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Different Types of Screen Time and its Effect Towards Social and Emotional Development among Preschoolers in Labuan

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ABSTRACT

Over recent years, there are growing literatures associating screen time with physical and psychological adverse consequences. Excessive and regular exposure to electronic device had shown to influence brain development, affecting language and social competences. This study investigated different types of screen time and its effect on social and emotional development among pre-schooler in Labuan. This was a cross-sectional self-report survey with 143 parents with child aged between 4 to 6 years old. The Strengths and Difficulties Questionnaire (SDQ) was used in identifying emotional and behavioural problems among these children. Descriptive statistics were calculated, and associations were examined using the Fisher Freeman-Halton Test. Results indicated that the majority (51%) of the pre-schoolers were exposed to screen time through the use of smartphones. Most or 43.5% spend an average of 2 to 3 hours on-screen during weekdays and it was found that screen time among pre-schoolers was increased during the weekend. There is no significant relationship found between parents' demographic characteristics and screen time exposure among preschoolers (p> 0.05) and no association was found between a child's demographic profiles with social and emotional development (p>0.05). However, the study showed that there is a significant association between average screen time spend during weekdays with social and emotional development (p= 0.021). In conclusion, different types of screen time did not affect the social and emotional development among preschoolers, but excessive usage may still have the tendency to affect negatively. Future study should better account for the methodological limitations of the extant studies to seek to understand the prolonged effects of excessive screen-times among preschoolers.

Keywords: *screen time; social development; emotional development; technology*

1. INTRODUCTION

Screen time is an accumulated time spent viewing or watching an electronic gadget screen, such as TV, video screens, computers, smartphones, video games, tablets and more [1]. Children are at increased risk for loss of social skills, obesity, sleep deprivation, vision problems and depression [2]. The prevalence of excess screen time ranges from 10% to 93.7% across high-income countries and from 21% to 98% in middle-income countries. The screen time among under-fives ranged from 0.1-5 hours a day which younger children (0-2 years) from middle-income and older children (0-5 years) from high-income countries had a screening time of more than one hour a day [3]. Long-term viewing of television or video and engaging in electronic

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media may influence brain development and regular exposure has also shown that language, psychological and social competences could be affected [4].

Additionally, exposure to multiple screens is increased among young children which include both the traditional fixed screens such as televisions and desktop computers and newer mobile screen media such as smartphones and electronic tablets [5]. Moreover, children may have been exposed to situations in which they see their parents and follow them in terms of technology used, and the prevalence of screen use may have increased for children [6]. There are many programs and products advertising that screen media can have positive impacts on a child's cognitive development [7]. In conjunction, parents who believe a television program or video is educational are likely to have the television on for extended periods of time [8]. Play deprivation which can be associated with physical and emotional illnesses, poor school achievement and social abnormalities were found to be the result of excessive screen time [9]. In addition, high users of screens were significantly more likely to display poor emotion regulation, unable to finish tasks, lower curiosity, and more difficulty in making friends [10]. It has also been identified that the contributing factor to social and emotional problem was the lack of interaction between parents and children [11].

There are various studies investigating the effects of screen time on language development, cognitive [12], physical health [13] and sleep patterns[14] among children and young adults. This study attempts to determine the types of screen time and its effect on social and emotional development among preschoolers.

2. MATERIAL AND METHOD

2.1 Sampling and Population

The cross-sectional study design was used, and the sample size had been calculated using Krejcie & Morgan (1970). 155 parents with a child age 4 to 6 years old in Labuan were recruited. The inclusion criterion comprised of parents with a child aged between 4 to 6 years old and was the primary carer of the involved child. The inclusion criteria comprised of parents and the primary carer with a child aged between 4 to 6 years old. Out of 155 parents and caregivers recruited, only 143 met the inclusions criteria and their responses were further analysed.

2.2 Instruments

Strength and Difficulties Questionnaire (SDQ) was developed by a child psychiatrist, Robert N. Goodman. The SDQ was a self-rated questionnaire to measure children's emotional and behavioural problems. This assessment comprises of 50-point marks and was administered for approximately 5 to 10 minutes. The total points from domains were interpreted as the lower point indicating "normal" and the higher point indicating "abnormal". The SDQ has been extensively evaluated for its internal consistency and reliability (15). The SDQ was distributed among the participants along with the demographics data comprised of the socio-demographic variables.

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2.3 Ethical Approval

Ethical approvals were gained from the Research Ethics Committee (REC) of Universiti Teknologi MARA (UiTM) and Jabatan Pendidikan Negeri Labuan, Ministry of Education, Malaysia.

2.4 Data Analysis

Data obtained were processed by using Statistical Package for the Social Sciences (SPSS) version 21. Descriptive analysis was used to determine the demographic backgrounds of the respondents, types of screen exposure and screen times among preschoolers. The Fisher-Freeman Halton tests were used to determine the parents' and child demographic profiles with screen time exposure and social, emotional development.

3. RESULTS

A total of 143 respondents participated in this study. As depicted in Table 1, questionnaires were 55.2% completed by the fathers and followed by 42.7% mothers and the rest or 2.1% were among caregivers. The majority of the respondents or 59.4% were aged between 30-39. In term of education level, the majority or 62.9% studied up till secondary school, followed by 28% with a diploma or degree qualifications. The respondents were mostly in the low-income group with 63.6% with household income of less than RM2000 and 32.95 with a household income between RM2001 to RM5000. Most preschoolers or 54.5% were male and the rest 45.5% were female.

Table 1: Demographic Profiles of the Respondents (n= 143)

Variables	*N (%)*
Roles	
Father	79 (55.2)
Mother	61 (42.7)
Caregiver	3 (2.1)
Age Range	
20 – 29 years old	19 (13.9)
30 – 39 years old	85 (59.4)
40 – 49 years old	35 (24.5)
50 – 59 years old	4 (2.8)
Education Level	
Secondary School	90 (62.9)
Undergraduates	40 (28)
Postgraduates	2 (2.9)
Certificate	11 (7.7)
Household Income	
Less than RM2000	91 (63.6)
Between RM2001 - RM5000	47 (32.9)
Above RM5000	5 (3.5)
Childs' Gender	
Male	78(54.5)
Female	65 (45.5)

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3.1 Types of Screen Exposure and Screen Times among Preschoolers

Figure 1 shows the types of screen exposure among preschoolers as reported by the respondents. Smartphones (51%) were found to be the most used technology by the pre-schoolers, followed by television (27%), tablet (12%), video games (6%) and laptop (4%).

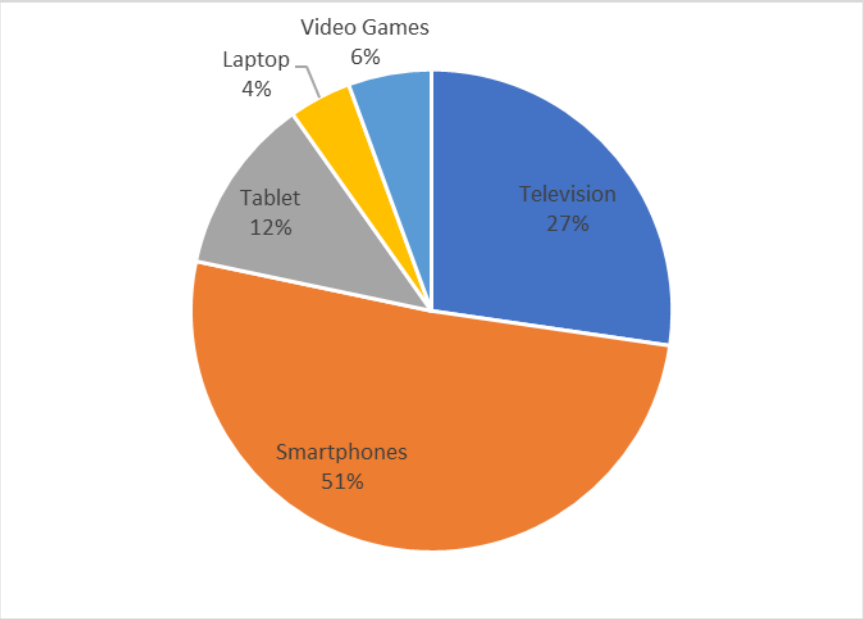

Figure 1: Types of Screen Exposure among Preschoolers

Table 2 depicts screen times among preschoolers during weekdays and weekends. Most (43.4%) and 34.3% of preschoolers spend between 2 to 3 hours on screen during weekdays and weekends respectively. Data shows that screen time increased drastically over the weekend with almost half of the children spend more than 4 hours on screen time during the weekend.

Table 2: Screen Times Among Preschoolers during Weekdays and Weekends

Screen Time (Hours)	Weekdays		Weekend	
	Frequency	Percentage	Frequency	Percentage
Less than 2	49	34.3	24	16.8
2 to 3	62	43.4	49	34.3
4 to 5	23	16.1	38	26.6
6 to 7	4	2.8	14	9.8
7 to 8	5	3.5	18	12.6

3.2 The Relationships between Parents' Age, Income Status and Screen Time Exposure among Preschoolers

A Fisher- Freeman- Halton extension of Fisher Exact probability test was used as the assumptions of Chi-Square test were not meet. The results showed that there was no significant relationship between parents' age, income status and screen time exposure among preschooler. Table 3 shows a Chi-Square test to investigate the relationship between parents' demographic characteristics and screen time exposure among preschooler.

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Table 3: The Relationship between Parents' Demographic Characteristics and Screen Time Exposure Among Preschooler

Parents' Demographic Characteristics	Screen Time (per day)	Weekdays n (%)	p-value	Weekend n (%)	p-value
Parents' Age	<2 hours	30 (28.8)		15 (14.4)	
<39 years old	2-3 hours	49 (47.1)		35 (33.7)	
	4-5 hours	17 (16.3)		27 (26.0)	
	6-7 hours	4 (3.8)		11 (10.6)	
	>8 hours	4 (3.8)		16 (15.4)	
>40 years old	<2 hours	19 (48.7)		9 (23.1)	
	2-3 hours	13 (33.3)		14 (35.9)	
	4-5 hours	6 (15.4)	0.213	11 (28.2)	0.421
	6-7 hours	-		3 (7.7)	
	>8 hours	1 (2.6)		2 (5.1)	
Income Status	<2 hours	27 (29.7)		17 (18.5)	
<RM 2000	2-3 hours	38 (41.8)		28 (30.8)	
	4-5 hours	17 (18.7)		20 (22.0)	
	6-7 hours	4 (4.4)		10 (11.0)	
	>8 hours	5 (5.5)		16 (17.6)	
RM 2000 – RM 4999	<2 hours	20 (42.6)		6 (12.8)	
	2-3 hours	21 (44.7)		20 (42.6)	
	4-5 hours	6 (12.8)		15 (31.9)	
	6-7 hours	-		4 (8.5)	
	>8 hours	-		2 (4.3)	
RM 5000 – RM 10000	<2 hours	2 (40.0)	0.424	1 (20.0)	0.172
	2-3 hours	3 (60.0)		1 (20.0)	
	4-5 hours	-		3 (60.0)	
	6-7 hours	-		-	
	>8 hours	-		-	

3.3 The Association Between Child Demographic Profiles with Social and Emotional Development

The Fisher- Freeman- Halton test for preschoolers' social and emotional development revealed there was no association between child's age, gender, type of technology used, averaged screen time during weekends with social and emotional development. However, the result shows that there was an association between average screen time during weekdays with social and emotional development (p= 0.021) as in Table 4.

Table 4: The Relationship between Child Demographic and Social Emotional Development

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Child Demographic Data	SDQ Interpretation			p-value
	Problem Unlikely	Problem Increase Slightly	Substantial Risk	
Gender				
Male	65 (83.3)	11 (14.1)	2 (2.6)	0.227
Female	60 (92.3)	5 (7.7)	-	
Child's Age				
4 years	23 (79.3)	5 (17.2)	1 (3.4)	0.490
5 years	59 (89.4)	6 (9.1)	1 (1.5)	
6 years	43 (89.6)	5 (10.4)	-	
Type of Technology Mostly Used				
Television	37 (94.9)	2 (5.1)	-	0.163
Smartphone	59 (80.8)	13 (17.8)	1 (1.4)	
Tablet	16 (94.1)	-	1 (5.9)	
Laptop	6 (100.0)	-	-	
Video games	7 (87.5)	1 (12.5)	-	
Average Screen Time (Weekday)				
<2 hours	41 (83.7)	8 (16.3)	-	*0.021
2-3 hours	59 (95.2)	3 (4.8)	-	
4-5 hours	18 (78.3)	4 (17.4)	1 (4.3)	
6-7 hours	3 (75.0)	-	1 (25.0)	
>8 hours	4 (80.0)	1 (20.0)	-	
Average Screen Time (Weekend)				
<2 hours	21 (87.5)	2 (8.3)	1 (4.2)	0.972
2-3 hours	42 (85.7)	6 (12.2)	1 (2.0)	
4-5 hours	33 (86.8)	5 (13.2)	-	
6-7 hours	13 (92.0)	1 (7.1)	-	
>8 hours	16 (88.9)	2 (11.1)	-	

4. DISCUSSION

This study sought to investigate different types of screen times and their effect towards social and emotional development among pre-schoolers in Labuan. From the demographic data, most respondents are fathers with the age range from 30 to 39 years old. The majority of the respondents are in low-income group with less than RM2000 of total household incomes. Despite that, it can be seen that all children in this study have access to digital devices ranged from smartphones, television, tablet, video games and laptop. This study found no significant relationships between the parents' age and income status on screen time exposure among pre-schoolers. The study had found no significant relationship between parents' age and income status on screen time exposure among preschoolers. This finding is contrary to the previous findings whereby the screen devices both fixed and mobile screens were used more frequently by young parents which likely influence the child's screen time exposure [16].

The current study found that smartphones are most accessible than all other media devices among preschoolers. This finding suggested that smartphones had taken over television compared to an earlier study which found that smartphones are increasingly accessible to children at the same rate as television accessibility [17]. The pass-back effect of smartphone

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had been discussed in which a parent or other individuals who own a mobile device passes it to a child, hence contributing to the rapid expansion of smartphone use among young children. With these trends, we can strongly suggest that mobile devices are displacing televisions. This might be due to its favourable size and portability, children could easily watch television on a smartphone using mobile apps such as Youtube and Netflix [18].

Our study revealed that male pre-schoolers have more screen time exposure than female pre-schoolers. A previous study indicated that males have more tendencies to use electronic devices excessively compared to females [19]. However, it was found that there was no association found between age, gender and social and emotional development. However, as SDQ used in this study is parent-reported, there might have been consistent reporting biases that influenced the results. The majority of the pre-schoolers spend 2 to 3 hours on screen during weekdays and almost half of the children spend more than 4 hours on screen during the weekend. These findings are quite alarming as World Health Organisation (WHO) guidelines on screen time for children recommended children aged between 2 to 5 should limit sedentary screen time to no more than an hour each day [20]. In addition, a recent study shows that increased screen time among pre-schoolers is associated with inattention problems and increased behavioural morbidity [21].

This study revealed that there was no association between types of technology used with the social and emotional development. However, it was found that there was an association between average screen time during weekdays with social and emotional development of these pre-schoolers. A previous study indicated that excessive television viewing which is more than 2 hours per day has been clearly associated with early childhood self-regulation difficulties [22]. In addition, longer hours spend on viewing content that is not age-appropriate is an independent predictor of poor executive functioning and mental flexibility among pre-schoolers [23].

5. CONCLUSION

This study found that preschoolers consumed more screen time than the recommended 1 hour. These preschoolers were mostly able to access media from televisions and smartphones. Nevertheless, the majority of them were on track with their social and emotional development. Thus, the study concluded that the different types of screen time did not affect social and emotional development. Despite that, excessive use in screen time in the long term may still have the tendency to affect negatively. Therefore, it is important to increase parents' awareness of the recommendations and guidelines given on screen time usage for their children while also increasing their awareness of the negative effect that may arise.

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