Sex Differences in Screen Time and Playfulness among Chinese Preschool Children

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Abstract: Past researches showed that there are sex differences in screen time and playfulness and it does affect children's development. The purpose of the present study is to determine the sex differences in screen time and playfulness among Chinese preschool children in Kuala Lumpur. There were 217 mothers of Chinese preschool children aged between four to six years old study at selected private preschools in Kuala Lumpur were recruited as respondents in this study by using Stratified Proportionate Random Sampling technique. Self-administered questionnaire was distributed to mothers. Children's screen time was assessed by using Screen Time Questionnaire (STQ), whereas the information of playfulness was collected by using Child Behavior Inventory of Playfulness (CBI). All instruments used in the current study showed good reliability in the local context with overall reliability score of above .70. Independent t-test was used to determine the gender differences in screen time and playfulness. As the results, there was no significant gender difference in screen time ($t = -1.25$, $p > .05$) and playfulness ($t = -1.46$, $p > .05$). In sum, the study provides valuable information about screen time and playfulness among male and female preschool children.

Keywords: Playfulness; Preschool children; Screen time; Sex difference

1. Introduction

In this contemporary time, electronic devices have become common and hence it is undeniable that the usage time or screen time of electronic devices among children is gradually increasing because they have more opportunities to use it in anywhere and anytime if compared to the last time. Screen time is defined as the total time spent by using smartphones, tablets, computers or handled devices in anywhere and they were available all hours [1]. Hosokawa and Katsura [2] mentioned that child target users of mobile devices are becoming younger nowadays and there is a changing in today's technology driven world, from traditional media like television and video games to new media like home computers, mobile devices such as smartphones and digital tablets. This shows that media become a dominant part in children's lives gradually and hence children might have lessened time to play if they always use electronic devices. In fact, playing games was important for children's learning and with the aid of nowadays electronic devices or technologies like smart phone, the digitally minded kids have better play environments [3]. Thus, child's play and playfulness in this new era is not similar again with the more traditional methods of play in last time. Play meant any activity that is personally directed by the child and it is freely chosen and intrinsically motivated [4]. The impulse to play among children was innate and hence playing and playfulness were important and they are essential elements of childhood that supported their development like emotional [2].

However, there is still very little research on the screen time of children because electronic devices are newly emerging in this era. Most of the previous researches were likely to examine the effects of the traditional devices or media like television, computers and video games on children's development but not included the modern electronic devices like smart phone and tablets [2]. Those modern and new technologies are eventually become an essential part in children's and parents' lives. Moreover, nowadays, the methods or the types of children's play become different if compared with last time. Childhood in this new generation is accompanied with more high advanced technology and less interaction with peers and natural environment. According to Genc [3], playing games is extremely important for a child's learning because they learnt and developed through playing. With the aid of the new technologies nowadays like smartphones, children are able to have better game environments [3]. Hence, play nowadays is drawn from more traditional play methods and changes in children's play and playfulness happen.

Some statistical data supported that there is gender difference in screen time. Boys and girls spent average for at least two hours per day in screen time [5]. Girls had statistically significant higher co-viewing of television than boys [6]. However, other researches showed that 33% of parents claimed that their three to five years old boys used electronic devices for more than an hour whereas 30% of parents of three to five years old girls used devices for more than an hour [7]. Other findings revealed that when comparing three to five-year-old boys with girls, they would use electronic devices for watching videos, 60% for boys and 61% for girls; and educational apps with 60% for boys and 64% for girls. However, there was bigger difference in the usage of games between boys and girls, which were 65% and 58%, respectively (references). In Malaysia, gender difference could be found out obviously

in their purposes of using electronic devices, for instance, boys mostly played games (70%), while girls used educational applications (63%) [7].

Besides, parents showed different attitudes and beliefs towards controlling their kids with different sex in using electronic devices. Parents were more likely to monitor their daughters' media use than their sons' [6]. This was because parents' self-reported monitoring activities for sons and daughters may have been shaped by parents' beliefs about how parents should monitor girls and boys in using electronic devices and also reflected stereotypes about boys and girls and the parenting of sons and daughters [6]. However, there were some previous studies revealed there was no association between electronic device use and the child's sex [8]-[9].

Moreover, many researches revealed that girls had different play preferences and playfulness with boys [10-13]. Play is always presented in preschool children's life, thus they developed friendships and relationships, developed sense of identity through play [14].

Furthermore, some researchers believed that preschool children already had gender-related preferences, experienced playfulness differently between boys and girls, and shown personal characteristics or feelings in their play. Boys expressed more enjoyment during play, showed enthusiasm and were more talkative than girls [15]. Besides, the study also stated that boys participated mainly in competitive games and played with more mobile toys while girls' games required sharing roles, played cooperatively and showed a preference for games involving fine manipulations [15]. Thus, boys and girls experienced and expressed playfulness differently.

Moreover, girls engaged more often in sedentary activities, locomotion, or activities on playground equipment, while boys were more likely to play sports or active games [10]. However, both boys and girls were actively playing in public playgrounds for most of the time [10]. Another study also found out that girls tended to occupy play spaces with activities related to girls like the doll corner in a kindergarten setting whilst boys were more likely to play with materials like cars [11]. Hence, the authors of these studies assumed that there were gender differences in play and their preferences in play. Reimers et al. [10] also studied about the relationship between moderately-to-vigorously physically active (MVPA) and child's sex. The study found out the presence of active children could be a relevant factor fostering or contributing to girls' physical activity levels in playgrounds. Thus, this study suggested public playgrounds should provide more spaces for children being physically actives and especially for girls [10]. In another study with four to five years old preschool children as participants, the finding revealed that girls were more likely to engage in significantly parallel-constructive play than boys whilst boys engaged in more parallel-dramatic play than girls [12]. Boys exhibited more aggressive play than girls [16]-[17], 2004). These findings were related to another research which revealed that child's sex had been found to be correlated with rough play [18]. Rough and tumble play referred to physically vigorous and playfully aggressive behaviors that include wrestling, tumbling, and chasing. In sum, boys and girls have different type of play, expressed differently and have different playfulness experience while playing [10]-[13], [15],[18].

2. Research Methodology

Participants and Procedure

A total of 217 mothers of Chinese preschool children between the ages of 4 and 6 years old were participated in this study. A set of questionnaire in hard copy was distributed to mothers of Chinese preschool children at six private preschools in urban areas of Kuala Lumpur. Proportionate stratified random sampling was used to recruit a representative sample of participants.

Before conducting the data collection, the ethical clearance approval was obtained from The Ethics Committee for Research Involving Human Subjects Universiti Putra Malaysia (Jawatankuasa Etika Universiti Penyelidikan Melibatkan Manusia). Permission from the principals in the selected preschools were obtained before carried out data collection. All participants had been given the detailed debriefing about the study and obtained consent to assure their confidentiality. In this study, 51.2% were girls and about 48.8% of the children were boys, with average age of 4.85 years and standard of deviation 0.78.

Data Collection Instruments

The survey was composed of three separate sections, which were Screen Time Questionnaire (STQ), Child Behavior Inventory of Playfulness (CBI) and also demographic information section included mother's characteristics (age, years of education and employment status), child's characteristics (gender and age), and family characteristics (number of children and family monthly income). All instruments in this research had been translated into Mandarin version using forward-backward translation via experts in Centre for the Advancement of Language Competence (CALC), UPM.

Screen Time Questionnaire (STQ) revised version[1] was applied to measure children's screen time behaviour, the quantity of screen time or use of screened devices. There are 20 items with six subscales. There are only three subscales (Child General Screen Time, Child Entertainment Screen Time and Child Calming Screen Time) were

used in this study with a total of 13 items measured screen time among preschool children. All of the items are open-ended format. The higher the mean scores, the frequency of screen time on children are higher. STQ revised version has been proved as a reliable and valid scale by Olszewski [1]. In this study, STQ showed good reliability with Cronbach's α .78.

Child Behavior Inventory of Playfulness (CBI) measured playfulness as a trait characteristic in children [19].This research is focused on the playfulness subscale only with 21 items [20].The CBI has excellent and high reliability coefficients on playfulness factor, which was from .81 to .94 [19].Overall, past researches showed that the instrument has useful psychometric properties[19-22]. In the present study, CBI showed good reliability with Cronbach's alpha coefficient of .90.

3. Results

Patterns of screen time, playfulness, parental monitoring and emotional intelligence were presented in Table 3.1. The levels for screen time in the current study are categorized based on the three sigma rule [23]. Screen time was measured by Screen Time Questionnaire (STQ) through parents' rating form [1]. The data indicated that the mean score per day for child was 15.49 (*SD*= 6.58). The data indicated that 76.1% of mothers reported their children have moderate level of screen time.

Besides, playfulness of children was measured by using Child Behavior Inventory of Playfulness (CBI) developed by Rogers et al.[19]. (1998). In this study, the mean score for children's playfulness was 74.9 with a standard deviation of 11.01. The level of CBI was categorised by referring to the median split to place all participants in the categories [24]. In this study, the median of CBI was 75. 52.6% of mothers reported their preschool children were at low level of playfulness.

Table 3.1: Patterns of Screen Time, Playfulness, Parental Monitoring and Emotional Intelligence (N= 217)

Variables	n	%	M	SD	Min	Max
Screen Time			15.49	6.58	4	37
Low (< 9)	24	11.5				
Moderate (9-22)	159	76.1				
High (> 22)	26	12.4				
Playfulness						
Low (≤ 75)	111	52.6	74.90	11.01	44	98
High (> 75)	100	47.4				

An independent-sample t-test was used to compare the mean scores of screen time and playfulness between male and female preschool child. Referring to the Table 3.2, this study found out that there were no significant difference in mean scores of screen time (t = -1.25, p > .05) between preschool boys and girls. The finding was inconsistent with previous studies which proved that differences exist for boys and girls in their purposes of using electronic devices [7] and another study which showed that girls had statistically significant higher co-viewing of television than boys [6]. However, it was supported by some studies where it was proved that there was no association between electronic device use and the child's sex [8]-[9].

Table 3.2: Independent t-test of child's sex and screen time

Sex	n	Mean Score	SD	t-value	p
Male	100	15.07	7.47	-1.25	.21
Female	109	16.41	8.02		

Table 3.3 shows that there were no significant difference in mean scores of playfulness (t = -1.46, p > .05) between preschool boys and girls. It was incongruent with past researches which revealed that girls had different play preferences and playfulness with boys [10]-[13]. For instance, girls engaged more often in sedentary activities, locomotion, or activities on playground equipment, while boys were more likely to play sports or active games [10].

Table 3.3: Independent t-test of child's sex and playfulness

Sex	n	Mean Score	SD	t-value	p
Male	100	73.44	12.20	-1.46	.15
Female	109	75.78	11.17		

4. Conclusion

The main objective of the present study was to compare the differences in screen time and playfulness between preschool boys and girls in Kuala Lumpur, Malaysia. The present study concluded that there are no differences in screen time and playfulness between preschool boys and girls, although some researchers [6]-[7],[10]-[13] found differences between males and females in screen time and playfulness. Since the present study was carried out through collecting parental reports, thus it might possible that the results were affected by mothers' own beliefs and views about the importance of playfulness and the way they control their child's screen time. It could be supported by previous studies which highlighted that parenting perceptions normally were influenced by factors such as their own experience and needs as well as the developmental needs of children [1][25]. Besides, parent's engagement level in play with their children depended on their view of parenting role and value about the importance of play and playfulness [26]. Moreover, parents showed different attitudes and beliefs towards controlling their kids with different sex in using electronic devices [6].

By understanding the impact of the screen time and playfulness, these findings of present study provided important implication for school authorities and researchers to avoid from bias or sex stereotyped on boys and girls. Further research should continue to investigate about the differences of screen time and playfulness among boys and girls by involving children with different age group and from different setting like from public, international and private education settings.

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