

Relationship between Screen Time, Sleep Duration, Parent-Child Interaction and Psychosocial Adjustment among Preschool Children in Selangor, Malaysia

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Abstract

The current study aimed to determine the relationship between screen time, sleep duration, parent-child interaction and psychosocial adjustment among preschool children in Selangor, Malaysia. The study also intended to assess whether difference exists in psychosocial adjustment between male and female, examine whether sleep duration and parent-child interaction mediate the relationship between screen time and psychosocial adjustment as well as explore on unique predictors of psychosocial adjustment. Multistage cluster sampling method was employed to select the sample in the study. The sample consisted of 392 parents (either mother or father) of preschool children aged between four to six years old in Selangor, Malaysia. Screen Time Questionnaire (STQ) was applied to measure screen time while the Children's Sleep Habits Questionnaire (CSHQ) was used to assess sleep duration. Besides, the Parent-Child Interaction Checklist and the Strengths and Difficulties Questionnaire (SDQ) were utilized to evaluate parent-child interaction and psychosocial adjustment respectively. Findings demonstrated that there was a significant difference in psychosocial adjustment in terms of hyperactivity, peer problems, prosocial behaviour, and total difficulties between boys and girls. Besides, screen time significantly correlated with parent-child interaction. Results also revealed that child's gender, father's years of education, child calming screen time, and parent-child interaction significantly predicted psychosocial adjustment. However, mediation analysis was unable to be conducted to test the mediating role of sleep duration and parent-child interaction on the relationship between screen time and psychosocial adjustment, as screen time did not correlate significantly with psychosocial adjustment in overall.

Keywords: parent-child interaction, preschool children, psychosocial adjustment, screen time, sleep duration

1. Introduction

1.1 Psychosocial Adjustment and Associated Factors

Psychosocial adjustment in childhood often refers to the adaptation and functioning in main areas such as family and school settings during this stage (Piqueras et al., 2019). Psychosocial adjustment is important in children as it affects various aspects of their daily life. For instance, when they transit to primary school from kindergarten. School transitions require students to adapt to new challenges and situations (Longobardi et al., 2019). Children would need to adapt to the new school environment, adjust themselves to people other than their family members, form new peer groups, and face academic challenges (Yoleri, 2015). This can increase the risk of children developing internalizing and externalizing psychological symptoms (Longobardi et al., 2019). It has been shown that children portray better psychosocial adjustment in other settings and their subjective well-being improves when they manage to adapt successfully in school (Gutiérrez & Gonçalves, 2013; Viñas Poch et al., 2015, as cited in Vargas et al., 2019).

Screen time is one of the associated factors with psychosocial adjustment in children. The Malaysian Communications and Multimedia Commission (MCMC) (2018) conducted the Hand Phone Users Survey and found that 91.8% of children aged 5 to 17 accessed internet using smartphone. Among the top online activities for children were text communication, social networking, obtaining information and watching videos. Time spent on electronic devices is negatively linked with psychosocial well-being among preschool children (Zhao et al., 2018). It may cause issues such as impaired attention, speech or language delays, learning issues, anxiety and depression

and negative character (Sundus, 2018).

In addition, sleep duration is also linked with psychosocial adjustment. In a past study, Firouzi and colleagues (2013) examined the sleep pattern and sleep disorders among a sample of children in Malaysia. They found that 41.5% of children did not get enough sleep with significant differences among different ages. The data showed that the children slept less than they need and sleep disturbances were prevalent among those who stayed in urban areas besides children who were overweight and obese. Sleep deprivation in early childhood increases the risk of physical health problems such as obesity, risks in developing neurodevelopmental issues such as intensifying symptoms of autism or behavioural problems, which may lead to poor attention in later life (Scharf & DeBoer, 2015; Taveras et al., 2014; Scharf et al., 2013).

Parent-child interaction plays an important role in influencing psychosocial adjustment. Research findings have indicated the benefits of adequate, high-quality parent-child interactions during early childhood in developing adaptive skills later in life. It has been put forward that the outcomes related with parent-child relationship can be understood through the quality of parenting as well as interactions between parent and child (Acar et al., 2017). Rigid parent-child interactions, for instance not engaging in play activities with children, was linked with higher levels of childhood internalizing and externalizing symptoms (Hollenstein et al., 2004). Besides, there were studies regarding technoferece (interruptions in interpersonal communication caused by attention paid to personal technological devices) recently. These technologies-mediated interferences to parent-child interactions can adversely influence perceptions on parental warmth and psychosocial health in children (Stockdale et al., 2018; Wong et al., 2020). Various types of parent-child activities might have different implications for children's social-emotional well-being too (Ginsburg et al., 2007).

Sleep duration and parent-child interaction play an important mediating role between screen time and psychosocial adjustment among preschool children. A study investigated the relationship between screen time, nighttime sleep duration and behavioural problems in preschool children in China (Wu et al., 2016). It was found that children who had more than two hours of screen time per day and less than 9.15 hours of sleep per day scored higher in behavioural problems. In a study examining the relationship between mothers' media use, children's media use, and parent-child interaction in relation to behavioural difficulties and strengths of children (Poulain et al., 2019), findings indicated that more screen time was linked with increased conduct problems, increased hyperactivity/inattention symptoms and decreased prosocial behaviour. On the contrary, a higher amount of parent-child interactions was linked with less conduct problems, less concerns of peer-relationship, and more prosocial behaviour in children.

1.2 The Present Study

The present study aimed to determine the relationship between screen time, sleep duration, parent-child interaction and psychosocial adjustment among preschool children in Selangor, Malaysia. There is a lack of research examining the relationship between these factors among preschool children. Up to date, only one study that had investigated both sleep duration and parent-child interaction as mediators on the relationship between screen time and psychosocial adjustment in China has been found (Zhao et al., 2018). The study indicated that there was a negative relationship between time spent on screens and psychosocial well-being among preschoolers. Besides, body mass index (BMI), sleep duration and parent-child interaction appeared to significantly mediate the effect of screen time on psychosocial well-being, with parent-child interaction contributed the most among the three factors. In addition, many of the previous studies were conducted in Western settings (Przybylski, 2019; Genuneit et al., 2018; Bayes & Bullock, 2020; Ranum et al., 2019; Skaug et al., 2018; Gadaire et al., 2016). Besides, there were very few studies which explored on the relationship between screen time, parent-child interaction and psychosocial adjustment. Quite a number of studies took into account parental mediation as a variable to be examined in relationship with the use of screens or digital devices in young children (Hwang et al., 2017; Shin & Li, 2017; Smahelova et al., 2017). Furthermore, many past articles highlighted the application of parent-child interaction as a form of intervention or therapy, particularly in coping with children who exhibited behaviour problems, in which it is referred as parent-child interaction therapy. Therefore, this study aimed to examine the mediating effects of sleep duration and parent-child interaction between screen time and psychosocial adjustment among preschool children in the Malaysian context.

1.3 Objectives of the Study

The main objective of the study is to determine the relationship between screen time, sleep duration, parent-child interaction and psychosocial adjustment among preschool children in Selangor, Malaysia. The specific objectives are listed as below.

- 1) To describe respondents' demographic characteristics, screen time, sleep duration, parent-child interaction

and psychosocial adjustment.

- 2) To determine the relationship between demographic characteristics (child's age, parents' years of education and family monthly income) and psychosocial adjustment among preschool children.
- 3) To determine the relationship between screen time, sleep duration, parent-child interaction and psychosocial adjustment among preschool children.
- 4) To determine the difference in psychosocial adjustment between male and female.
- 5) To determine the mediating effect of sleep duration and parent-child interaction on the relationship between screen time and psychosocial adjustment among preschool children.
- 6) To determine the unique predictors of psychosocial adjustment among preschool children.

1.4 Related Literature

1.4.1 Demographic Characteristics and Psychosocial Adjustment

Alavi and colleagues (2015) conducted a study to compare socio-demographic factors in children and adolescents who presented internalizing and externalizing disorders. No association was shown between age and externalizing or internalizing scores in Child Behaviour Checklist (CBCL) using Pearson correlation. In addition, there was also no association between age and either externalizing or internalizing disorders as well. A study looking on emotional and behavioural problems in children and adolescents in central Kenya was conducted by Magai and colleagues (2018). Findings indicated that younger children had significantly higher scores on all problem scales except for anxious/depressed, withdrawn/depressed, somatic complaints, and internalizing problems. Besides, Idris and colleagues (2019) looked into the emotional and behavioural issues among school children in Malaysia. Based on teacher reports, boys had a significantly higher total difficulties score. For children reports, the total difficulties scores were higher in girls. Emotional problems were higher for girls based on child-reported data and the difference was significant. There were more hyperactivity problems for boys according to parent and teacher reports. Besides, peer problems reported by parents were also higher in boys. In another study conducted by Yoleri & Seven (2014), the results demonstrated that gender had a significant effect on prosocial behaviours. Preschool teachers rated girls as more prosocial than boys. However, in terms of age, children's prosocial behaviours did not have significant difference.

Palmer and colleagues (2018) studied the socio-demographic, maternal, and child indicators of socioemotional (SE) problems in two-year-old children in southern United States. Outcomes showed that maternal education up to and less than high school were independently associated with SE problems in two-year-olds. Alavi and colleagues (2015) compared parental socio-demographic factors in children and adolescents who exhibited internalizing and externalizing disorders. Results revealed that children with mothers who had a university degree had a lower externalizing score in the Child Behaviour Checklist (CBCL) compared to children with mothers who had a college diploma or some high school education. However, no significant difference was found for internalizing scores. Similar results were found between father's education and externalizing as well as internalizing scores in the CBCL. Children whose fathers had less education experienced more externalizing disorders. In a study conducted by Hosokawa and Katsura (2017), the results showed that lower socioeconomic status was both directly and indirectly associated with more marital conflict, more negative parenting practices, less constructive marital conflict, poorer social competence and more symptoms of behavioural problems. Family income was directly related to child mental health functioning, such as social competence and behavioural problems, while controlling for other variables. A study conducted in Malaysia explored family socioeconomic status and social-emotional development among young children (Mohamed & Toran, 2018). There was a strong relationship between the level of social-emotional development of children with mother's education level, mother's occupation and father's income.

1.4.2 Screen Time and Psychosocial Adjustment

The association between screen time and developmental health in preschool-aged children was examined by Kerai and colleagues (2022). Results suggested that children with more than one hour of daily screen time were more likely to be vulnerable in all five developmental health domains: physical health and wellbeing, social competence, emotional maturity, language and cognitive development, and communication skills, compared to children reporting up to one hour of daily screen time. Niiranen and colleagues (2021) investigated the frequency of electronic media (e-media) usage by preschool children and the risks of high-dose e-media use on children's psychosocial well-being. Results indicated that increased screen time at 5 years old was associated with a risk of multiple psychosocial symptoms, while increased levels of e-media use at 18 months old were only associated with Five-To-Fifteen (FTF) peer problems. Furthermore, high-dose use of electronic games at the age of 5 years seemed

to be associated with fewer risks for psychosocial well-being than programme viewing, as it was only associated with SDQ hyperactivity. Xie and colleagues (2020) investigated digital screen time and its effect on preschoolers' behaviour in China. Findings indicated that preschoolers with screen time of more than 60 minutes in a week tend to have more behavioural problems than those with screen time of less than 60 minutes in a week.

1.4.3 Sleep Duration and Psychosocial Adjustment

Bayes and Bullock (2020) examined the association between sleep issues as well as internalizing and externalizing behaviour in children aged five to twelve years old in Melbourne, Australia. Results showed that there were moderate relationships between sleep issues and emotional distress, aggressive behaviour and hyperactive/impulsive behaviour after controlling for socioeconomic status and age. A study by Ranum and colleagues (2019) investigated the links between sleep duration and symptoms of emotional and behavioural disorders in middle childhood. An association was found between short sleep duration and increased risk of future occurrence of emotional disorder symptoms in both boys and girls while an association was found between reduced sleep and behavioural disorder symptoms in boys.

1.4.4 Parent-Child Interaction and Psychosocial Adjustment

A study by Wong and colleagues (2020) was conducted to assess the frequency of parent-child activities and social-emotional development through a longitudinal perspective. The activities between parent and child included story reading, storytelling, and music activities. Story reading was negatively associated with hyperactivity and emotional/anxiety problems while storytelling was negatively associated with physical and indirect aggression among boys, but not girls. In addition, storytelling and music activities were linked with lower hyperactivity among girls. More frequent parent-child activities predicted more prosocial behaviour among boys and girls. Besides, Wilke and colleagues (2017) examined the effects of a family support program on children's socio-emotional and language development. Two different course formats, one focusing on parenting skills and another one focusing on parent-child interaction, were examined. Based on the findings, childcare professionals' rating of children's problem behaviour was lower for children in the parent-child interaction-focused group. Parents who joined the parenting skills-focused group reported significantly lower prosocial skills in their children.

1.4.5 Screen Time, Sleep Duration/Parent-Child Interaction and Psychosocial Adjustment

Guerrero and colleagues (2019) explored sleep duration as a mediator between screen time and problem behaviours in children. The time spent on watching television or movies was linked with increase in rule-breaking behaviour, social problems, aggressive behaviour and thought problems. Longer time spent on playing video games was associated with greater somatic complaints, aggressive behaviour and reduced sleep duration. Greater amount of time spent on screens was associated with increased problem behaviours, while longer sleep duration was associated with reduced problem behaviours. Although the effect sizes were small, sleep duration mediated the relationship between screen time and problem behaviours. Furthermore, Wu and colleagues (2016) conducted a study to evaluate the relationship between screen time, nighttime sleep duration and behavioural problems among preschool children. Children who spent more than two hours of screen time per day were found to have a higher tendency of having total difficulties, emotional symptoms, conduct problems, hyperactivity, issues with peers and prosocial concerns, as well as behavioural symptoms of autism spectrum disorder. Similar findings were reported in children who slept less than 9.15 hours per day, but no significant increased likelihood of emotional symptoms was noted for short sleep period. Overall, preschoolers with higher screen time and short duration of nighttime sleep were more inclined to develop behavioural issues. Regarding research on screen time, parent-child interaction and psychosocial adjustment, children's media use, mothers' media use and parent-child interaction were assessed in relations to behavioural strengths and difficulties in children by Poulain and colleagues (2019). Children with mothers who reported high screen times tend to demonstrate high screen times. Increased time spent on electronic devices was related to more conduct problems, more hyperactivity/inattention symptoms and less prosocial behaviour. Conversely, higher amount of parent-child connections were related to less conduct problems, less peer-relationship concerns and more prosocial behaviour among children.

1.5 Theoretical Background

This study integrates Erikson's Psychosocial Theory, Social Cognitive Theory, Bronfenbrenner's Ecological Systems Theory and the ecological techno-subsystem in determining the relationship between screen time, sleep duration, parent-child interaction and psychosocial adjustment among preschool children.

In this study, the target sample is preschool children from age four to six. This age range spans across two stages of psychosocial development according to Erikson's theory, which is the third and fourth stage. The third stage-

initiative vs. guilt usually takes place around age three to five. In this stage, play becomes the central part in children's development. Children are capable to plan and carry out playful projects for the enjoyment of being active, to self-define, and to fulfill their imagination (Erskine, 2019). However, this could be concerning when children spend large amounts of time on screens and hence, their social play may be overshadowed by solitary play, which could influence how children develop (Hendry, 2017). The fourth stage- industry vs. inferiority usually occurs around six to ten years old. During this stage, it is when children start to get exposed to the school setting. They are capable of learning and accomplishing new skills and knowledge (David, 2014). Therefore, they may have more control over using screen-based devices at this stage, as they learn to analyze what is good or bad for them at this point of time.

Bandura's Social Cognitive Theory discussed a model of causation which involves triadic reciprocism determinism. Behaviour, cognition and other personal factors, and environmental influences interact and influence each other bidirectionally (Bandura, 1989). In this study, screen time and child's interaction with parents are considered as environmental factors. Screen time is an influence from the digital environment as individuals nowadays rely heavily on digital devices. When people around children are constantly holding and looking at screens, they will also be influenced. A child's interaction with parents is another environmental factor that may have an impact on children's psychosocial adjustment. Sleep duration is the personal factor of preschool children while psychosocial adjustment is the behavioural outcome in this study.

Ecological Systems Theory, developed by psychologist Urie Bronfenbrenner (1979), discussed how human development is influenced by different types of environmental systems. There are four interrelated types of environmental systems in Bronfenbrenner's Ecological Systems Theory, which are micro-, meso-, exo-, and macrosystems. The levels range from smaller, proximal settings in which individuals directly interact to larger, distal settings that indirectly influence development. In the current study, parent-child interaction is regarded as the microsystem here, as parents share a direct and close relationship with their children. Parents have a great influence on their children throughout their development.

Catching up to the pace of continuously increasing complexity and availability of childhood technology, Johnson and Pupilampu (2008) proposed the ecological techno-subsystem, a dimension of the microsystem. The techno-subsystem includes child interaction with both living, such as peers, and non-living, for instance hardware, components of communication, information and recreation technologies in immediate or direct environments. In the current study, screen time is considered as the techno-subsystem. Mobile devices may be used to calm or distract children, or to manage children's behaviour. Past studies revealed that parents often give children devices when doing house chores, to keep them calm in public places, during meals or during bedtime to put them to sleep (Kabali et al., 2015; Coenen et al., 2015; Dinleyici et al., 2016, as cited in Bozzola et al., 2018).

2. Method

2.1 Study Design and Subject Characteristics

The current study employs a correlational research design. The targeted population for this study is parents (either mother or father) of preschool children aged four to six years old enrolled in private preschools in Selangor, Malaysia. This is due to the trend of using screens among preschool children are becoming more worrying. Furthermore, they are in the crucial stage for acquiring and developing behavioural and socio-emotional skills. On the other hand, children who are not staying together with their parents and children who are diagnosed with developmental/mental health conditions such as Autism Spectrum Disorder (ASD), Attention-Deficit/Hyperactivity Disorder (ADHD), and Conduct Disorder (CD) are excluded from this study.

2.2 Sampling Procedures and Sample Size

Ethical approval was obtained from the Ethics Committee for Research Involving Human Subjects, Universiti Putra Malaysia (JKEUPM) before conducting the proposed study. Multistage cluster sampling has been used to select the sample for this study. In the current study, the state of Selangor is chosen as the study location. Selangor can be divided into three zones, which are north, central and south. The north zone includes districts of Hulu Selangor, Kuala Selangor and Sabak Bernam. For the central zone, the districts comprise of Gombak, Petaling and Klang, while for the south zone consists of Sepang, Kuala Langat and Hulu Langat. One district from each zone is randomly selected by drawing lots. Then, six preschools are randomly selected from each district by drawing lots. Three age groups are then selected from each of the six preschools. The three age groups consist of children aged four, five and six years old respectively. However, more preschools across different districts are approached during the data collection process due to the lack of survey response.

This study is focused on private preschools due to the psychosocial wellbeing of children in these preschools are

often disregarded. Besides, Selangor state is chosen as it is considered to have more urban areas, which makes internet access more convenient and in turn, usage of digital devices among the population would most likely be higher. Based on the survey by MCMC (2018), there is a higher number of hand phone users in the urban area compared to the rural area in Malaysia, with the ratio being 1.79 to 1 in 2018. Based on the enrolment statistic obtained from the Ministry of Education Malaysia, (2020), there were 207.7 thousand children enrolled in government preschools, while 282.8 thousand children enrolled in private preschools in 2020. A total of 85687 children were enrolled into private preschools in the state of Selangor in Malaysia (Department of Statistics Malaysia, 2020). The sample size of this study is calculated based on Cochran's formula. There were 392 parents of preschool children who participated in this study.

2.3 Instrumentation

Data in this study were collected mainly using online survey questionnaire method. In the current study, there are a total of four instruments to measure all the variables (screen time, sleep duration, parent-child interaction and psychosocial adjustment). Two sections on demographic information are included at the beginning of the questionnaire to collect information on child's and family background respectively.

2.3.1 Screen Time

Screen time in preschool children is measured by using the Child Screen Time Use section, obtained from the Screen Time Questionnaire (STQ) (Olszewski, 2015). The STQ is designed to measure the quantity of screen time or use of screened devices which include cellular phone, computer, MP3 player, smartphone, tablet, television, and video game console. The Child Screen Time Use section consists of subscales on child general screen time, child entertainment screen time, and child calming screen time. Seven items in this section which are more relevant are selected to be used in the current study. The overall reliability for the items in STQ employed in this study is 0.82. The STQ has content validity and construct validity. Construct validity is proven in previous research whereby principal component analysis was conducted. Three elements were retained in the final analysis and it was suggested that the elements consist of child general screen time, child entertainment screen time, and child calming screen time (Olszewski, 2015).

2.3.2 Sleep Duration

Sleep duration in preschool children is measured by using the sleep duration subscale, derived from the Children's Sleep Habits Questionnaire (CSHQ) (Owens et al., 2000). The CSHQ is a parent-report sleep screening survey designed for children aged four to ten (Owens et al., 2000). The items are rated on a 3-point Likert type scale, ranging from 1 (never/rarely) to 3 (usually). There are three items in the sleep duration subscale, with two items being reverse scored. The minimum total score for this subscale is three while the maximum total score is nine. A high score indicates more disturbed sleep behaviour. In this study, the internal consistency for the subscale is 0.5. In terms of validity, items in the CSHQ demonstrate construct validity. The items were grouped together conceptually according to presenting symptom constellations associated with the revised International Classification of Sleep Disorders (ICSD) categorizations which represent the most common sleep disorders among children (Owens et al., 2000). Besides, criterion validity is also shown. Non-sleep disordered children were able to be differentiated from those seeking evaluation due to a suspected sleep disorder, although there was overlap in the distribution of scores (Owens et al., 2000).

2.3.3 Parent-Child Interaction

Interaction between parent and child is examined using the checklist developed by Holzwarth (2003). The checklist is adapted in this study. Parents are required to fill in the time duration they spent to interact with their child on average in a day for a list of activities. In this study, reliability for the checklist was examined using Cronbach's alpha and the reliability coefficient is 0.79. In addition, the checklist has validity such as content validity and construct validity. The categories of the checklist correlate to past research on observations of parent-child interaction, hence construct validity is indicated (Holzwarth, 2003).

2.3.4 Psychosocial Adjustment

Psychosocial adjustment in preschool children is measured by using the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). The SDQ consists of 25 items rated on a 3-point Likert type scale, ranging from 0 (Not True) to 2 (Certainly True). This scale equally divided across five subscales which measure emotional symptoms, conduct problems, hyperactivity/inattention, peer problems and prosocial behaviour. High scores on the four subscales that report on difficulties indicate more significant problems, whereas high scores on the prosocial subscale denote better social behaviour. The total difficulties score is calculated by combining the scores in all subscales, excluding the prosocial scale (Stone et al., 2015). In this study, the overall reliability coefficient for the

SDQ is 0.57. The SDQ has construct validity and criterion validity based on previous research. Nearly all items loaded primarily, and usually exclusively, on the proposed five factors in the questionnaire based on the factor analyses results. The proposed five-factor structure suited the results particularly well for the parent version of the questionnaire (Goodman, 2001). Furthermore, the SDQ was able to indicate significant differences in prevalence of psychiatric risk between low-risk and high-risk groups (Goodman, 2001).

2.4 Data Analysis

The data collected in this study are analyzed using the SPSS software. Descriptive statistics is used to describe the profile of parents and their children. Inferential statistical tests are carried out to analyze data in the study. For instance, independent samples t-test is used to examine whether there is a difference in psychosocial adjustment between child's gender (male and female) in the study. Pearson's correlation is employed to determine the relationships between demographic characteristics with psychosocial adjustment. Moreover, relationship between screen time, sleep duration, parent-child interaction and psychosocial adjustment is determined using this method as well. Multiple regression is applied to examine unique predictors of psychosocial adjustment among preschool children.

3. Results and Discussion

3.1 Descriptive Statistics

The findings in this study consist of 52% male and 48% female preschool children. Most children are at the age of six, with 57.7% of them in this age group. In terms of parents' education level, there are 46.4% of mothers and 39.3% of fathers who hold a degree, constituting the highest percentage among other education levels in this study. Based on the results, around half of the respondents (50.3%) have an income between the range of RM5000 and RM11000.

3.2 Demographic Characteristics and Psychosocial Adjustment

The relationship between demographic characteristics and psychosocial adjustment are examined using Pearson's correlation. Gender is a categorical variable. Therefore, it is dummy coded before conducting the analysis. Female is coded as one and male is coded as zero. The findings indicated that female children exhibit less overall difficult behaviour ($r = -.13, p < .01$). Girls portray less hyperactivity and peer problems respectively as compared with boys. Meanwhile, girls are more likely to exhibit prosocial behaviour. Unexpectedly, mother's years of education did not reveal a significant correlation with the psychosocial adjustment of child. Father's years of education had a significant correlation with psychosocial adjustment in terms of conduct problems ($r = -.14, p < .01$), hyperactivity ($r = -.10, p < .05$), and overall difficult behaviour ($r = -.14, p < .01$). Children whose fathers have a higher education level tend to reveal less of these issues. Correlations between demographic characteristics and psychosocial adjustment are shown in Table 1.

Table 1. Demographic characteristics and psychosocial adjustment

Variables	ESS	CPS	HS	PPS	PS	TDS
<i>r (p)</i>						
Child's Gender	.01 (.87)	-.07 (.16)	-.17** (.00)	-.14** (.01)	.15** (.00)	-.13** (.01)
Child's Age	.10 (.06)	-.05 (.31)	-.01 (.83)	-.09 (.08)	.06 (.22)	-.01 (.78)
Mother's Years of Education	-.02 (.69)	-.07 (.15)	-.02 (.67)	-.07 (.17)	-.00 (.97)	-.06 (.24)
Father's Years of Education	-.08 (.10)	-.14** (.01)	-.10* (.04)	-.09 (.07)	.02 (.66)	-.14** (.01)
Family Monthly Income	-.02 (.63)	-.05 (.37)	.01 (.84)	-.07 (.20)	-.10 (.06)	-.04 (.46)

Note. ESS = Emotional Symptoms Scale, CPS = Conduct Problem Scale, HS = Hyperactivity Scale, PPS = Peer Problem Scale, PS = Prosocial Scale, TDS = Total Difficulties Score, * $p < .05$, ** $p < .01$.

3.3 Screen Time, Sleep Duration, Parent-Child Interaction and Psychosocial Adjustment

Pearson's correlation analysis is conducted on the study variables as well as between subscales of the variables. Table 2 displays the relationship between screen time, sleep duration, parent-child interaction and psychosocial adjustment. Based on the findings, screen time had a significant correlation with parent-child interaction ($r = .11, p < .05$). When screen time of children increases, interaction between parent and children increases as well. More specifically, child general screen time and child calming screen time correlated significantly with parent-child interaction. This may be because parents interact with their children when children are using electronic devices. Parents may view the content on the devices together with their children or parents may guide their children when utilizing electronic devices. Discussion regarding the media content may then occur between parents and children, thus parent-child interaction would increase.

Besides, child entertainment screen time correlated significantly with peer problems ($r = .12, p < .05$). The tendency of child having peer problems increases when the screen time spent on entertainment increases. The broad use of screens for entertainment may decrease the amount of social interaction in children. In the long term, this may affect their social interaction skills and influence their relationship with peers. Moreover, child calming screen time demonstrated a significant positive correlation with hyperactivity ($r = .14, p < .01$). An increase of screen time spent in calming the child would in turn increase the hyperactive behaviour in child. Some hypotheses in past studies explaining the link between media use and Attention-Deficit/Hyperactivity Disorder (ADHD)-related behaviours included violent content in media, fast pace of entertainment media or the duration of time spent on media (Zimmerman & Christakis, 2007; Christakis, 2009; Christakis et al., 2004). When child calming screen time is higher, children are also more likely to show overall difficult behaviour.

Results revealed that children experiencing issues in sleep duration tend to have more emotional symptoms ($r = .13, p < .05$) and conduct problems ($r = .10, p < .05$). Reduced sleep may impair executive functions (Warren et al., 2016). This in turn is linked with behavioural or conduct problems that possibly present as increased anger and impulsivity (Huang-Pollock et al., 2017; Rohlf et al., 2018). Furthermore, lack of sleep has been found to reduce positive emotions (Vriend et al., 2013). The current study also indicated that conduct problems tend to decline with increased amounts of parent-child interaction ($r = -.11, p < .05$). Parents tend to engage their children in healthy activities when interacting with them. Hence, children would have less time to be involved in misconduct such as fighting. Moreover, parent-child interaction showed a significant positive correlation with prosocial behaviour ($r = .21, p < .01$). More prosocial behaviour is exhibited when parents and children interact more frequently. Children internalize and follow the way that they see their parents carry themselves. Thus, children would tend to develop prosocial behaviour when their parents often portray these behaviours.

Table 2. Relationship between study variables

Variables	Screen Time	Sleep Duration	PCI	PSA
<i>r (p)</i>				
Screen Time	1	.06 (.22)	.11* (.03)	.08 (.11)
Sleep Duration	.06 (.22)	1	.03 (.59)	.10 (.05)
PCI	.11* (.03)	.03 (.59)	1	-.10 (.05)
PSA	.08 (.11)	.10 (.05)	-.10 (.05)	1

Note. PCI = Parent-Child Interaction, PSA = Psychosocial Adjustment, * $p < .05$.

3.4 Gender Difference in Psychosocial Adjustment

Independent samples t-test is employed to examine whether gender difference exists in psychosocial adjustment. Results (as shown in Table 3) pointed out that there was a significant difference in terms of hyperactive behaviour, $t(390) = 3.34, p = .00$, peer problems, $t(390) = 2.81, p = .01$, and prosocial behaviour, $t(390) = -3.03, p = .00$ between boys and girls. Besides, there was also a significant difference in the overall difficult behaviour, $t(390) = 2.60, p = .01$ between male and female children. Boys tend to exhibit more hyperactivity ($M = 3.81, SD = 1.93$), peer problems ($M = 2.26, SD = 1.49$), and total difficulties ($M = 9.45, SD = 4.78$). Meanwhile, girls are more inclined to portray prosocial behaviour ($M = 7.69, SD = 1.94$). The outcomes are consistent with past findings (Idris et al., 2019; Maguire et al., 2015; Yoleri & Seven, 2014).

Table 3. Independent samples t-test

Scales	t	df	Sig. (2-tailed)
Emotional Symptoms	-.16	390	.87
Conduct Problem	1.40	390	.16
Hyperactivity	3.34	390	.00
Peer problem	2.81	390	.01
Prosocial	-3.03	390	.00
Total Difficulties	2.60	390	.01

Note. df = degrees of freedom.

3.5 Predictors of Psychosocial Adjustment

Multiple regression is applied in this study to determine the antecedent and independent variables that could predict psychosocial adjustment in children. Child's gender is dummy coded before conducting multiple regression, with female being coded as one and male being coded as zero. Based on the results of Pearson's correlation, only child's gender, father's years of education, child entertainment screen time, child calming screen time, sleep duration, and parent-child interaction were included in the regression model to predict children's psychosocial adjustment. The other antecedent and independent variables in the study would be excluded in this test as they did not show significant correlation with psychosocial adjustment. The results revealed that only child's gender ($\beta = -.11, p < .05$), father's years of education ($\beta = -.18, p < .01$), child calming screen time ($\beta = .12, p < .05$), and parent-child interaction ($\beta = -.14, p < .01$) significantly predicted psychosocial adjustment. It is found that father's years of education most significantly predicted psychosocial adjustment in this study. Children whose fathers that have obtained higher education develop less psychosocial adjustment issues. Parent-child interaction is the second significant predictor of psychosocial adjustment. Difficulties in psychosocial adjustment decrease when there is more interaction between parents and their children. The third significant predictor of psychosocial adjustment is child calming screen time, followed by child's gender. Results indicated that higher amounts of child calming screen time would lead to more issues in psychosocial adjustment. With regards to gender, being a girl seems to predict fewer psychosocial adjustment issues. The results are shown in Table 4.

Table 4. Predictors of psychosocial adjustment

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	11.72	1.29		9.12	.00
Child's Gender	-1.03	.45	-.11*	-2.29	.02
Father's Years of Education	-.41	.12	-.18**	-3.54	.00
Child Entertainment Screen Time	-.14	.15	-.05	-.92	.36
Child Calming Screen Time	.29	.13	.12*	2.21	.03
Sleep Duration	.29	.19	.08	1.52	.13
Parent-Child Interaction	-.00	.00	-.14**	-2.71	.01

Note. Significant level = * $p < .05$, ** $p < .01$, $F = 5.10$, $R = .27$, $R^2 = .07$, Adjusted $R^2 = .06$.

3.6 Mediation Analysis

Mediation analysis is unable to be conducted to determine the mediating effect of sleep duration and parent-child interaction between screen time and psychosocial adjustment, as screen time did not show a significant correlation with psychosocial adjustment as an overall. Pearson's correlation results between subscales of screen time and psychosocial adjustment revealed that child entertainment screen time correlated significantly with peer problems in psychosocial adjustment, while child calming screen time correlated significantly with two dimensions in psychosocial adjustment, which were hyperactivity and total difficulties.

4. Conclusion

The current study has important practical implications in the child development and education field. Policies can be developed and implemented to improve psychosocial wellbeing of children. Besides, this study increases the awareness of the importance of psychosocial adjustment among parents and educators in nurturing children. This would help parents and teachers have a better understanding of children. Hence, parents can adapt to more suitable parenting practices when caring for their children while teachers can also utilize teaching materials/methods to enhance children's development in terms of the psychosocial aspect. Implications of the study can be taken into consideration in the pre-service and in-service training of teachers. Psychosocial aspect of children should be emphasized in these trainings and teachers should be trained to implement educational approaches that can have a positive impact on enhancing students' outcomes holistically. Teachers should learn to be more aware of psychosocial concerns in children, for instance emotional issues and conduct problems. Identifying the signs and managing the concerns effectively are crucial as improper handling of these concerns may have adverse consequences in children's development in the long term. Thus, pre-service training should prepare teachers for classroom practice by including a strong practicum component besides requiring them to acquire knowledge in the education field. The practicum component should incorporate various scenarios depicting psychosocial issues that are commonly presented by children to better prepare teachers in dealing with the issues. In addition, guidelines for teachers in utilizing media for education purposes can be set to ensure that children's psychosocial development is well taken care of in classroom learning. Media content used in teaching should be appropriate to children's developmental level. Regarding in-service training of teachers, continuous professional development courses and programs focusing on the psychosocial adjustment of children can be held constantly to equip teachers with up-to-date information in this aspect. Perhaps future research topics should also take into consideration the component of classroom teaching and learning in affecting children's psychosocial adjustment besides including factors that are more relevant to parents' nurturing practice like screen time and parent-child interaction. This would certainly be able to provide a more comprehensive perspective concerning factors that affect children's psychosocial adjustment.

Nevertheless, there are some limitations in the current study. The study focused on only one self factor, which is sleep duration, and one environmental factor, which is parent-child interaction, in determining whether they mediate the relationship between screen time and psychosocial adjustment. However, various factors may be associated with psychosocial adjustment in children. Future studies can explore on other factors that may be related to psychosocial adjustment and variables that may mediate the relationship between screen time and psychosocial adjustment. Besides that, the sample for the current study is parents of preschool children in Selangor, Malaysia. The data collected is unable to be generalized to preschool children staying in other states in Malaysia or other countries, especially countries which have a different culture or practice with Malaysia. Upcoming research can involve preschool children in other states of Malaysia as well as from other countries. The results in this study are also limited to children at the preschool age group only. Thus, it is unable to represent individuals from other developmental stages such as adolescents and adults. In addition, the current study is cross-sectional, as it only involves studying data from a population at one specific point in time. Happenings that children went through prior to the study which may affect their psychosocial adjustment are not known to the researcher. Collection of data is only carried out once, therefore comparisons of various information are unable to be made for each of the children. Longitudinal study can be carried out to enable multiple times of data collection. Specific interventions can be introduced throughout this period of time to determine their effectiveness in children's psychosocial adjustment, and comparisons can be made for each child before and after they undergo the interventions. Data collection in this study was mostly conducted online due to the uncertain pandemic situation. Virtual communication was not really effective throughout the data collection process. Thus, paper-and-pencil survey method of data collection can be employed with care in post-pandemic future. Furthermore, data in this study were self-reported through survey questionnaire method. Therefore, responses may not be fully accurate. Other methods such as interviews and observations can be utilized or combined with survey to collect data related to this study in future.

In sum, results in this study demonstrated that screen time, particularly general and calming screen time correlated significantly with parent-child interaction. Although screen time, sleep duration, and parent-child interaction did not have a significant correlation with psychosocial adjustment as overall, there were some significant correlation when the variables were analyzed as subscales. Besides, boys are more likely to exhibit hyperactivity, peer problems and total difficulties while girls are more likely to portray prosocial behaviour. This study also revealed several predictors of psychosocial adjustment among children, which were father's years of education, parent-child interaction, child calming screen time, and child's gender.

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References

- Acar, I. H., Uçuş, Ş., & Yıldız, S. (2017). Parenting and Turkish children's behaviour problems: the moderating role of qualities of parent-child relationship. *Early Child Development and Care, 189*(7), 1072-1085. <https://doi.org/10.1080/03004430.2017.1365362>
- Alavi, N., Roberts, N., & DeGrace, E. (2015). Comparison of parental socio-demographic factors in children and adolescents presenting with internalizing and externalizing disorders. *International Journal of Adolescent Medicine and Health, 29*(2). <https://doi.org/10.1515/ijamh-2015-0049>
- Bandura, A. (1989). Social cognitive theory. *Annals of Child Development, 6*, 1-60. Retrieved from <https://www.uky.edu/~eushe2/Bandura/Bandura1989ACD.pdf>
- Bayes, D. M., & Bullock, B. (2020). Sleep problems in school aged children: A common process across internalising and externalising behaviours? *Clocks & Sleep, 2*(1), 7-18. <https://doi.org/10.3390/clockssleep2010002>
- Bozzola, E., Spina, G., Ruggiero, M., Memo, L., Agostiniani, R., Bozzola, M., Corsello, G., & Villani, A. (2018). Media devices in pre-school children: The recommendations of the Italian pediatric society. *Italian Journal of Pediatrics, 44*(69). <https://doi.org/10.1186/s13052-018-0508-7>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press. Retrieved from https://khoerulanwarbk.files.wordpress.com/2015/08/urie_bronfenbrenner_the_ecology_of_human_develop_bokos-z1.pdf
- Christakis, D. A. (2009). The effects of infant media usage: What do we know and what should we learn? *Acta Paediatrica, 98*, 8-16. <https://doi.org/10.1111/j.1651-2227.2008.01027.x>
- Christakis, D. A., Zimmerman, F. J., DiGiuseppe, D. L., & McCarty, C. A. (2004). Early television exposure and subsequent attentional problems in children. *Pediatrics, 113*, 708-713. <https://doi.org/10.1542/peds.113.4.708>
- David, L. (2014, July 23). *Erikson's stages of development*. Learning Theories. Retrieved from <https://www.learning-theories.com/eriksons-stages-of-development.html>
- Department of Statistics Malaysia. (2020). *Education Statistics*. Retrieved from https://www.dosm.gov.my/v1/index.php?r=column/cthree&menu_id=Z1hCMUUVLQWVOL2tScVlhSmo5cEd3QT09
- Erskine, R. (2019). Child development in integrative psychotherapy: Erik Erikson's first three stages. *International Journal of Integrative Psychotherapy, 10*.
- Firouzi, S., Poh, B. K., Noor, M. I., & Sadeghilar, A. (2013). Sleep pattern and sleep disorders among a sample of Malaysian children. *Sleep and Biological Rhythms, 11*(3), 185-193. <https://doi.org/10.1111/sbr.12020>
- Gadaire, D. M., Henrich, C. C., & Finn-Stevenson, M. (2016). Longitudinal effects of parent-child interactions on children's social competence. *Research on Social Work Practice, 27*(7). <https://doi.org/10.1177/1049731516632592>
- Genuneit, J., Brockmann, P. E., Schlarb, A. A., & Rothenbacher, D. (2018). Media consumption and sleep quality in early childhood: Results from the Ulm SPATZ Health Study. *Sleep Medicine, 45*, 7-10. <https://doi.org/10.1016/j.sleep.2017.10.013>
- Ginsburg, K. R., American Academy of Pediatrics Committee on Communications, & American Academy of Pediatrics Committee on Psychosocial Aspects of Child and Family Health. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics, 119*(1), 182-191. <https://doi.org/10.1542/peds.2006-2697>
- Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry, 38*(5), 581-586. <https://doi.org/10.1111/j.1469-7610.1997.tb01545.x>
- Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child & Adolescent Psychiatry, 40*(11), 1337-1345.

<https://doi.org/10.1097/00004583-200111000-00015>

- Guerrero, M. D., Barnes, J. D., Chaput, J-P., & Tremblay, M. S. (2019). Screen time and problem behaviors in children: Exploring the mediating role of sleep duration. *International Journal of Behavioral Nutrition and Physical Activity*, *16*(105). <https://doi.org/10.1186/s12966-019-0862-x>
- Hendry, R. S. (2017). *Investigating relationships between screen time and young children's social emotional development* (Master's thesis, The University of British Columbia, Canada). Retrieved from <https://open.library.ubc.ca/cIRcle/collections/graduateresearch/42591/items/1.0348154>
- Hollenstein, T., Granic, I., Stoolmiller, M., & Snyder, J. (2004). Rigidity in parent-child interactions and the development of externalizing and internalizing behavior in early childhood. *Journal of Abnormal Child Psychology*, *32*, 595-607. <https://doi.org/10.1023/B:JACP.0000047209.37650.41>
- Holzwarth, V. N. (2003). *Parent-child interaction: Development of measure for a naturalistic setting* (Master's thesis, East Tennessee State University, United States). Retrieved from <https://dc.etsu.edu/cgi/viewcontent.cgi?article=1988&context=etd>
- Hosokawa, R., & Katsura, T. (2017). A longitudinal study of socioeconomic status, family processes, and child adjustment from preschool until early elementary school: The role of social competence. *Child and Adolescent Psychiatry and Mental Health*, *11*(62). <https://doi.org/10.1186/s13034-017-0206-z>
- Huang-Pollock, C., Shapiro, Z., Galloway-Long, H., & Weigard, A. (2017). Is poor working memory a transdiagnostic risk factor for psychopathology? *Journal of Abnormal Child Psychology*, *45*(8), 1477-1490. <https://doi.org/10.1007/s10802-016-0219-8>
- Hwang, Y., Choi, I., Yum, J-Y., & Jeong, S-H. (2017). Parental mediation regarding children's smartphone use: Role of protection motivation and parenting style. *Cyberpsychology, Behavior and Social Networking*, *20*(6), 362-368. <https://doi.org/10.1089/cyber.2016.0555>
- Idris, I. B., Barlow, J., & Dolan, A. (2019). A longitudinal study of emotional and behavioral problems among Malaysian school children. *Annals of Global Health*, *85*(1). <https://doi.org/10.5334/aogh.2336>
- Johnson, G. M., & Pupilampu, K. P. (2008). Internet use during childhood and the ecological techno-subsystem. *Canadian Journal of Learning and Technology*, *34*(1). <https://doi.org/10.21432/T2CP4T>
- Kerai, S., Almas, A., Guhn, M., Forer, B., & Oberle, E. (2022). Screen time and developmental health: results from an early childhood study in Canada. *BMC Public Health*, *22*(310). <https://doi.org/10.1186/s12889-022-12701-3>
- Longobardi, C., Settanni, M., Prino, L. E., Fabris, M. A., & Marengo, D. (2019). Students' psychological adjustment in normative school transitions From kindergarten to high school: Investigating the role of teacher-student relationship quality. *Frontiers in Psychology*, *10*(1238). <https://doi.org/10.3389/fpsyg.2019.01238>
- Magai, D. N., Malik, J. A., & Koot, H. M. (2018). Emotional and behavioral problems in children and adolescents in central Kenya. *Child Psychiatry and Human Development*, *49*(4), 659-671. <https://doi.org/10.1007/s10578-018-0783-y>
- Maguire, L. K., Niens, U., McCann, M., & Connolly, P. (2016). Emotional development among early school-age children: Gender differences in the role of problem behaviours. *Educational Psychology*, *36*(8), 1408-1428. <https://doi.org/10.1080/01443410.2015.1034090>
- Malaysian Communications and Multimedia Commission. (2018). *Internet Users Survey 2018*. Retrieved from <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/Internet-Users-Survey-2018.pdf>
- Ministry of Education Malaysia. (2020). *Quick Facts Malaysia Educational Statistics 2020*. Retrieved from <https://www.moe.gov.my/menumedia/media-cetak/penerbitan/quick-facts/3719-quick-facts-2020/file>
- Mohamed, S., & Toran, H. (2018). Family socioeconomic status and social-emotional development among young children in Malaysia. *Journal of Applied Sciences*, *18*(3), 122-128. <https://doi.org/10.3923/jas.2018.122.128>
- Niiranen, J., Kiviruusu, O., Vornanen, R., Saarenpää-Heikkilä, O., & Paavonen, E. J. (2021). High-dose electronic media use in five-year-olds and its association with their psychosocial symptoms: a cohort study. *BMJ Open*, *11*(3). <https://doi.org/10.1136/bmjopen-2020-040848>
- Olszewski, L. E. (2015). *Screen time exposure and children's behavioral correlates* (Doctoral dissertation, Pace University, New York City, United States).

- Owens, J. A., Spirito, A., & McGuinn, M. (2000). The children's sleep habits questionnaire (CSHQ): Psychometric properties of a survey instrument for school-aged children. *Sleep, 23*(8). Retrieved from <https://depts.washington.edu/dbpeds/Screening%20Tools/CHSQ%20article.pdf>
- Palmer, F. B., Graff, J. C., Jones, T. L., Murphy, L. E., Keisling, B. L., Whitaker, T. M., Wang, L., & Tylavsky, F. A. (2018). Socio-demographic, maternal, and child indicators of socioemotional problems in 2-year-old children: A cohort study. *Medicine, 97*(28). <https://doi.org/10.1097/MD.00000000000011468>
- Piqueras, J. A., Mateu-Martínez, O., Cejudo, J., & Pérez-González, J-C. (2019). Pathways into psychosocial adjustment in children: Modeling the effects of trait emotional intelligence, social-emotional problems, and gender. *Frontiers in Psychology, 10*(507). <https://doi.org/10.3389/fpsyg.2019.00507>
- Poulain, T., Ludwig, J., Hiemisch, A., Hilbert, A., & Kiess, W. (2019). Media use of mothers, media use of children, and parent-child interaction are related to behavioral difficulties and strengths of children. *International Journal of Environmental Research and Public Health, 16*(23). <https://doi.org/10.3390/ijerph16234651>
- Przybylski, A. K. (2019). Digital screen time and pediatric sleep: Evidence from a preregistered cohort study. *The Journal of Pediatrics, 205*, 218-223. <https://doi.org/10.1016/j.jpeds.2018.09.054>
- Ranum, B. M., Wichstrøm, L., Pallesen, S., Falch-Madsen, J., Halse, M., & Steinsbekk, S. (2019). Association between objectively measured sleep duration and symptoms of psychiatric disorders in middle childhood. *JAMA Network Open, 2*(12). <https://doi.org/10.1001/jamanetworkopen.2019.18281>
- Rohlf, H. L., Holl, A. K., Kirsch, F., Krahé, B., & Elsner, B. (2018). Longitudinal links between executive function, anger, and aggression in middle childhood. *Frontiers in Behavioral Neuroscience, 12*(27). <https://doi.org/10.3389/fnbeh.2018.00027>
- Scharf, R. J., & DeBoer, M. D. (2015). Sleep timing and longitudinal weight gain in 4- and 5-year-old children. *Pediatric Obesity, 10*(2), 141-148. <https://doi.org/10.1111/ijpo.229>
- Scharf, R. J., Demmer, R. T., Silver, E. J., & Stein, R. E. K. (2013). Nighttime sleep duration and externalizing behaviors of preschool children. *Journal of Developmental and Behavioral Pediatrics, 34*(6), 384-391. <https://doi.org/10.1097/DBP.0b013e31829a7a0d>
- Shin, W., & Li, B. J. (2017). Parental mediation of children's digital technology use in Singapore. *Journal of Children and Media, 11*(1), 1-19. <https://doi.org/10.1080/17482798.2016.1203807>
- Skaug, S., Englund, N., & Wichstrøm, L. (2018). Young children's television viewing and the quality of their interactions with parents: A prospective community study. *Scandinavian Journal of Psychology, 59*(5). <https://doi.org/10.1111/sjop.12467>
- Šmahelová, M., Juhová, D., Cermak, I., & Smahel, D. (2017). Mediation of young children's digital technology use: The parents' perspective. *Cyberpsychology, 11*(3). <https://doi.org/10.5817/CP2017-3-4>
- Stockdale, L. A., Coyne, S. M., & Padilla-Walker, L. M. (2018). Parent and child technofence and socioemotional behavioral outcomes: A nationally representative study of 10- to 20-year-old adolescents. *Computers in Human Behavior, 88*, 219-226. <https://doi.org/10.1016/j.chb.2018.06.034>
- Stone, L. L., Janssens, J. M. A. M., Vermulst, A. A., Der Maten, M. V., Engels, R. C. M. E., & Otten, R. (2015). The Strengths and Difficulties Questionnaire: Psychometric properties of the parent and teacher version in children aged 4-7. *BMC Psychology, 3*(1). <https://doi.org/10.1186/s40359-015-0061-8>
- Sundus, M. (2018). The impacts of using gadgets in children. *Journal of Depression and Anxiety, 7*(1). <https://doi.org/10.4172/2167-1044.1000296>
- Taveras, E. M., Gillman, M. W., Peña, M-M., Redline, S., & Rifas-Shiman, S. L. (2014). Chronic sleep curtailment and adiposity. *Pediatrics, 133*(6), 1013-1022. <https://doi.org/10.1542/peds.2013-3065>
- Vargas, B., Leiva, L., Rojas-Andrade, R., & Scquicciarini, A. M. (2019). Effects of psychosocial adversity on school maladjustment: A follow-up of primary school students. *Psicología Educativa, 25*(2), 101-108. <https://doi.org/10.5093/psed2019a10>
- Vriend, J. L., Davidson, F. D., Corkum, P. V., Rusak, B., Chambers, C. T., & McLaughlin, E. N. (2013). Manipulating sleep duration alters emotional functioning and cognitive performance in children. *Journal of Pediatric Psychology, 38*(10), 1058-1069. <https://doi.org/10.1093/jpepsy/jst033>
- Warren, C., Riggs, N., & Pentz, M. A. (2016). Executive function mediates prospective relationships between sleep duration and sedentary behavior in children. *Preventive Medicine, 91*, 82-88.

<https://doi.org/10.1016/j.jpmed.2016.07.024>

- Wilke, F., Hachfeld, A., & Anders, Y. (2017). How is participation in parent-child-interaction-focused and parenting-skills-focused courses associated with child development? *Early Years*, 38(4), 411-428. <https://doi.org/10.1080/09575146.2017.1288089>
- Wong, T. K. Y., Konishi, C., & Kong, X. (2020). A longitudinal perspective on frequency of parent-child activities and social-emotional development. *Early Child Development and Care*. <https://doi.org/10.1080/03004430.2020.1765773>
- Wu, X., Tao, S., Rutayisire, E., Chen, Y., Huang, K., & Tao, F. (2016). The relationship between screen time, nighttime sleep duration, and behavioural problems in preschool children in China. *European Child and Adolescent Psychiatry*, 26(5). <https://doi.org/10.1007/s00787-016-0912-8>
- Xie, G., Deng, Q., Cao, J., & Chang, Q. (2020). Digital screen time and its effect on preschoolers' behavior in China: results from a cross-sectional study. *Italian Journal of Pediatrics*, 46(9). <https://doi.org/10.1186/s13052-020-0776-x>
- Yoleri, S. (2015). Preschool children's school adjustment: Indicators of behaviour problems, gender, and peer victimisation. *Education 3-13 International Journal of Primary, Elementary and Early Years Education*, 43(6), 628-638. <https://doi.org/10.1080/03004279.2013.848915>
- Yoleri, S., & Seven, S. (2014). Analyzing effect of age and sex differences on prosocial behavior of preschool children. *The Journal of Academic Social Science Studies*, 29, 261-270. <https://doi.org/10.9761/JASSS2425>
- Zhao, J., Zhang, Y., Jiang, F., Ip, P., Ho, F. K. W., Zhang, Y., & Huang, H. (2018). Excessive screen time and psychosocial well-being: The mediating role of body mass index, sleep duration, and parent-child interaction. *The Journal of Pediatrics*, 202, 157-162. <https://doi.org/10.1016/j.jpeds.2018.06.029>
- Zimmerman, F. J., & Christakis, D. A. (2007). Associations between content types of early media exposure and subsequent attentional problems. *Pediatrics*, 120, 986-992. <https://doi.org/10.1542/peds.2006-3322>

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