

GADGET USAGE AMONGST PRESCHOOL CHILDREN AND ITS' EFFECT ON THEIR PSYCHOSOCIAL STATUS

ALEXANDER LUCAS KHIU KWONG HUAT

SULTAN IDRIS EDUCATION UNIVERSITY

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ABSTRACT

The two main purposes of the present study were to explore the gadget landscape in Malaysian households and to examine the relationship between gadget use and psychosocial status in pre-schoolers. The sample of the current study consists of 234 parent-child dyads of pre-schoolers aged five and six. Most parents in the study are Malays, married and living in urban regions (e.g. Kuala Lumpur, Sepang & Melaka Tengah). Next, most of the raters are mothers (74.4%). The raters were asked to complete the Gadget Use Questionnaire, to evaluate gadget usage such as duration of use, types of content when using media and types of gadget available, used and owned by pre-schooler, and the Strength and Difficulties Questionnaire (SDQ), to measure psychosocial status of pre-schoolers such as Peer Relationship Issues, Emotional Problems, Conduct Problem, Hyperactivity and Prosocial Behaviour, in Bahasa Malaysia. Descriptive analysis was used to describe the trends of media use while Ordinal Logistics Regression was used to evaluate the relationship between media use (e.g. duration of use and types of content- cartoon, educational, music and others) and psychosocial adjustment. The finding indicated that mobile devices are readily available at home and are widely used by pre-schoolers. Another finding of the study is the preference for education contents consistently predicted higher psychosocial adjustment scores for Peer Relationship Issues (Odds Ratio_{Cartoon} = 0.14, Odds Ratio_{Others} = 0.19), Emotional Problems (Odds Ratio_{Others} = 0.21) and Total Difficulties Score (Odds Ratio_{Cartoon} = 0.19, Odds Ratio_{Cartoon&Music} = 0.00, Odds Ratio_{Others} = 0.19). In conclusion, mobile devices are readily available at home to Malaysian pre-schoolers and preference for educational content consistently predicted more psychosocial status problems. The potential cause of this relationship could be due to low-quality educational content. This points to a need to properly regulate the production of educational contents and inform parents of the potential risk of low-quality educational content.



PENGUNAAN GAJET DALAM KALANGAN KANAK-KANAK PRASEKOLAH DAN KESANNYA KE ATAS STATUS PSIKOSOSIAL MEREKA

ABSTRAK

Dua tujuan utama kajian ini adalah untuk meninjau landskap gajet di Malaysia dan untuk mengkaji hubungan antara penggunaan gajet dan perkembangan psikososial dalam kanak-kanak prasekolah. Sampel kajian ini terdiri daripada 234 pasangan ibubapa dan kanak-kanak prasekolah berumur lima dan enam tahun. Kebanyakan ibu bapa berbangsa melayu, berstatus berkahwin dan menetap di kawasan bandar (Kuala Lumpur, Sepang & Melaka Tengah). Sebilangan besar penilai dalam kajian ini adalah ibu (74.4%) kepada kanak-kanak prasekolah. Responden diminta untuk menjawab Soal Selidik Penggunaan Gajet, bagi menilai penggunaan gajet seperti durasi penggunaan, jenis kandungan semasa menggunakan gajet dan jenis gajet yang ada dirumah, diguna dan dimiliki oleh kanak-kanak prasekolah, dan Soal Selidik Kekuatan dan Kesukaran (SDQ), untuk mengukur status psikososial kanak-kanak prasekolah seperti Isu-isu Hubungan Rakan Sebaya, Masalah Emosi, Masalah Perilaku, Hyperaktif dan Tingkah Laku Prososial, dalam Bahasa Melayu. Analisis deskriptif digunakan untuk menggambarkan trend penggunaan alat media manakala Regresi Logistik Ordinal digunakan untuk menaksir hubungan antara penggunaan alat media (durasi penggunaan, jenis kandungan – kartun, kandungan berunsur pendidikan, music dan lain-lain) dan penyesuaian psikososial. Dapatan kajian menunjukkan bahawa gajet sedia ada dalam rumah dan digunakan oleh kebanyakan kanak-kanak prasekolah. Selain itu, dapatan kajian turut mendapati bahawa kanak-kanak prasekolah yang dilaporkan lebih suka menggunakan kandungan berunsur pendidikan dikaitkan dengan skor penyesuaian psikososial yang lebih tinggi untuk isu hubungan rakan sebaya ($Odds\ Ratio_{Cartoon} = 0.14$, $Odds\ Ratio_{Others} = 0.19$), masalah emosi ($Odds\ Ratio_{Others} = 0.21$) dan jumlah skor kesukaran ($Odds\ Ratio_{Cartoon} = 0.19$, $Odds\ Ratio_{Cartoon\&Music} = 0.00$, $Odds\ Ratio_{Others} = 0.19$). Kesimpulannya, alat media mudah alih mudah didapati di dalam rumah kanak-kanak prasekolah dan kanak-kanak yang lebih suka kandungan berunsur pendidikan dijangka secara konsisten untuk mempunyai lebih banyak isu status psikososial. Salah satu punca hubungan ini mungkin disebabkan oleh kandungan berunsur pendidikan yang berkualiti rendah. Justeru itu, penghasilan kandungan berunsur pendidikan dalam aplikasi perlu dikawal selia dan ibubapa perlu dimaklumkan tentang risiko penggunaan kandungan pendidikan yang berkualiti rendah.

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LIST OF EQUATIONS

Formula

Item Content Validity Index

Equation

(3.1)





LIST OF ABBREVIATIONS

AAP	American Academy of Pediatrics
AIM	Adult Involvement in Media Scale
ANOVA	Analysis of Variance
BMI	Body Mass Index
E-Games	Electronic Games
HRQoL	Health Related Quality of Life
I-CVI	Item Content Validity Index
NCDRC	National Child Development Research Center
OfCom	Office of Communications
SDQ	Strengths and Difficulties Questionnaire
SDQ-Mal	Malay version of Strengths and Difficulties Questionnaire
SES	Socioeconomic Status



APPENDIX LIST

- A Language Expert Appointment Letter
- B Content Validity Expert Appointment Letters
- C Questionnaire Booklet
- D Content Validity Rating Form
- E Approval Letters from KPM, JPNIN and JKM
- F Approval Letters from KPM, JPNIN and JKM State Offices



CHAPTER 1

INTRODUCTION



The primary aim of this study was to examine the relationship between media use and psychosocial development in young children aged 5 and 6 years old. Background of the study is provided in this section followed by the problem statement. Then, the research question and corresponding objectives are presented. Next, the key variables in this study are defined and the conceptual framework of this study is presented. Lastly, the hypothesis for the study is formulated. This chapter forms the foundation of the research.





1.2 Background of Study

The late 20th Century and early 21st Century saw rapid progress in Information and Communications Technology culminating in the invention and innovation of a myriad of technological devices which became an indispensable part of our life today. Let us consider the development of the humble mobile phone which was first introduced in 1946 as a bulky 36-kilogram device mounted in automobiles capable of merely making push to talk conversations (Bates & Gregory, 2007). Today, mobile phones rarely weigh more than 200 grams and offer a plethora of functions including but not limited to cameras, media players, planners and social networking. Similar patterns of evolution could be seen for other media devices, the black and white television sets replaced today by smart televisions capable of connecting to the Internet, the bulky personal computer of yesteryears succeeded by lighter and increasingly sophisticated laptops with greater processing power. With each step of evolution, technology becomes increasingly portable and assimilated into our lives.

At present, the modern child grows up with an array of digital gadgets and gizmos. In a recent study of exposure and mobile media use among very young children in the United States it was found that by age 4, 75% of all the children own their own mobile device and a majority of the children had started to use mobile devices before the age of 1 (Kabali et al., 2015). In Malaysia, the trends are equally worrisome, mobile-cellular penetration rates have risen to 141.6 (which means there are approximately 44 million active cellular devices in a country with a population of 30 million) and 28 million Malaysians have an active mobile broadband subscription (Malaysian Communications and Multimedia Commission, 2016). This means that





there is at least one mobile device for each Malaysian and some may even have more than one device. While it is arguable that some children may not own their own mobile device it is undeniable that, in the technological era we live in, children are bound to be exposed to media either intentionally or unintentionally.

Over recent years the media industry has begun to target young children and their parents as key consumers of electronic media. In short, children today are growing up with media playing a part in their lives, being brought up as natives of digital media. Miniaturization of the electronic media, as discussed earlier, led to the development of smartphones which made media devices much more portable and increasingly accessible to children. Additionally, the falling costs of electronics brought about a surge in the availability of mobile devices in homes. On top of accessibility and availability, the content of the mobile devices or the applications, more commonly known as apps, are directed towards children. As of February 2017, Apple's app store boasts a selection of more than 80,000 applications labelled as educational. It has been demonstrated that most parents believe that their child was able to learn from educational media (Rideout, 2014). However, the bulk of these educational apps are unregulated and untested (Hirsh-Pasek et al., 2015) resulting in the possibility that a large number of these apps having little to no educational benefits to the users. Regardless of the educational qualities of these applications, it is undeniable that there is a huge market for applications directed towards children and industries are quick to fill the market with numerous applications for children.





In all, the increasing presence of mobile devices in the lives of children and the rise in popularity of educational apps makes it inevitable that children will come into contact with mobile devices. It remains to be seen however, the effects of mobile media consumption on the development of pre-schoolers, particularly the effects on psychosocial development in children.

1.3 Problem Statement

The American Academy of Pediatrics (AAP) issued a policy statement in 2011 advising against media use for children below two and to limit the media consumption of those above two to less than 2 hours per day (Council on Communications and Media, 2011). Then in 2016, the AAP issued another policy statement recommending parents to limit the screen time of children aged between 2 and 5 to no more than an hour per day. The additional recommendation includes avoiding digital media use in children younger than 18-24 months except video chatting. The policy authors cited numerous health and developmental consequences such as obesity sleep issues, attention issues and aggressive behaviours as the basis for their recommendation (Council on Communications and Media, 2016).

One of the key changes in the 2016 AAP policy statement is the addition of and the emphasis on mobile media. In comparison with traditional media such as television, console games and computers, mobile devices are much more portable and are slowly being incorporated into the lives of children. These devices bring with them a novel quality, an interactive component which is intriguing to young children.





Recent research has shown the positive effects of media use for verb learning through socially contingent videos (Roseberry et al., 2014). This seems to suggest that interactive media, particularly mobile devices, may offer potential benefits for children.

Despite being increasingly popular, there is a dearth of research on mobile devices. To the best of this researcher's knowledge the extant literature on the impacts of different types of media devices, such as television, computer, electronic games, have been studied extensively. Therefore, it is not immediately evident that there is a lack of studies on mobile devices at a cursory glance. A more detailed examination of past studies of media use in children aged between zero to six shows that mobile device is the least studied type of device. Furthermore, researchers have also commented on the lack of research on the potential effects of mobile and interactive media on children despite being one of the most widely used forms of media today, especially among younger children (Kabali et al., 2015; Radesky et al., 2015).

It is evident that there is a lack of studies on the effects of gadget use in younger children. Taken into account the increasing popularity of mobile devices among children, it becomes necessary to investigate the potential relationship between mobile devices usage and the developmental outcomes among pre-schoolers. Therefore, this research aims to explore the current trends of media use and to examine the relationship of gadget use variables, in terms of content and duration, and psychosocial adjustment of preschool children.



Psychosocial adjustment is an important area of development in pre-schoolers which includes their social competence, academic competence, self-esteem, problem behaviour and internalised distress (Noom et al., 1999). The child's ability to successfully adjust psychosocially depends on the interaction between the child and the environment in which the child grows (Chess & Thomas, 1995). Erikson proposed that it is the social context, stressing on interactions of a child with their parents, family members, social institution such as schools and their culture which are important key towards psychosocial development (Widick et al., 1978). Media use in children robs the opportunity for them to interact and as such may cause detrimental effects to their psychosocial adjustment. Therefore, it is imperative to look into how media use may be able to predict psychosocial adjustment in children especially mobile media considering that there is a general lack of studies for mobile media.

1.4 Objective of Study

The first objective of the study is to identify the trends of gadget usage among pre-schoolers in Peninsular Malaysia. Overall trends of use in Malaysia is described in terms of number of devices at home, number of devices used and owned by children, duration of use in a week, age of first use and popular content. Next, the trends of use are compared between key demographic variables such as gender of children, age, race, socioeconomic status (indicated by monthly household income) and locality (urban and rural).



The second objective of the study aims to investigate the difference in psychosocial adjustment variable scores between media use variables (content and duration) among West Malaysian pre-schoolers. Therefore, the difference in psychosocial adjustment scores among preschoolers who prefer different media content (educational, entertainment & etc.) and duration (more than two hours or less than two hours) will be compared. The two hours cut off was the recommended duration for children by the American Academy of Pediatrics (2016).

The third objective of the study is to determine if media use variables are predictors of psychosocial adjustment in pre-schoolers. The media use variables are number of devices at home, number of devices used and owned by children, duration of use in a week, favourite content and parental mediation.



1.5 Research Questions

The research questions of the present study are as follows:

- a. What are the trends of gadget use among pre-schoolers?
- b. Is there a difference for psychosocial adjustment scores among preschoolers who adhere and fail to adhere to AAP recommendation, and those who prefer different types of content?
- c. Are media use variables, such as number of devices at home, number of devices used and owned by children, duration of use and age of first use, predictors of psychosocial adjustment in pre-schoolers?





1.6 Significance of Study

The current study aims to look at trends of media use among pre-schoolers and to investigate the relationship between media use variables and psychosocial adjustment in pre-schoolers. This study will attempt to add to the current literature to address the lack of research on the effects of mobile device usage in pre-schoolers.

Additionally, the findings of the study would enable parents to make informed decisions about their children's media usage. Traditionally, the question would be whether to allow or disallow children from using media. However, in this day and age with the rapid technologisation of the world makes it inevitable that children will come into contact with mobile devices. The question then becomes one of what contents and how long should children be allowed to use mobile devices? This study will attempt to aid parents in making these decisions by providing them with information about the potential benefits or risks of certain contents and duration of use.

Furthermore, current policies of media use are based on those recommended by the American Academy of Pediatrics (AAP). Policy makers in Malaysia are unable to make recommendations due to limited studies being conducted in the context of Malaysia. This study hopes to be the impetus for more research on the effects of media use in pre-schoolers. With more scholarly attention being placed in the Malaysia context, policymakers would then be able to come up with policies that are tailored to Malaysians.





1.7 Conceptual and Operational Definition of Variables

There are six key variables which will be conceptually and operationally defined in this section. These include mobile device, usage trend, preschooler, content of gadget, duration of gadget use and psychosocial adjustment. The terms mobile media and gadgets will be used to refer to mobile devices and they are used interchangeably. While in definition, they may refer to different things, in reality, the terms are used colloquially to refer to mobile devices such as smartphones and tablets.

1.7.1 Mobile Device



Mobile device is formed from the combination of two words mobile and device.

Mobile is defined by the Oxford English Dictionary (Waite, 2012) as “able to move or be moved freely or easily” (p. 571) whereas device is defined as “A thing made or adapted for a particular purpose, especially a piece of mechanical or electronic equipment” (p.235). Taken together literally these two words combined mean an easily moveable piece of mechanical or electronic equipment. The definition of a mobile device is a mobile computing tool such as a smartphone or tablet computer (Waite, 2012). Colloquially, the term *gajet* (gadget) is more commonly used compared to mobile device and the two terms will be used interchangeably throughout this writing.



For the purposes of this study, mobile device or gadgets is operationalized as smartphones or tablets. Responses such as cell phones, mobile phones, iPhones and the like will be grouped together as smartphones. Whereas, iPads, Android tablets, Surface tablet, Windows tablet and the like will be grouped together as tablets.

1.7.2 Usage

Usage is defined as the action of using something or the fact of being (Waite, 2012). In this context, the usage here refers to the action of using gadgets.

In this study, the usage of gadgets is measured using the gadget use questionnaire. Respondents will answer questions such as number of devices at home, number of devices used and owned, the circumstances under which children are allowed to use media, the contents of media used, activities using media, time of use and duration of use.

1.7.3 Preschooler

Preschooler is derived from the term preschool which means “the period before a child is old enough to go to school” (Waite, 2012). Preschooler here refers to a child who is not old enough to go to school.

To achieve the objectives of this study, preschoolers are children aged between 5 and 6 years old.

1.7.4 Content of Gadget

Content of Gadget is conceptually defined as any form of media which is used or viewed on mobile devices such as music, graphics, videos or GPS navigation (Bentil, 2012).

Content of mobile device is operationally defined as the list of responses the parents listed for item 14 of Gadget Use Questionnaire which asked about the children's favourite content when using gadgets.

1.7.5 Duration of Gadget Use

Duration of use of gadget is conceptually defined as the length of time during which the mobile device is being used.

In this study, duration of use is operationally defined as the responses on items concerning duration per day of each activity on smartphone or tablet and the frequency of use per week for the corresponding activity. The corresponding items in the gadget use questionnaire are items 6 and 8. The product of duration and frequency



indicated the number of minutes spent on each mobile device related activity per week.

1.7.6 Psychosocial Adjustment

Psychosocial adjustment is conceptually defined as social competence, academic competence, self-esteem, problem behaviour and internalised distress (Noom et al., 1999).

Psychosocial adjustment is operationally defined as the scores obtained on the Strength and Difficulties Questionnaire by Goodman (1997). There are five subscales of the questionnaire which are Peer Relationship Problems, Conduct Problem, Hyperactivity/Inattention, Emotional Problems and Prosocial Behaviour which are all indicators of psychosocial adjustment. Higher scores on peer relationship problems, conduct problem, hyperactivity/inattention and emotional problem indicate more psychosocial problems. On the other hand, higher scores of prosocial behaviour indicate good psychosocial adjustment.



1.8 Conceptual Framework

The conceptual framework of the study is presented in Figure 1.1. Media use variables such as number of gadget at home, number of gadgets owned, duration of use, favourite content and parental mediation strategy are potential predictors psychosocial adjustment issues among pre-schoolers.

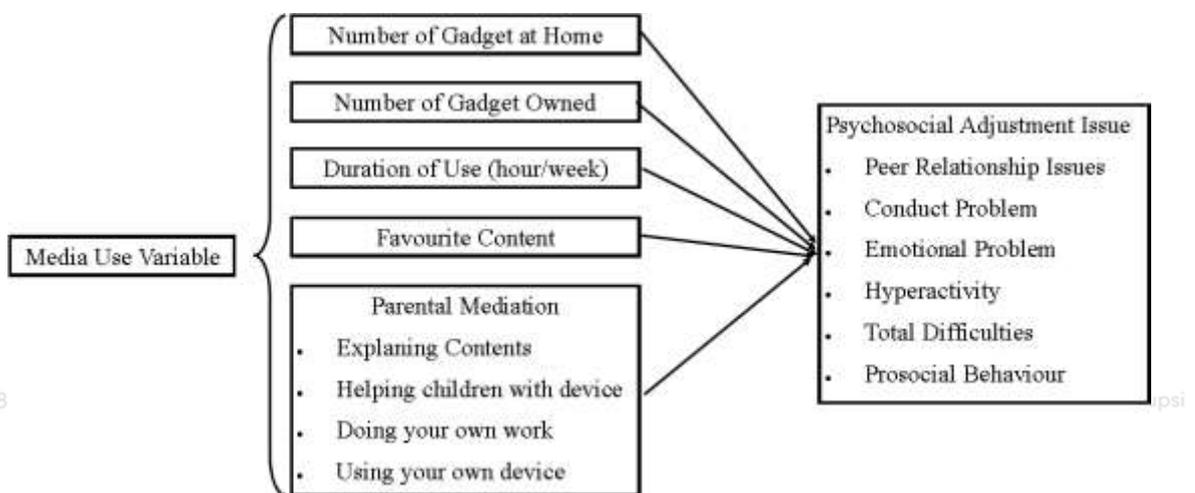


Figure 1.1. Conceptual Framework

1.9 Hypothesis

The corresponding hypothesis of each objective is presented in Table 1.1. There are no testable hypothesis for the the first objective because the primary aim is to describe the trends of media use. The first, second and third null hypothesis addresses the second objective of the study. While the fourth hypothesis addresses the third objective.

Table 1.1

Objectives and Their Respective Hypothesis

Objective	Hypothesis
Objective 2	<p>H01: There is no significant difference in psychosocial adjustment scores among preschoolers who prefer different media content.</p> <p>H01a: There is no significant difference in conduct problem scores among preschoolers who prefer different media content.</p> <p>H01b: There is no significant difference in emotional problems scores among preschoolers who prefer different media content.</p> <p>H01c: There is no significant difference in hyperactivity/inattention scores among preschoolers who prefer different media content.</p> <p>H01d: There is no significant difference in peer problems scores among preschoolers who prefer different media content.</p> <p>H01e: There is no significant difference in prosocial scores among preschoolers who prefer different media content.</p>
Objective 2	<p>H02: There are no significant difference psychosocial adjustment scores (Conduct Problem, Emotional Problems, Hyperactivity/Inattention, Peer Problems and Prosocial) between children who use less than 2 hours of screen media and children who use more than 2 hours of screen media.</p> <p>H02a: There is no significant difference in conduct problem scores between children who use less than 2 hours of screen media and children who use more than 2 hours of screen media.</p> <p>H02b: There is no significant difference in emotional problems scores between children who use less than 2 hours of screen media and children who use more than 2 hours of screen media.</p> <p>H02c: There is no significant difference in hyperactivity/inattention scores between children who use less than 2 hours of screen media and children who use more than 2 hours of screen media.</p>

(continue)

Table 1.1 (continued)

Objective	Hypothesis
Objective 2	H ₀ 2d: There is no significant difference in peer problems scores between children who use less than 2 hours of screen media and children who use more than 2 hours of screen media.
	H ₀ 2e: There is no significant difference in prosocial scores between children who use less than 2 hours of screen media and children who use more than 2 hours of screen media.
Objective 2	H ₀ 3: There is no interaction effect between content and duration of screen media use
Objective 3	H ₀ 4: Media use variables are not significant predictors of psychosocial adjustment scores.
	H ₀ 4a: Number of devices at home is not a significant predictor of psychosocial adjustment scores.
	H ₀ 4b: Number of devices owned by children is not a significant predictor of psychosocial adjustment scores.
	H ₀ 4c: Weekly duration of use is not a significant predictor of psychosocial adjustment scores.
	H ₀ 4d: Parents accompanying their children is not a significant predictor of psychosocial adjustment scores.
	H ₀ 4e: Parents explaining the contents to their children is not a significant predictor of psychosocial adjustment scores.
	H ₀ 4f: Parents helping their children with devices is not a significant predictor of psychosocial adjustment scores.
	H ₀ 4g: Parents doing their own work is not a significant predictor of psychosocial adjustment scores.
	H ₀ 4h: Parents using their own device is not a significant predictor of psychosocial adjustment scores.
	H ₀ 4i: Favourite content is not a significant predictor of psychosocial adjustment scores.
	H ₀ 4j: Favourite content is not a significant predictor of psychosocial adjustment scores.



1.10 Conclusion

This chapter described the background of the study, the problem which led to the formulation of the objectives and hypothesis of the study. Additionally, the key variables in this study were defined and the conceptual framework of the study is described. Three main hypotheses is proposed to examine the relationship between mobile media use and its' effect on psychosocial adjustment in preschoolers.

Overall, to the best of the researcher's knowledge, there is a lack of studies on mobile device usage and effects in young children. There is a need for studies to investigate this phenomenon considering the potential consequences of media use.

This study attempts to fill in the gap by investigating the effects of mobile media use

