	156	66.95
- Nighttime	31	13.31
- Daytime and Nighttime	45	19.31
- Daytime, Nighttime and Midnight	1	0.43
Public Holiday Time of Use		
- Daytime	126	63.00
- Nighttime	22	11.00
- Midnight	1	0.50
- Daytime and Nighttime	50	25.00
- Daytime, Nighttime and Midnight	1	0.50
School Holiday Time of Use		
- Daytime	117	58.21
- Nighttime	22	10.94
- Daytime and Nighttime	61	30.35
- Daytime, Nighttime and Midnight	1	0.50

Secondly, the relationship between media use variable and psychosocial adjustment issues were examined. A significant weak positive relationship was found between duration of gadget use and conduct problems ($\rho = 0.13$, $n=274$, $p= .001$). Another significant correlation was found between duration of gadget use and peer relationship issue ($\rho= 0.16$, $n=274$, $p=.001$). Refer Table 4.

Table 4: Correlation Matrix of Media Use Variables and SDQ-Mal Subscales

Variable	1	2	3	4	5	6	7	8	9
1. Number of Gadgets at Home	1								
2. Number of Gadgets Used	.69**	1							
3. Number of Gadgets Owned	.24**	.34**	1						
4. Duration of Use	.10	.21**	.18**	1					
5. Prosocial Behaviour	.06	.05	-.07	.025	1				

6. Emotional Problems	-.04	-.053	.074	.051	-.12	1			
7. Conduct Problems	-.08	-.066	.103	.13*	-.39**	.40**	1		
8. Hyperactivity	-.09	-.06	.03	.04	-.38**	.40**	.60**	1	
9. Peer Relationship Issues	-.11	-.01	.11	.16**	-.24**	.31**	.38**	.34**	1

Note. *significant at $p < .05$, ** significant at $p < .001$.

DISCUSSION

The present study found that a large majority of households have between 1 to 3 devices at home while the most common device is smartphones. Similarly, prior studies have noted that there is a large percentage of families with media devices at home, especially smartphones (Baboo et al., 2013; Kabali et al., 2015). The findings are also in line with the high rates of mobile penetration released by the Malaysian Communications and Multimedia Commission (MCMC, 2017). This becomes a cause for concern as the presence of devices at home have translated to usage in children, this is evident in Table 1 where the percentage of device available and the corresponding usage is almost similar for most of the devices. On the whole the results seemed to suggest that presence of devices at home is linked with usage. This is especially true for smartphone where the proportion for availability and usage are close to one another. The only exception to the pattern was tablets, a larger proportion of students have used tablets compared to the availability of tablets at home. The result seems to suggest a proclivity for tablet use among pre-schoolers. Further evidence of the inclination towards tablets lie in the ownership rates of devices in pre-schoolers, tablet ownerships are the highest compared to all other devices. The findings are consistent with those of Kabali et al. (2015), tablets were reported as the most owned device for children of all ages. Mere availability, usage and ownership of devices fails to capture the whole picture of gadget usage and other indicators of use such as duration, time of use and type of content is discussed in the following section.

For duration of use, it was found that close to half of the sample in this study failed to adhere to AAP usage recommendations of no more than 2 hours daily. Additionally, the mean duration of use for those who failed to adhere to AAP recommendations was 284 minutes, more than twice the recommended maximum duration of use. Besides that, another key finding of the present study is that the most popular category of contents are cartoons followed by music. These cartoon and music contents are usually delivered via applications such as Youtube, TubeMate, Youtubekids. This finding is in line with the findings of Kabali et al. (2015) who reported that content delivery apps, such as Youtube and Netflix, were popular among young children. Some parents have reported that they allow pre-schoolers to use gadgets at midnight well beyond their regular sleeping time.

On the whole, the trends suggest that gadgets are a part of life for the contemporary pre-schooler. The pervasiveness of media devices results in inevitable exposure to and usage of media devices. Now more than ever, children are experiencing increasing exposure to media as parental attitudes towards media are changing, with a recent survey by Dinyelici, Carman, Ozturk and Sahin-Dagli (2016) where almost 90% of the parents emphasized that the internet was important for their child's education. Some parents are incorporating media devices into their parenting strategy, using tablets or smartphones as rewards for behaving and to manage their child while they are having dinner, shopping or doing household chores. Past studies have linked media use with psychosocial issues (Conners-Burrow et al., 2010; Pagani et al., 2010; Hinkley et al., 2014). On the other hand, Roseberry, Hirsh-Pasek and Golinkoff (2014) have suggested that toddlers were able to learn novel verbs in socially contingent interactions using media devices meanwhile Hofferth and Ui (2012) demonstrated that children who spent more time texting had far greater reading comprehension compared to those who did not. The key here is proper management of a child's media usage by parents with guidance from researchers and policy makers. There is evidence to suggest that parental involvement and monitoring of children's media use is able to mitigate the negative effects of media use such as loss of sleep, poor school performance, prosocial and aggressive behaviour (Gentile, Reimer, Nathanson, Walsh & Eisenmann, 2014). Therefore, the responsibility falls on parents to properly manage media usage with the help of guidelines developed by researchers and policy makers. In the context of Malaysia, to the best of the author's knowledge there are no guidelines for media use. As such there is a dire need for a media use guideline for pre-schoolers developed specifically for Malaysians (Ministry of Health, 2015).

Finally, this study set out to determine the relationship between media use variables and psychosocial adjustment issues. The correlation analysis revealed two significant correlations for media use variables and psychosocial adjustment. Firstly, a significant positive but weak relationship was found between duration of use and conduct problems. This meant that longer durations of use were linked with the presentation of more conduct problem symptoms such as temper tantrums or hot tempers, disobedience, fighting with other children, lying or cheating and stealing. A closer look at the symptoms of conduct problems suggests that the underlying problem could be one of self-regulation. Children with self-regulation issues may be prone to bouts of emotional outbursts and impulsive behaviours. Previous studies have linked longer exposure to media with subsequent problematic self-regulatory behaviour (Inoue, Yorifuji, Kato, Sanada, Doi & Kawachi, 2016) and attentional problems (Swing, Gentile, Anderson & Walsh, 2010; Christakis, Zimmerman, DiGiuseppe & McCarty, 2004). The second significant correlation was between duration of use and peer relationship issues. The results of the present study are in accord with earlier observations which showed a relationship between media use and risk of lower classroom engagement and victimization by classmates (Pagani et al. 2010). Also, Conners-Burrow et al. (2010) showed a link between media use and lower social skills rating. The reason for this is not clear but it may have something to do with the Time Displacement Hypothesis posited by Putnam (1995). Heavy media use is displacing time for other activities such as parent-child interactions which have long been shown to be important for their cognitive (Dodici, Draper & Peterson, 2003) and socio-emotional development (Chang, Schwartz, Dodge & McBride-Chang, 2003). Additionally, the Early Child Care Research Network, N. I. (2003) have shown that the amount of time a child spends in non-maternal care is associate with more socio-emotional issues later on in life, providing further support for the negative impact of the lack of the parent-child interaction.

CONCLUSION

This study revealed several interesting results with regards to gadget usage trends and its' relationship with psychosocial adjustment. While, the relationship is significant it should be noted that the strength of the relationship is weak. Results should be interpreted bearing that in mind.

A major limitation of the study was our inability to establish causality between media use variables and psychosocial issues. Radesky, Silverstein, Zuckerman and Christakis (2014) have shown that parents have embraced media use as means to cope with infants with self-regulation problems. As such it is not known if media viewing resulted in psychosocial issues or if parents are employing media as part of their parenting strategy to cope with their child's psychosocial issues. In order to investigate the causality between media use variables and psychosocial issues, future researchers need to design an experiment.

Additionally, the data collected in this survey study were parent-reported and may not accurately reflect the true nature of media usage and psychosocial issues in children. Alternative methods of data collection such as daily diaries may be able to shed a clearer picture on the media usage among children.

Overall, the increasing presence of media devices in the modern Malaysian household is undeniable and children are growing up with media devices as their companions. There is cause for concern as the trends show that close to half of Malaysia pre-schoolers do not abide by the daily usage recommendations, some parents have allowed their children to use devices well over their bed times and also the worry that children are coming into contact with contents with little to no educational benefits. Then, the study found a relationship between duration of use with psychosocial issues which point to the need for guidelines developed in a Malaysia context to assist parents in managing their child's media use.

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