

WHEN PARENTS PHUB: INVESTIGATING ITS RELATIONSHIP WITH CHILDREN'S  
DIGITAL AND PROBLEM BEHAVIOURS

A Thesis Submitted to the Committee on Graduate Studies in Partial Fulfillment of the  
Requirements for the Degree of Master of Science in the Faculty of Arts and Science

TRENT UNIVERSITY

Peterborough, Ontario, Canada

© Copyright by Tiana Vandendort 2025

Psychology M.Sc. Graduate Program

September 2025

## **Abstract**

### **When Parents Phub: Investigating its Relationship with Children's Digital and Problem Behaviours**

Tiana Vandendort

In today's digital era, smartphone use is having a profound effect on family life. There is growing concern about parental phubbing, which occurs when parents ignore their children in favour of using their phones. This study examined how parental phubbing was associated with children's problematic media use (PMU), and problem behaviours (internalizing, externalizing, attention) during middle childhood. The role of the parent-child relationship, measured by closeness and conflict, was also explored given its well-established influence on child development. Participants included 99 parents/guardians of 6-8-year-olds and 87 parents/guardians of 9-12-year-olds. Data on all variables were collected through online surveys. Across both groups, phubbing was associated with children's PMU. Among the 6-8-year-old's, phubbing was also linked to internalizing and externalizing problems. In this age group, parent-child closeness buffered phubbing effects while conflict mediated the relationship between phubbing and children's behaviour. These findings enhance our understanding of parental phubbing within Canadian family contexts.

**Keywords:** phubbing, problematic media use, problem behaviours, parent-child relationship, middle childhood

## Acknowledgements

First, I would like to acknowledge and convey my profound gratitude to my supervisor, Dr. Mowei Liu, for her invaluable guidance, encouragement, and mentorship. Dr. Liu has played a pivotal role in my academic development, having supported me since my undergraduate years. I am extremely thankful for all the opportunities she has provided and the knowledge I have gained under her supervision. Without her belief in my abilities and constant support, this thesis would not have been possible.

I would also like to extend my sincere thanks to my committee members, Dr. Karen Blair and Dr. Pan Liu for the time and effort they dedicated to helping me complete this project.

A huge thank you as well to Yuke Fu. Yuke has been a source of invaluable guidance in the lab, and I feel incredibly fortunate to have worked with her. I am deeply grateful for her patience, thoughtful feedback, and unwavering support throughout every step of the process. Special thanks also to Rebecca Robertson, Hayley Hartwick, and Shreyya Kesavan for their help and encouragement throughout this project.

Finally, I would like to thank my family, Dina Burkett, Hank Vandendort, Kadin Vandendort, my friend Claire Christmas and Ryan Austin for their constant emotional support and motivation throughout this journey and during my time at Trent University.

This research was supported by funding from the Social Sciences and Humanities Research Council of Canada, and I gratefully acknowledge their support.

## Table of Contents

Abstract.....	ii
Acknowledgements.....	iii
List of Figures.....	vi
List of Tables.....	vii
When Parents Phub: Investigating its Relationship with Children's Digital and Problem Behaviours.....	
Behaviours.....	1
Phubbing.....	2
Background.....	2
Phubbing in the Parent-Child Context.....	4
Problematic Media Use.....	5
Parental Phubbing and Problematic Media Use.....	7
Problem Behaviours.....	9
Parental Phubbing and Problem Behaviours.....	10
Internalizing Problems.....	12
Externalizing Problems.....	12
Attention Problems.....	13
Parent-Child Relationship.....	13
Moderating effect.....	16
Mediating effect.....	17
The Present Study.....	20
Parental Phubbing and Child Outcomes.....	21
Parent-Child Relationship as a Moderator.....	22
Parent-Child Relationship as a Mediator.....	22
Methods.....	24
Participants.....	24
Procedure.....	25

Measures .....	26
Parental Phubbing .....	26
Problematic Media Use.....	26
Problem Behaviours.....	26
Parent-Child Relationship.....	27
Data Analyses .....	27
Results.....	29
Correlations.....	30
Partial Correlations .....	30
Moderation .....	34
6-8-year-old's.....	34
9-12-year-old's.....	36
Mediation .....	37
Discussion.....	41
Associations Between Parental Phubbing and Child Outcomes.....	41
Problematic Media Use.....	41
Problem Behaviours.....	42
The Moderating Role of the Parent-Child Relationship .....	44
The Mediating Role of the Parent-Child Relationship .....	45
Problematic Media Use.....	46
Problem Behaviours.....	47
Parent-Child Closeness versus Conflict.....	48
Limitations, Future Directions, and Implications .....	49
Conclusion .....	50
References.....	52
Appendices .....	75

## List of Figures

<b>Figure 1</b>	Proposed Moderation Model .....	23
<b>Figure 2</b>	Proposed Mediation Model .....	24
<b>Figure 3</b>	Simple Moderation Between Parental Phubbing and Children’s Externalizing Problems by Parent-Child Closeness for 6-8-year-old’s. ....	35
<b>Figure 4</b>	Johnson-Neyman Plot of Moderation Between Parental Phubbing and Children’s Externalizing Problems by Parent-Child Closeness for 6-8-year-old’s. ....	36
<b>Figure 5</b>	Mediation Model of the Parent-Child Relationship on the Association Between Parental Phubbing and Children’s Problematic Media Use for 6-8-year-old’s .....	40
<b>Figure 6</b>	Mediation Model of the Parent-Child Relationship on the Associations Between Parental Phubbing and Children’s Internalizing and Externalizing Problems for 6-8-year-old’s .....	40

## List of Tables

<b>Table 1</b>	Means, Standard Deviations, Minimum and Maximum Values of Parental Behaviours, Parent-Child and Child Variables .....	29
<b>Table 2</b>	Spearman’s Correlations among Parent, Child, Parent-Child Variables and Confounding Variables in 6-8-year-old’s .....	31
<b>Table 3</b>	Spearman’s Correlations among Parent, Child, Parent-Child Variables and Confounding Variables in 9-12-year-old’s .....	32
<b>Table 4</b>	Partial Spearman’s Correlations Between Parental Phubbing, Children's PMU, Problem Behaviours and the Parent-Child Relationship .....	33
<b>Table 5</b>	Results of Mediation Analysis for 6-8-year-old’s.....	39

## **When Parents Phub: Investigating its Relationship with Children's Digital and Problem Behaviours**

Within the past two decades, the use of smartphones in everyday family life has increased substantially (Wang et al., 2020). The 2020 Canadian Internet Use Survey found that most Canadians (84%) had a smartphone for personal use, with the highest rates among adults aged 25 to 34 (97%) and 35 to 44 (96%; Statistics Canada, 2020). Researchers have expressed concern about parents' growing smartphone use, as recent studies have found smartphones distract caregivers and reduce their responsiveness to children (Kushlev & Dunn, 2019; Radesky et al., 2014). Recently, the term "phubbing," a combination of the words "phone" and "snubbing," has gained attention. Phubbing refers to the act of ignoring someone in a social context in favour of using one's phone (Chotpitayasunondh & Douglas, 2016). Within the family context, parental phubbing has been identified as a common negative parenting behaviour that decreases parent-child interaction quality (McDaniel & Coyne, 2016; Wang, Qiao, et al., 2022). As positive parent-child interactions are crucial for children's healthy development (Radesky et al., 2014), it is important to understand how parental phubbing may be associated with children's problem behaviours.

Furthermore, since parents are typically children's primary role models (Bandura, 1971), they may implicitly influence their children's digital habits through their own phone behaviour. This is likely to have a serious impact on children's problematic media use, which refers to children's excessive use of screen media devices that interferes with children's functioning. Children's problematic media use has been associated with various negative outcomes such as depression and lower academic achievement (Domoff et al., 2019; Rega et al., 2023), emphasizing the importance of further investigating possible antecedents of this behaviour, such

as parental phubbing. Lastly, because phubbing takes place during parent-child interactions, it is also important to consider the role of the parent-child relationship in shaping children's problematic media use and behaviours. Considering the parent-child relationship has been well established as greatly influencing a child's development (Popov & Ilesanmi, 2015), it may also impact how parental phubbing affects children's development. Altogether, this study aims to investigate the relationships between parental phubbing, children's problematic media use and behaviours within a Canadian context, and how the parent-child relationship may influence these associations.

## **Phubbing**

### ***Background***

In 2007, mobile phone sales were at an unprecedented high, and the release of the first iPhone transformed the mobile market with its numerous technological advancements (Elhai et al., 2017). As a result of this surge in digital sales, people's daily phone use was also increasing (Samkange-Zee et al., 2009). Researchers expressed concern about this trend, as they worried that the quality of social interactions between individuals may decline with an increase in smartphone usage (Garrido et al., 2021; Varoth & Douglas, 2016). When people were on their phones, they tended to ignore others in their immediate surroundings (Nazir & Piskin, 2016). In 2012, a team from Macquarie Dictionary coined the word "phubbing" to describe this behaviour, a portmanteau of the words "phone" and "snubbing" (Macquarie Dictionary, 2013). Phubbing describes the act of ignoring someone in a social setting by using one's phone instead of engaging in conversation with the person present (Macquarie Dictionary, 2013). Phubbing can occur in any setting, by anyone, at any time (i.e., at work, during a meal, social gatherings, etc.; Nazir & Piskin, 2016). After suggesting this term, Macquarie Dictionary partnered with the

advertising company McCann Melbourne and launched a “Stop Phubbing” campaign (Garrido et al., 2021), which raised awareness about the behaviour and contributed to growing academic interest about phubbing.

At the same time, a similar concept called technology interference, or “technoferece,” was being investigated, defined as interruptions or intrusions in interactions that occur because of technology (Solecki, 2022). Although these terms have often been used interchangeably within research, it is important to distinguish between these two concepts as they describe different aspects of one’s smartphone use. For example, *technoferece* includes disruptions from a large variety of technology (i.e., computers, television, tablets etc.; Frackowiak et al., 2023), while phubbing solely focuses on the effects of smartphone interruptions. Some researchers suggest that technoferece serves as an umbrella term for overall disruptions of communication (e.g., receiving an incoming text message), whereas phubbing more specifically refers to the act of turning one’s gaze away from the person in front of them to focus on their phone, often for extended periods (e.g., engaging in a text conversation; Braune-Krickau et al., 2021; Solecki, 2022). These concepts also differ in their possible effects, with technoferece increasing the total number of interruptions in communication, whereas phubbing increases the chances of the other person feeling ignored (Frackowiak et al., 2023). As a whole, technoferece describes an objective behaviour of technology interrupting interactions, while phubbing relates to the more subjective experience of smartphone use (Frackowiak et al., 2023). While both concepts provide important insights into the direct effects of technology use, due to the prevalence of smartphone use specifically within the parent-child relationship (Chotpitayasunondh & Douglas, 2016), the present study focuses solely on the effects of phubbing.

Initial research on phubbing examined its impact within a variety of different contexts, such as marital, romantic (Chotpitayasunondh & Douglas 2016), and supervisor-employee relationships (Roberts & David, 2016). In general, phubbing has been associated with decreased relationship satisfaction (Roberts & David, 2016), reduced employee engagement (Roberts & David, 2017), and overall poorer-quality communication (Abeele et al., 2016). Engaging in phubbing during a face-to-face conversation disrupts feelings of a shared presence (Kadylak et al., 2018) and leaves an impolite impression on the other person (Abeele et al., 2016). In light of these findings, phubbing has been identified as a risk factor for both interpersonal relationships and mental health (Xie & Xie, 2019). Furthermore, phubbing is considered a problematic behaviour that holds serious consequences for both the phubber and the person being phubbed (Chotpitayasunondh & Douglas, 2016).

### ***Phubbing in the Parent-Child Context***

Parental phubbing describes the act of parents using their phones during a parent-child interaction, which may lead to the child feeling ignored or excluded (Xie & Xie, 2020). It has been characterized as a form of social exclusion, neglect, and poor parenting style that can result in a variety of negative child outcomes (Xu & Xie, 2023). Some studies have examined the effects of phubbing on preschoolers, finding that parental phubbing is positively associated with increased social withdrawal (Zhang et al., 2021), greater electronic media use (Li et al., 2024), and negatively associated with preschoolers' prosocial behaviour (Shi, 2024). However, the majority of research on parental phubbing has focused on its effects within parent-adolescent relationships. For instance, parental phubbing has been positively associated with adolescent depression (Wang et al., 2020; Xie & Xie, 2020), problematic phone use (Geng et al., 2021; Niu et al., 2020), mobile phone addiction (Xie & Xie, 2019), and internalizing problems (Wang et al.,

2020; Xie & Xie, 2020). Phubbing also significantly decreases adolescent prosocial behaviour (Xu & Xie, 2023) and parent-adolescent relationship quality (Solecki, 2022). Overall, when parents phub, adolescents report feeling rejected, less important, and perceive less parental warmth (Xie & Xie, 2020). Adolescents who experience being phubbed by their parents are also more likely to engage in similar phubbing behaviours themselves (Tong et al., 2023). This suggests that parents' digital habits, such as phubbing, play a significant role in shaping their children's digital behaviours.

### **Problematic Media Use**

One digital behaviour of particular interest is children's problematic media use (PMU), which refers to children's excessive and troublesome use of digital technologies (e.g., videogames, smartphones, tablets, etc.) that negatively impacts their social, behavioural, or academic development (Domoff et al., 2019). Over the past decade, research has consistently noted that children's use of digital devices, specifically smartphones and tablets, has increased amongst school-age children (Domoff et al., 2020; Rega et al., 2023). This increase can be partially explained by recent advancements in platforms and apps, which have become more user-friendly and attractive to younger users (Domoff et al., 2020). Furthermore, following the COVID-19 pandemic, research on problematic media use has become even more pertinent, as the temporary shift to online services and functions (i.e., school, work) transformed digital environments within families and further accelerated children's media use (Eales et al., 2022; Kroshus et al., 2022). Three-quarters of Canadian parents admit to being concerned about their child's digital use, as children's need to engage with digital media continues to grow in both home and educational settings (Canadian Pediatric Society, 2019).

It is important to highlight that problematic media use is not determined solely by whether one has exceeded a certain number of hours of screen time. The “problematic” component of *problematic media use* refers to a child’s excessive use of media that interferes with the child’s functioning, such as a diminished interest in activities and engaging in deceptive behaviours related to media use (Domoff et al., 2020). Similar to phubbing, most of the work investigating PMU has been conducted with the adolescent or adult populations (Geng et al., 2021; Wang et al., 2020; Xie & Xie, 2020). This is problematic, as researchers have identified that overexposure to media in childhood can have serious consequences on children’s development (Rega et al., 2023). These consequences can include academic difficulties (Adelantado-Renau et al., 2019), poorer self-regulation skills (Inoue et al., 2016), and increased attention problems (Swing et al., 2010).

Problematic media use has harmful effects on both children’s physical and mental health development (Domoff et al., 2019). For instance, Rega et al. (2023)’s review highlighted associations between children’s PMU and problematic behaviours, lower emotional intelligence, higher depressive symptoms, and sleep problems. Additionally, Takahashi et al. (2018) identified that children’s problematic internet use significantly increased with age and school grade, likely as a result of children gaining more independence over their devices as they approached adolescence. Gender differences have also been found in rates of problematic media use in children (Kroshus et al., 2022), with boys having higher PMU than girls. This is in line with research suggesting that boys tend to spend more time on devices playing games, whereas girls are more likely to use devices for social media, which they tend not to have access to in childhood (Abdullah et al., 2022). Beyond age and gender, cultural differences have been identified, with a slightly higher percentage of children classified as problematic media users in

Eastern countries than in Western countries (Rega et al., 2023). However, it is possible this difference may be unrelated to cultural effects and rather a result of the limited amount of research that has been conducted on PMU within Western countries (Rega et al., 2023).

Several risk factors for children's problematic media use have been identified, including children's early exposure to mobile device use, higher levels of internalizing and externalizing symptoms, and executive function problems (Rega et al., 2023). Additionally, family-related influences (e.g., parenting style, parental neglect, parental monitoring) play a significant role in children and adolescents developing problematic media use (Niu et al., 2020). To better understand why these factors may have a large influence over children's PMU, it is helpful to examine key developmental frameworks that explain how problematic media use emerges.

### ***Parental Phubbing and Problematic Media Use***

Domoff et al. (2020) recently proposed the Interactional Theory of Childhood Problematic Media Use (IT-CPU) to explain the different types of factors involved in the development of problematic media use. This framework originally draws from Bronfenbrenner (1979), who proposed that there were different spheres of influence in which children developed, and these spheres interacted with one another. Bronfenbrenner also coined the Process-Person-Context-Time model (PPCT), which consisted of both proximal and distal processes contributing towards an individual's development. The microsystem is the innermost layer of this model, consisting of an individual's immediate environment, including people they interact with daily, such as parents, other family members, and friends. Individuals in this layer have the most direct and powerful impact on children's habits and development (Bronfenbrenner & Morris, 2006). When considering PMU, this model suggests that the individuals closest to the child (i.e., parents) will impact proximal and situational factors that lead to screen media use and the

emergence of problematic use (Domoff et al. 2020). Furthermore, the outer layers in the PPCT (e.g., ecosystem) encompass more distal factors relating to the emergence of problematic media use, such as family socio-economic status. In addition to proximal and distal factors, Domoff et al.'s (2020) IT-CPU suggests there are maintaining factors that contribute to the development of PMU. These maintaining factors draw from social learning and behaviour principles (e.g., reinforcement) and interact with proximal factors to contribute to and sustain PMU during childhood. Considering this model in the context of the present study, parents' mobile phone use and habits (i.e., phubbing) can be considered a proximal factor that may directly impact children's problematic media use.

Beyond its role in the IT-CPU, Bandura's (1971) social learning theory can also be used separately to explain the relationship between parental phubbing and children's PMU. According to social learning theory (Bandura, 1971; Grusec, 2011), children adopt behaviours through observation and imitation, using parents as their main models. Therefore, it is likely that children's digital habits are also learned from observing their parents' or other caregivers' mobile device use. In line with this reasoning, if mothers are regularly preoccupied with their phones when around their children, their children may then imitate this behaviour and start using electronic devices themselves in a similar manner, which could lead to PMU. Previous studies have found positive correlations between parents' and children's excessive use of the Internet and mobile phones (Hefner et al., 2019) as well as between parental phubbing and children's levels of electronic media use (Wang et al., 2024).

Alternatively, the adverse outcomes of parental phubbing may explain its link to children's PMU. More specifically, phubbing has been identified as a form of exclusion, as parents who engage in this behaviour demonstrate a lack of responsiveness, engagement, and

warmth toward their child. Children who are repeatedly phubbed by their parents are likely to feel ignored and rejected (Niu et al., 2020) and, as a result, may turn to electronic media as a coping mechanism. In support of this reasoning, Chen et al. (2021) found parental rejection was positively associated with adolescent problematic mobile phone use. Altogether, consistent with these theories, previous research has established a link between parental phubbing and adolescent PMU (Geng et al., 2021; Hong et al., 2019; Niu et al., 2020; Liu et al., 2019, Wang, Qiao, et al., 2022) and preschooler PMU (Li et al., 2024; Zhang, Cao, et al., 2024; Zhang, Liu, et al., 2024). However, while phubbing has been shown to have harmful effects on children's digital behaviours, it can also impact children's behaviours in non-digital contexts.

### **Problem Behaviours**

Children's problem behaviours are defined as expressions of dysfunction (Mesman et al., 2001). In 1966, Achenbach first introduced the terms internalizing and externalizing problems to represent two factor-analytically derived groupings of behavioural, emotional, and social problems in children (Achenbach et al., 2016). More specifically, internalizing problems are defined as negative emotions experienced by the individual, and this group includes anxiety, depression, somatic complaints and withdrawn behaviour (Wang et al., 2024). On the other hand, externalizing problems are maladaptive behaviours that deviate from an individual's social norms, including oppositional (e.g., defiant), delinquent (e.g., rule-breaking), and aggressive behaviours (Liu et al., 2004). These groupings have since been recognized as some of the most widely used terms for classifying maladaptive behaviours and disorders in research (Achenbach et al., 2016). Externalizing problems are often comorbid with attention problems; however, they involve distinct behaviours that may influence and be influenced by the environment in different ways (Schmengler et al., 2023). More specifically, attention problems include children's

difficulties with inattention, distractibility, poor concentration, and sometimes impulsivity (Freidman, 2007). Attention problems are important to consider in addition to internalizing and externalizing problems as they constitute one of the main symptoms of attention-deficit hyperactivity disorder (ADHD), which is among the most common and increasingly prevalent neurobehavioural childhood disorder in the world (Espinet et al., 2022; Werling et al., 2022).

Targeting factors that may contribute to children's problem behaviours is critical, as social maladjustment can negatively impact many areas of a child's life. For example, children's problem behaviours have been linked to negative peer relationships (Sturaro et al., 2011; Ji et al., 2019), academic difficulties, dropout, and unemployment (Ashford et al., 2008; Oliver et al., 2020). Children's problem behaviours start to emerge during preschool years but continue to impact children throughout their development (Basten, 2016; Wang et al., 2024). Middle childhood (6-12) is a critical period for the development of problem behaviours, as children experience important socialization challenges, particularly at school. During this time, early signs of mental health, behavioural and learning challenges often become more apparent as children's problem behaviours begin to impact their school functioning and overall educational development (Achenbach et al., 1998; Ontario, 2022). Although children at this age begin to spend more time in environments outside of the home, parents still have a primary influence over their children's behavioural outcomes (Acar et al., 2017). This emphasizes the importance of identifying parental factors that may act as precursors to children's problem behaviours.

### ***Parental Phubbing and Problem Behaviours***

The family systems theory states that individuals can be best understood as interconnected with their family, with the family being an emotional unit (Cox & Paley, 2003). As a consequence of the family being an interdependent system, family members' experiences

are interrelated and can mutually influence each other (Cox & Paley, 2003; Wang et al., 2020). When considering the role of technology, according to this theory, devices such as phones have a vital role in family life and can impact family members' relationships and individuals' development (Coyne et al., 2014; Niu et al., 2020). In some contexts, technology can strengthen family bonds, for example, increasing communication through social networking or media (Coyne et al., 2014). However, technology can also cause disruptions within the system, such as when parents use it to phub, which may weaken relationship quality and negatively affect children's development and behaviour.

These disruptions and negative effects of technology can be further explained by the parental acceptance-rejection theory (Rohner et al., 2005). According to this theory, children desire acceptance from their parents and develop their perceptions, interpretations, and behaviours based on how they believe their parents view them (Rohner et al., 2005). However, when children feel they are lacking care, support, or warmth from their parents and thus perceive rejection, they become more vulnerable to behavioural and mental health problems. These effects are well supported by research, which has found parental rejection leads to psychological maladjustment and is associated with the emergence of problem behaviours in preschool children (Putnick et al., 2015). When parents consistently engage with their phones in the presence of their children (e.g., through phubbing), they impede their ability to attend to their children's needs, leading to feelings of neglect and rejection in children (Zhang et al., 2023). In line with these theories, recent research has also examined the relationship between parental phubbing and various child problem behaviours.

### ***Internalizing Problems***

The effects of parental phubbing on children's emotional well-being have been observed across various internalizing problems. For example, parental phubbing has been positively associated with depression in late childhood and adolescence (Xie & Xie, 2019; Yang et al., 2023), and predicts adolescents' depressive symptoms (Wang et al., 2020). In addition to depression, maternal phubbing is linked to adolescent loneliness (Wang, Zhao, et al., 2022). Furthermore, looking at preschoolers, Wang, Zhao, et al. (2022) reported that parental phubbing significantly and positively predicted children's social withdrawal. These findings suggest that when parents are focused on their phones, they may ignore their children's emotional needs, leading to an increase in internalizing symptoms (Zhang et al., 2023). Children might internalize feelings of being unworthy or incompetent, causing them to withdraw as a self-protective measure, which could contribute to loneliness and depression.

### ***Externalizing Problems***

Additionally, limited parental attention and responsiveness due to phone use may lead to children's externalizing problems (Zhang et al., 2023), as children may act out to gain their parents' attention or out of frustration. In line with this, parental phubbing was identified as significantly and positively predicting preschoolers' aggression (Wang, Qiao, et al., 2022). Zhao et al. (2023) and Yang et al. (2023) also discovered a positive correlation between parental phubbing and adolescent aggression. More specifically, Yang et al. (2023) found that parental phubbing positively predicted adolescents' reactive aggression, characterized by impulsive reactions aimed at reducing perceived threats (e.g., phubbing), such as by alleviating feelings of frustration and unfairness.

### ***Attention Problems***

To date, there is no research examining the relationship between parental phubbing and children's attention problems. However, broader research on parental technology use has shown that emerging adolescents who perceive their parents as frequently distracted by devices had higher levels of inattention and hyperactivity symptoms (Deneault et al., 2024). Similarly, parents reported greater problem behaviours in their children, including attention deficits, when technological interruptions occurred more frequently during their interactions, (McDaniel & Radesky, 2018a; 2018b). Other studies have found that increased parental device use during parent-child interactions was associated with lower attentional control ability in children and adolescents (Jiang et al., 2025; Qiao & Liu, 2020). Jiang et al. (2025) suggested this may be because when parents are easily distracted by mobile devices during interactions, it sets a negative example for children and hinders their ability to develop self-regulation skills.

Altogether, while some research has explored the link between parental phubbing and child problem behaviours, it has primarily focused on singular internalizing and externalizing problems (e.g., depression and aggression), and mostly within adolescent populations. The existing research and theoretical frameworks suggest that parents distracted phone use can lead to the development of maladaptive behaviours in children. In order to fully understand how phubbing may impact a child's development, it is helpful to consider the broader dynamics between parents and children.

### **Parent-Child Relationship**

Parent-child relationships are one of the most important bonds an individual will experience, as they greatly influence one's development and adaptation (McDaniel, 2019; Popov & Ilesanmi, 2015). This relationship is bidirectional in nature, meaning that the quality of the

connection is affected by characteristics of both the child and the parent (Bronfenbrenner & Morris, 2006). While it is important to acknowledge that both parents and children may influence the quality of their interactions with each other, the present study focuses solely on how parental factors, specifically phubbing, may alter this connection. With this in mind, high-quality parent-child relationships have been identified as protective in the health and well-being of children (Niu et al, 2020) and are important predictors of children's emotional and social well-being (Cox & Harter, 2003). On the other hand, lower-quality parent-child relationships can lead to feelings of rejection and social exclusion.

The study of parent-child relationships draws from Bowlby's (1988) attachment theory, which states that children form secure bonds with their primary caregiver, usually the mother or father, when they are provided with a sense of emotional support and security. Secure parent-child attachment is necessary in positively influencing children's future social, cognitive, and emotional development (Bowlby, 1988). These bonds are initially formed during infancy, when parents demonstrate consistent responsiveness to their child's needs, and result in children forming internal representations of relationships to use as a model for future relationships (Bowlby, 1988). In addition to attachment theory, the parent-child relationship is also developed and influenced by various internal and external factors of family, such as family structure, parenting style, and the communication between parent and child (Popov & Ilesanmi, 2015).

The parent-child relationship can be further divided into two main dimensions, relational closeness and conflict. Closeness refers to the emotional and behavioural bonds between the parent and child, commonly shown through warmth, trust, support, and communication (Xie et al., 2021). Children who experience warm and responsive parenting have better adjustment across developmental stages, such as better social competence (Driscoll, 2011; Luo & Qui,

2024). On the other hand, conflict refers to parent-child interactions involving behavioural opposition or overt disagreement (Yan et al., 2019). Conflict has been associated with children's maladjustment, such as higher levels of children's antisocial behaviour (Acar et al., 2018). Some researchers have argued that some parent-child conflict is normal and plays an important role in children's socialization, particularly constructive conflict, which involves negotiation, collaboration, and resolution (Driscoll, 2011). However, the present study only focused on non-constructive parent-child conflict. As children grow and mature, the parent-child relationship evolves and levels of closeness and conflict shift. For instance, in middle childhood, children's growing need for autonomy and individuality may lead to a decrease in relationship closeness with parents and an increase in conflict (Marceau et al., 2014). Altogether, a high-quality parent-child relationship is characterized by an intimate bond between the parent and child, high responsiveness, mutual respect and support (i.e., high levels of closeness, low levels of conflict; Liu et al., 2024). In contrast, a low-quality parent-child relationship generally involves conflicts and disputes over control, authority, obedience (i.e. low levels of closeness, high levels of conflict; Aloia & Warren, 2019; Goodman, Waters, & Thompson, 2012).

Advances in mobile and digital technology have considerably changed interactions and communication between parents and their children. When studying parents' phone use in playground and restaurant settings, three-quarters of observed parents and caregivers used their phones while supervising and eating with their children (Hiniker et al., 2015; Mangan et al., 2018; Radesky et al., 2014). Children report feeling irritated when their parents are on their devices instead of interacting with them (Sharaievska & Stodolska, 2016), and parents show a similar response to their children's media use (Hiniker et al., 2016), which may create a disrupted parent-child relationship. Considering these findings, it is possible that parental

phubbing may play a role in negatively impacting children's development through aversive parent-child relationships.

When determining the underlying influence of parent-child relationships on the connection between parental phubbing and child developmental outcomes, it is important to acknowledge its interactive nature. In other words, the parent-child relationship can be viewed from two perspectives: (1) as an already established relationship and (2) as an ongoing relationship. In the former, a pre-existing high-quality parent-child relationship may shield children from negative developmental outcomes, even in the presence of negative parenting behaviours such as phubbing (i.e., a moderating effect). On the other hand, when parents are not actively maintaining these relationships with their children through present family interactions (e.g., due to phubbing), children may eventually experience consequences (i.e., mediating effect). Therefore, using the parent-child relationship, two models are proposed to explain the effects of phubbing, PMU, and problem behaviours within a family context.

### ***Moderating effect***

Past literature has discovered the parent-child relationship can mitigate against the harmful effects of negative parental variables on children's development. For example, Zhu et al. (2023) found that the parent-child relationship significantly moderated the effects of parental behavioural and psychological control on adolescents' Internet addiction. It is reasonable to assume that the parent-child relationship may have a moderating effect, given that stable family environments play a crucial protective role in children's healthy development (Vanassche et al., 2014). Furthermore, because the parent-child relationship is formed at the earliest and most prolonged stage of life, a strong parent-child relationship is considered the most important protective factor for children (Thornton et al., 1995). Currently, there has been no research

investigating the moderating role of the parent-child relationship on phubbing. However, related research has identified strong parent-child relationships that foster secure attachment as protective factors in children's emotional and social development (Eisenberg et al., 2004; Hefner et al., 2019). When investigating the buffering effect of the parent-child relationship in children's PMU, Hefner et al. (2019) argued that secure attachments support the development of children's self-regulation skills, social competence, and secure relationships later in life that are all pivotal in children developing healthy involvement of devices. In line with this, Lei and Wu (2007) found adolescents' secure attachment to fathers protected them from problematic Internet use.

When considering children's problem behaviours, the stress-buffering model states that increased social support and positive relationships with others can protect against negative and potentially pathogenic influences of stressful events (Cohen & Wills, 1985). Parental phubbing has been associated with heightened stress in children, who exhibit increased heart rates, more negative emotions, and fewer positive emotions in response to this behaviour (Rozenblatt-Perkal et al., 2022; Stockdale et al., 2020). Therefore, it is possible that secure parent-child relationships, which help children cope effectively with stress, may protect them from the negative effects of phubbing. However, despite its protective role, the parent-child relationship is also susceptible to influence from parental behaviours, which can in turn negatively affect child development.

### ***Mediating effect***

According to the displacement hypothesis, parental phubbing is likely to undermine the quality of the parent-child relationship. This theory suggests that when parents frequently engage with media, they may have reduced meaningful interactions with their children, as they replace these interactions with more time spent on devices (Kraut et al., 1998; Valkenburg & Peter,

2007). In the context of phubbing, this displacement may reduce parental responsiveness and sensitivity, leading children to feel ignored and weakening the parent-child relationship (Kildare, 2017). Furthermore, when children try to initiate interaction, parents addicted to their phones are more likely to respond in a hostile and impassive manner, as well as view their child's communication as intrusive (Radesky et al., 2014; 2016). In line with this reasoning, Liu et al. (2024) found a correlation between higher parental engagement with mobile devices and more frequent parent-child conflicts. Additionally, Xu and Xie (2023) recently identified parental phubbing as being negatively correlated with parent-adolescent attachment. Altogether, existing research suggests that parental phubbing interferes with the development of a positive mother-child relationship.

The quality of the family environment and parent-child relationships is also crucial in the development and persistence of various problematic and addictive behaviours (Rega et al., 2023). According to attachment theory, when children's psychological needs are met with parental warmth and acceptance, children are more likely to seek comfort and support from their parents during distressing or challenging situations (Bowlby, 1982). Children who look for emotional support from their parents are therefore less likely to turn to the Internet and devices as a source of comfort or distraction, reducing the likelihood of developing addiction-like behaviours (Shen et al., 2023). This argument is well supported by research, for instance, in a longitudinal study, Qui et al. (2022) found that early parent-child relationships were negatively associated with adolescents' smartphone addiction. Likewise, a recent meta-analysis revealed negative associations between parent-child relationships and problematic internet use amongst children and adolescents aged 6 to 25 years (Zhu et al., 2022).

On the other hand, when parents are less responsive and more distant, they are likely to form an insecure relationship with their child, as they are unable to meet their child's needs (Bowlby, 1982; McDaniel et al., 2018). Insecure parent-child relationships can have adverse effects on a child's social and emotional well-being (Liu et al., 2024). For instance, insecurely attached children are more likely to develop anxiety and depression if they feel constant uncertainty about their caregivers' responses to their attachment-related needs (Madigan et al., 2013). Additionally, when parents consistently demonstrate unresponsive or rejecting caregiving, children may begin to isolate and withdraw themselves from both their parents and others as a way of coping with the negative caregiving experience (Manassis, 2011). Alternatively, children may perceive this negative treatment as normal and react to others similarly, typically through displaying aggressive and hostile behaviours (Madigan et al., 2013). Following this reasoning, poorer parent-child relationships have been linked to internalizing, externalizing (Acar et al., 2017; Achenbach & Dumenci, 2001; Madigan et al., 2013; Rothbum et al., 1995) and attention problems (Barkley et al., 1998; McKee et al., 2004; Podolski & Nigg, 2001) in children and adolescents.

Previous research has identified different aspects of parent-child relationships as important mediators between phubbing and child outcomes. For instance, Liu et al. (2024) found that parent-child conflict partially mediated the associations between parental phubbing and young children's electronic media use. Similarly, Niu et al. (2020) showed evidence that the parent-child relationship mediated the relationship between parental phubbing and adolescent problematic mobile phone use. Furthermore, a study by Wang, Qiao, et al. (2022) revealed both positive and negative parenting behaviours significantly mediated the link between parental phubbing and children's social withdrawal and aggression. More specifically, it was found that

parental phubbing reduced positive parenting behaviours and increased negative ones, which in turn served as risk factors contributing to children's social withdrawal, aggression, (Wang, Qiao, et al., 2022) and depression (Xie & Xie, 2020).

### **The Present Study**

Phubbing behaviours are becoming increasingly more commonplace in today's society (Chotpitayasunondh & Douglas, 2016), as smartphone ownership and usage continue to grow (Statistics Canada, 2024). Parents' phone use is also attracting media attention (e.g., CTV News), with news outlets warning parents about the potential effects of phubbing on their children (Lau, 2024). However, significant gaps remain in empirical studies investigating the influence of phubbing within the parent-child context. For instance, most studies on parental phubbing have been conducted in Eastern countries such as China (Geng et al., 2021; Hong et al., 2019; Niu et al., 2020; Xie & Xie, 2020), and to date, no research has examined phubbing within a Canadian context. Considering that Canada has one of the highest rates of internet and phone usage (Silver et al., 2022), it is imperative to examine the implications of this trend for Canadian family life. Furthermore, most research has investigated the impact of parental phubbing on adolescents (Geng et al., 2021; Niu et al., 2020; Wang et al., 2020), although children in middle childhood are more vulnerable to adverse parenting behaviours, as this is a critical period of development (Government of Ontario, 2022). Ontario alone is home to over a million children in this age range, with this number projected to steadily increase in the coming years (Government of Ontario, 2022). During middle childhood, children experience significant growth in their cognitive, emotional, and social capabilities, however, these changes can vary across the years (Bhana, 2010). Therefore, middle childhood can be further divided into separate groups: younger middle childhood (ages 6-8) and later middle childhood (ages 9-12). Later middle childhood is

more commonly referred to as early adolescence, reflecting the trend of earlier puberty onset, which marks the transition between childhood and adolescence (Bhana, 2010).

With this in mind, the present study aimed to explore the relationship between parental phubbing and child behaviour in middle childhood and early adolescence within a Canadian context. There were three main purposes to this study: (1) to investigate the direct associations between parental phubbing and children's problematic media use, as well as between parental phubbing and children's problem behaviours; (2) how parental phubbing may influence these child outcomes through the mediating role of the parent-child relationship and; (3) how the parent-child relationship may mitigate the harmful effects of phubbing by investigating its role as a moderator.

### **Parental Phubbing and Child Outcomes**

The child outcomes of interest to this study were children's problematic media use, children's internalizing, externalizing, and attention problems. Parental phubbing was hypothesized to be positively associated with children's problematic media use. This hypothesis follows the reasoning of Domoff et al.'s (2020) Interactional Theory of Childhood Problematic Media Use, which suggests that due to parents' role in a child's microsystem, their negative behaviours, such as phubbing, may act as a proximal factor contributing to the development of children's PMU. Furthermore, this assumption is supported by several longitudinal studies that have demonstrated that parental phubbing predicted problematic media use in adolescents (Geng et al., 2021; Hong et al., 2019; Wang, Qiao, et al., 2022). Parental phubbing is also hypothesized to be positively associated with all three children's problem behaviours (internalizing, externalizing, and attention). Previous research has described parental phubbing as a neglectful behaviour (Xu & Xie, 2023), with parents reporting that they pay less attention to their child and

are less responsive to their needs when on their phones (Radesky et al., 2014). While no studies have examined the relationship between phubbing and problem behaviours in school-aged children, some research conducted with younger and older groups provides support for the link between these variables. For instance, mother phubbing has been significantly and positively correlated with children's emotional and behavioural problems (Lv et al., 2022). Therefore, it seems likely parental phubbing will be associated with more overall internalizing, externalizing, and attention problems.

### **Parent-Child Relationship as a Moderator**

The parent-child relationship is hypothesized to moderate the relationship between parental phubbing and children's PMU as well as parental phubbing and children's problem behaviours. In this study, a positive parent-child relationship is characterized by higher levels of closeness and lower levels of conflict, whereas a negative relationship involves higher levels of conflict and lower levels of closeness. Children who experience negative parent-child relationships are likely to become insecurely attached (Bowlby, 1982; Liu et al., 2003), and more vulnerable to the effects of their environment. Therefore, it is hypothesized that when parents phub, a negative parent-child relationship will exacerbate children's problematic media use and problem behaviours. Conversely, it is hypothesized that a positive parent-child relationship will protect against children's problematic media use and problem behaviours, even when parents engage in phubbing.

### **Parent-Child Relationship as a Mediator**

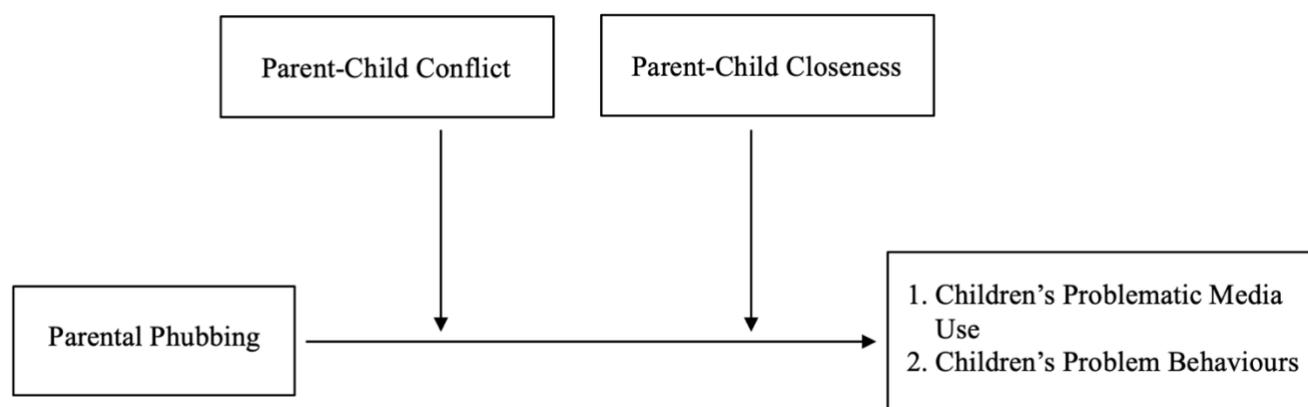
The present study also predicts that parental phubbing may have an indirect effect on children's PMU through the parent-child relationship. The IT-CPU suggests that proximal factors (i.e., phubbing) can contribute to the maintenance of problematic media use through

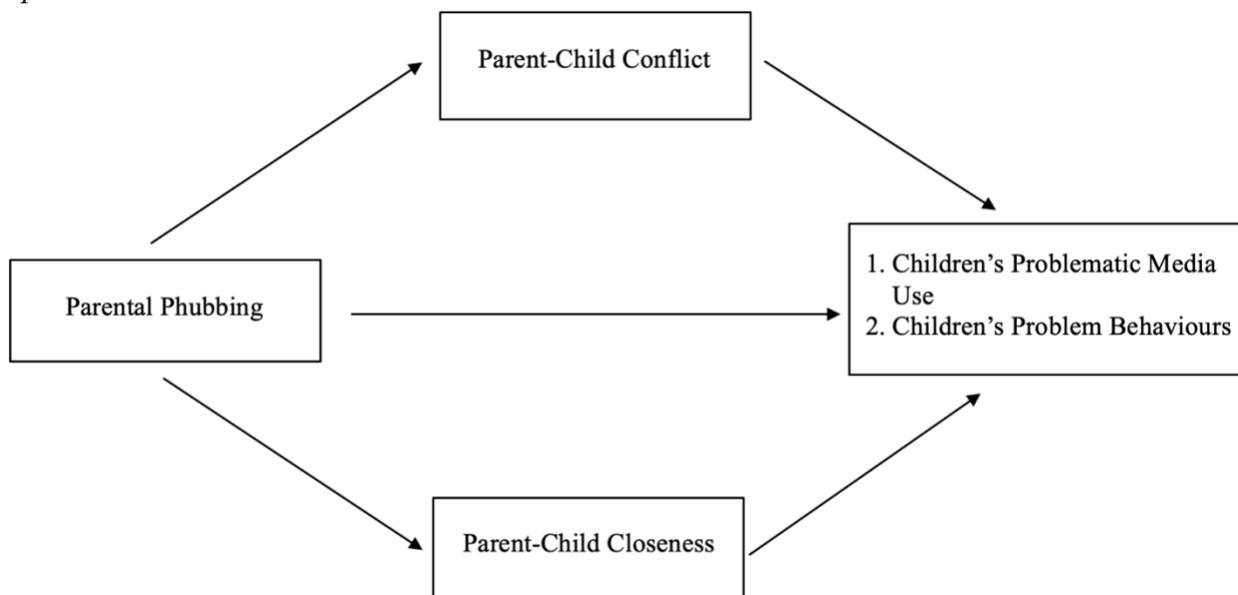
maintaining factors (Domoff et al., 2020). Given the significance of the parent-child relationship in children's development (Cox & Paley, 2003), it seems likely that it would be an important maintaining factor. This proposed mediation is supported by research demonstrating that parental phubbing negatively impacts the parent-child relationship (Kildare, 2017) and that the parent-child relationship is negatively associated with problematic media use (Qui et al., 2022; Zhu et al., 2022). Furthermore, Niu et al. (2020) found that the parent-child relationship mediated the positive association between parental phubbing and adolescent problematic mobile phone use.

Similarly, it is hypothesized that the parent-child relationship will mediate the association between parental phubbing and children's problem behaviours. Previous studies have demonstrated that lower quality parent-child relationships are associated with children's problem behaviours (Acar et al., 2017; Madigan et al., 2012) because poorer parent-child relationships can hinder a child's ability to form secure attachments, regulate their emotions, and communicate with others (Zhang, Liu, et al., 2024). Currently, there is no research examining this mediating effect specifically on children's attention problems. However, some studies have found that parent-child relationship mediates the relation between phubbing and children's internalizing (Xie & Xie, 2020) and externalizing (Wang, Qiao, et al., 2022) problems, supporting this hypothesis. Moderation and mediation models are displayed in Figures 1 and 2.

### Figure 1

#### *Proposed Moderation Model*



**Figure 2***Proposed Mediation Model***Methods****Participants**

A total of 186 participants were recruited for the study: 99 were parents/guardians of children aged 6-8 years and 87 were parents/guardians of children aged 9-12 years. For both the 6-8 and 9-12 groups, most of the respondents were mothers (80.85% and 87.36% respectively) and identified their ethnicity as White or Caucasian (74.75% and 83.91%, respectively). Participants in the 6-8-year-old group ranged from 22 to 48 years old ( $M = 34.67$ ,  $SD = 5.34$ ), and their children were, on average, 7 years old. The sample included a similar proportion of parents of boys (52.52%) and girls (47.47%). Similarly, respondents in the 9-12 group ranged from 24 to 53 years old ( $M = 38.67$ ,  $SD = 5.77$ ), and their children were, on average, 10 years old. This group had a higher proportion of parents of boys (63.22%) compared to girls (36.78%). Across both groups, many participants reported living in a city (47.47% and 45.98%, respectively) and most parents reported having a college (mothers: 39.4% and 39.08%, fathers:

30.35% and 45.9%) or bachelor's degree (mothers: 32.3% and 27.6%, fathers: 32.2% and 26.4%). Both groups had, on average, two children in the family.

### **Procedure**

This study was first reviewed and approved by Trent University's Research Ethics Board before beginning recruitment. Parents and guardians of children aged 6-12 were recruited through community and online sources to participate in a survey-based study through Qualtrics. Community recruitment was carried out through various Ontario-based organizations serving this age group (e.g., YMCA, recreational programs). For community recruitment, the owner and/or manager of each organization was contacted to distribute the study information and questionnaire link to their parent clients. Flyers for the study were also posted on public bulletin boards in community spaces. The online sample was recruited through Facebook groups and parenting forums that catered to parents and guardians of children in this age range. Study information, along with a link to the questionnaire, was shared through posts on these platforms.

When clicking the survey link, participants were first asked to provide consent and confirm that they identified as a parent or guardian before accessing the study questionnaire. After affirming these questions, participants were instructed to answer the questions on behalf of only one child if they had multiple children between 6 and 12 years old. After completing the questionnaire, participants received an electronic debriefing form and were given the opportunity to enter a draw to win one of four Amazon gift cards. Those interested were directed to a separate Qualtrics page where they could provide their email to enter the contest.

## Measures

### *Parental Phubbing*

Parents were asked to assess their own phubbing behaviours with the Parental Phubbing Scale (Pancani et al., 2021). This 10-item scale asked parents to indicate the frequency of which they engaged in the following behaviours regarding their smartphone use on a scale from 1 = Never, 5= All the time (e.g., “I use my smartphone when my child and I are out together”); *Cronbach’s*  $\alpha = .72$  for ages 6-8;  $\alpha = .83$  for ages 9-12). Mean scores were calculated with a higher score indicating more phubbing.

### *Problematic Media Use*

Children’s problematic media use was assessed through Domoff et al. (2019)’s Problematic Media Use Measure: Short Form (PMUM-SF). This scale consisted of nine items inquiring into a child’s screen media use habits, e.g., “My child becomes frustrated when my child cannot use screen media.” Responses to each item were recorded on a five-point Likert scale, ranging from 1= Never to 5= Always (*Cronbach’s*  $\alpha = .88$  for ages 6-8;  $\alpha = .90$  for ages 9-12). In order to determine PMU, item responses were averaged to produce a mean score, with a higher score suggesting more problematic media use.

### *Problem Behaviours*

The Brief Problem Monitor (BPM; Achenbach et al. 2011) was used to measure children’s problem behaviours. This 19-item scale included items for rating internalizing, attention, and externalizing problems. The internalizing problems subscale included items related to anxious/depressed and withdrawn behaviours (e.g., “feels too guilty;” *Cronbach’s*  $\alpha = .79$  for ages 6-8;  $\alpha = .86$  for ages 9-12) while the externalizing subscale consisted of statements addressing rule-breaking and aggressive behaviours (e.g., “disobedient at school;” *Cronbach’s*  $\alpha$

= .82 for ages 6-8;  $\alpha = .85$  for ages 9-12). Additionally, items making up the attention subscale included those related to children's inattentiveness and hyperactivity (e.g., "fails to finish things he/she starts;" *Cronbach's*  $\alpha = .72$  for ages 6-8;  $\alpha = .79$  for ages 9-12). Parents were asked to rate how each item describes their child's behaviour now or within the past seven days and each item is rated as either 0 = Not true (as far as you know), 1 = Somewhat true, or 2 = Very true. Total scores were calculated for each of the three categories as well as an overall problem score, with higher scores indicating more severe problem behaviours.

### ***Parent-Child Relationship***

The short form of Driscoll and Pianta's (2011) Child-Parent Relationship Scale was used to assess the parent-child relationship (CPRS-SF). This scale consisted of 15 items and asked parents to reflect on the degree to which each statement currently applied to their relationship with their child. These statements were ranked on a five-point scale (1 = Definitely does not apply, 5 = Definitely applies) and made up either the child-parent conflict subscale (e.g., "My child easily becomes angry at me;" *Cronbach's*  $\alpha = .84$  for ages 6-8;  $\alpha = .85$  for ages 9-12) or child-parent closeness subscale (e.g., "My child values their relationship with me;" *Cronbach's*  $\alpha = .87$  for both ages 6-8 and 9-12). Mean scores for each subscale were calculated along with a total CPRS-SF score based on the average item score.

### **Data Analyses**

The data for this study were drawn from a larger study that included parents of children aged 0-12. Before beginning any analyses, the dataset was filtered and cleaned based on several criteria. First, participants who reported having children under the age of six were excluded, as this age group was not of interest to the current study ( $n = 248$ ). Participants were also excluded from further analysis for the following reasons: not completing 10% or more of the questionnaire

( $n = 126$ ), not consenting for their data to be used in analyses ( $n = 2$ ), failing at least two of the three attention check questions ( $n = 18$ ), and finishing the questionnaire in less than 10 minutes ( $n = 4$ ). After applying these exclusion criteria, the final sample was reduced from 582 to 186 valid participants. Besides filtering for age, a large proportion of excluded participants was due to the number of blank responses that likely originated from bots. Bot responses are a contemporary issue affecting researchers who collect questionnaire data online (Griffin et al., 2022; Schwab et al., 2024; Yarrish et al., 2019). However, we believe that we effectively eliminated the bots from our data as the present study used several empirically supported strategies (e.g. attention checks; Griffin et al., 2022) to identify and remove problematic responses.

After cleaning the data, descriptives (e.g., means, standard deviations, etc.) were initially assessed for demographic information (e.g., sex, education level), phubbing, PMU, problem behaviours, and parent-child relationship. Spearman's correlations were used to identify possible covariates and examine the relationships between parental phubbing and children's PMU, as well as between phubbing and children's problem behaviours. Hayes's PROCESS Macro Model 2 was used to examine the moderating effect of parent-child relationship on children's PMU and problem behaviours, with a follow-up Johnson-Neyman plot to visualize the effect. Hayes's PROCESS Macro Model 4 was conducted in order to determine if parent-child relationship quality mediates the relationship between phubbing and children's PMU, with a follow-up Sobel test used to determine effect size.

## Results

To assess whether the assumptions of normality were met for all child and parent variables, skewness and kurtosis ratios were calculated. All variables, except children's problematic media use, violated the assumption of normality, exhibiting significant skewness and kurtosis. As a result, non-parametric tests were used for all univariate analyses to ensure more robust findings. Means, standard deviations, minimum, and maximum values of parental phubbing, parent-child relationship (conflict and closeness), and child behaviours (PMU, internalizing, externalizing, attention) are reported in Table 1. No outliers were removed for these variables of interest, as all responses fell within the possible range (1 to 5) of the 5-point Likert scale.

**Table 1**

*Means, Standard Deviations, Minimum and Maximum Values of Parental Behaviours, Parent-Child and Child Variables*

Variables	6-8-year-old's				9-12-year-old's			
	M	SD	Min	Max	M	SD	Min	Max
Parental Phubbing	2.71	.535	1.44	4.00	2.76	.668	1.00	5.00
Child Problematic Media Use	2.46	.749	1.00	4.00	2.69	.829	1.00	3.89
Child Internalizing Problems	.418	.405	0.00	1.50	.374	.528	0.00	1.83
Child Externalizing Problems	.470	.433	0.00	1.71	.369	.365	0.00	1.57
Child Attention Problems	.620	.423	0.00	2.00	.724	.518	0.00	2.00
Parent-Child Conflict	2.50	.806	1.00	5.00	2.41	.865	1.00	4.37
Parent-Child Closeness	4.45	.621	1.43	5.00	4.52	.543	2.57	5.00

## **Correlations**

First, correlation analysis was used to identify possible covariates associated with parental phubbing, parent-child conflict, parent-child closeness, children's problematic media use, and problem behaviours. Family income level was excluded from this analysis due to insufficient data. Exact values are reported in Tables 2 and 3 for the 6-8 and 9-12 age groups, respectively. For the 6-8-year-olds, Spearman's correlation indicated a negative correlation between the number of children in a household and children's PMU, as well as between parents' age and parent-child conflict. Additionally, children's sex was negatively associated with children's attention problems. For the 9-12 age group, children's age was positively associated with children's internalizing problems and with parent-child conflict. Mother's education was negatively associated with children's PMU, and both mother's and father's education were negatively associated with children's internalizing and externalizing problems.

### ***Partial Correlations***

Controlling for the number of children in a household, parents' age and children's sex, Spearman's partial correlation was conducted for the 6-8-year-olds. Exact  $p$  values are shown in Table 4. Parental phubbing was positively associated with children's problematic media use, internalizing and externalizing problems. Phubbing was also positively associated with higher levels of conflict in the parent-child relationship. A Spearman's partial correlation was also used for the 9-12-year-olds, controlling for children's age, mother's education, and father's education. A significant positive correlation was found between parental phubbing and children's problematic media use.

**Table 2***Spearman's Correlations among Parent, Child, Parent-Child Variables and Confounding Variables in 6-8-year-old's*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Page	----													
2. Cage	.127	----												
3. Nchild	-.054	.045	----											
4. Nadult	.002	-.146	-.153	----										
5. EduM	.253*	.081	-.171	.070	----									
6. EduF	.318**	.148	-.168	.280**	.577**	----								
7. Sex	-.002	-.034	-.018	-.045	-.095	.113	----							
8. Phub	.057	.018	-.125	-.096	.057	.069	.048	----						
9. PMU	.177	.053	-.215*	.102	.177	.108	-.063	.390**	----					
10. Int	-.059	.077	.111	-.020	-.059	.009	-.035	.330**	.442**	----				
11. Ext	-.090	.052	.099	.001	-.090	.034	-.095	.342**	.500**	.620**	----			
12. Att	-.049	.118	.028	.025	-.049	-.095	-.216*	.199*	.470**	.461**	.570**	----		
13. Conf	-.218*	-.045	-.043	.021	.502	.003	.106	.381**	.518**	.516**	.708**	.483**	----	
14. Close	.152	.067	.179	-.141	.597	-.053	-.003	-.121	-.333**	-.150	-.348**	-.193	-.413**	----

*Note.* Page = parent's age, Cage = child's age, Nchild = number of children in family, Nadult = number of adults in family, EduM = maternal education, EduF = father's education, Sex = child's sex (coded as male = 0, female = 1), Phub = parental phubbing, PMU = problematic media use, Int = internalizing problems, Ext = externalizing problems, Att = attention problems, \*\*  $p < .001$ , \*  $p < .01$ .

**Table 3***Spearman's Correlations among Parent, Child, Parent-Child Variables and Confounding Variables in 9-12-year-old's*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Page	----													
2. Cage	.307**	----												
3. Nchild	-.085	-.210	----											
4. Nadult	-.254*	.206	-.122	----										
5. EduM	.098	-.104	-.190	-.128	----									
6. EduF	-.061	-.240*	-.127	-.338**	.505**	----								
7. Sex	.208	-.035	.001	.195	-.006	-.182	----							
8. Phub	-.046	-.111	.071	-.103	.147	.097	.093	----						
9. PMU	.130	.197	-.096	.006	-.227*	-.159	-.076	.214*	----					
10. Int	.105	.274*	.044	.161	-.291**	-.302**	.151	.048	.306**	----				
11. Ext	-.078	.136	.045	.186	-.333**	-.242*	-.038	.021	.564**	.382**	----			
12. Att	-.127	.083	.010	.173	-.210	-.190	.061	.047	.514**	.384**	.518**	----		
13. Conf	.004	.320**	-.060	.122	-.186	-.209	-.031	.109	.676**	.374**	.725**	.494**	----	
14. Close	.006	-.143	-.055	-.137	.230*	.174	-.026	-.151	-.563**	-.346**	-.554**	-.367**	-.580**	----

*Note.* Page = parent's age, Cage = child's age, Nchild = number of children in family, Nadult = number of adults in family, EduM = maternal education, EduF = father's education, Sex = child's sex (coded as male = 0, female = 1), Phub = Parental phubbing, PMU = Problematic media use, Int = Internalizing problems, Ext = Externalizing problems, Att = Attention problems, \*\*  $p < .001$ , \*  $p < .01$

**Table 4**

*Partial Spearman's Correlations Between Parental Phubbing, Children's PMU, Problem Behaviours and the Parent-Child Relationship*

Variables	1	2	3	4	5	6	7
1. Phub	---						
2. PMU	.370***/.214*	---					
3. Internalizing	.313**/.048	.474***/.306**	---				
4. Externalizing	.310**/.021	.526***/.564***	.590***/.382***	---			
5. Attention	.145/.047	.455***/.514***	.434***/.384***	.533***/.518***	---		
6. P-C Conflict	.317**/.109	.511***/.676***	.499***/.374***	.686***/.725***	.432***/.494***	---	
7. P-C Closeness	-.067/-.151	-.297**/-.563***	-.147/-.346**	-.338**/-.554***	-.143/-.367***	-.428***/-.580***	---

*Note.* Correlations for the 6-8 and 9-12-year-old groups presented before and after the slash respectively, Phub = Parental phubbing,

PMU = Problematic media use,  $N = 87/82$ ,  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

## Moderation

A moderation analysis was conducted using Model 2 of PROCESS Macro for SPSS to examine whether parent-child closeness and conflict moderated the relationship between parental phubbing and children's problematic media use and problem behaviours. The same confounding variables previously identified (6-8 group: number of children, parent's age, sex; 9-12 group: children's age, mother's education, father's education) were controlled for to ensure statistical accuracy during moderation.

### *6-8-year-old's*

Among the 6-8-year-old group, the overall models for children's PMU,  $F(7, 84) = 7.43$ ,  $p < .001$ , internalizing,  $F(6, 86) = 7.57$ ,  $p < .001$  and attention problems,  $F(7, 85) = 6.57$ ,  $p < .001$  were significant. However, no significant interaction effects were found between parental phubbing and parent-child conflict in predicting PMU ( $b = -.102$ ,  $SE = .149$ ,  $t = -.682$ ,  $p = .497$ ), internalizing ( $b = .060$ ,  $SE = .076$ ,  $t = .785$ ,  $p = .434$ ) and attention problems ( $b = .026$ ,  $SE = .083$ ,  $t = .309$ ,  $p = .758$ ). Similarly, no significant interaction effect was found between parental phubbing and parent-child closeness in predicting PMU ( $b = -.020$ ,  $SE = .090$ ,  $t = -.224$ ,  $p = .824$ ), internalizing ( $b = .095$ ,  $SE = .082$ ,  $t = 1.15$ ,  $p = .254$ ) and attention problems ( $b = -.152$ ,  $SE = .073$ ,  $t = -2.09$ ,  $p = .040$ ).

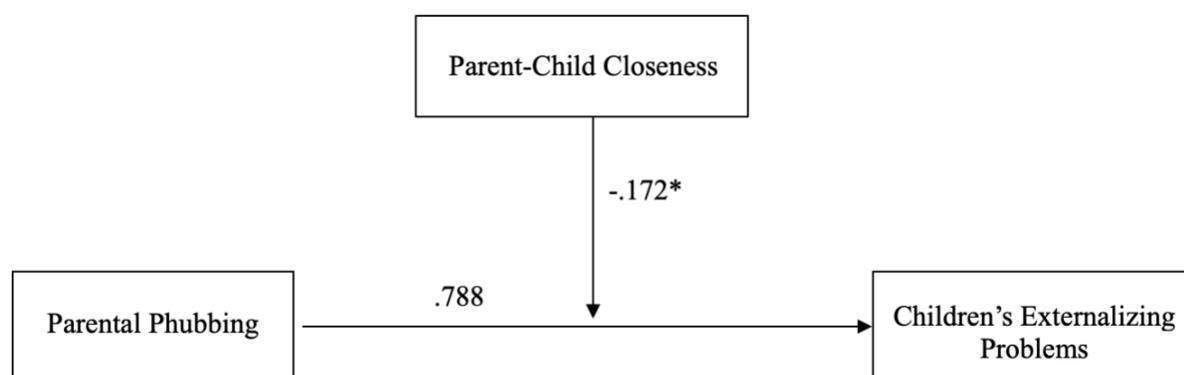
A significant moderation was only found for externalizing problems. In order to determine the unique contributions of parent-child closeness and conflict, follow up simple moderation analyses were conducted. When controlling for parent-child closeness, the interaction between parental phubbing and parent-child conflict was not significant ( $b = .054$ ,  $SE = .067$ ,  $t = .808$ ,  $p = .421$ ). However, when controlling for parent-child conflict, parent-child closeness significantly moderated the relationship between parental phubbing and children's

externalizing problems, ( $b = -.172$ ,  $SE = .075$ ,  $t = -2.30$ ,  $p = .024$ ) as seen in Figure 3. The overall model was significant,  $F(5, 87) = 23.76$ ,  $p < .001$ , and explained 57.73% of the variance in externalizing problems ( $R^2 = .5773$ ). The interaction between parental phubbing and parent-child closeness explained an additional 2.58% of the variance ( $R^2 = .0258$ ).

To further investigate the moderating effect of parent-child closeness, a Johnson-Neyman plot was run to visualize the interaction, as seen in Figure 4. The results showed that when closeness values were less than 3.72 standard deviations, the confidence bands did not contain zero, indicating a significant effect of phubbing on externalizing problems in the range. However, beyond a closeness value of 3.72, the confidence bands included zero, indicating the effect became statistically nonsignificant. This suggests the relationship between phubbing and externalizing problems weakened and became non-significant at higher levels of parent-child closeness.

### Figure 3

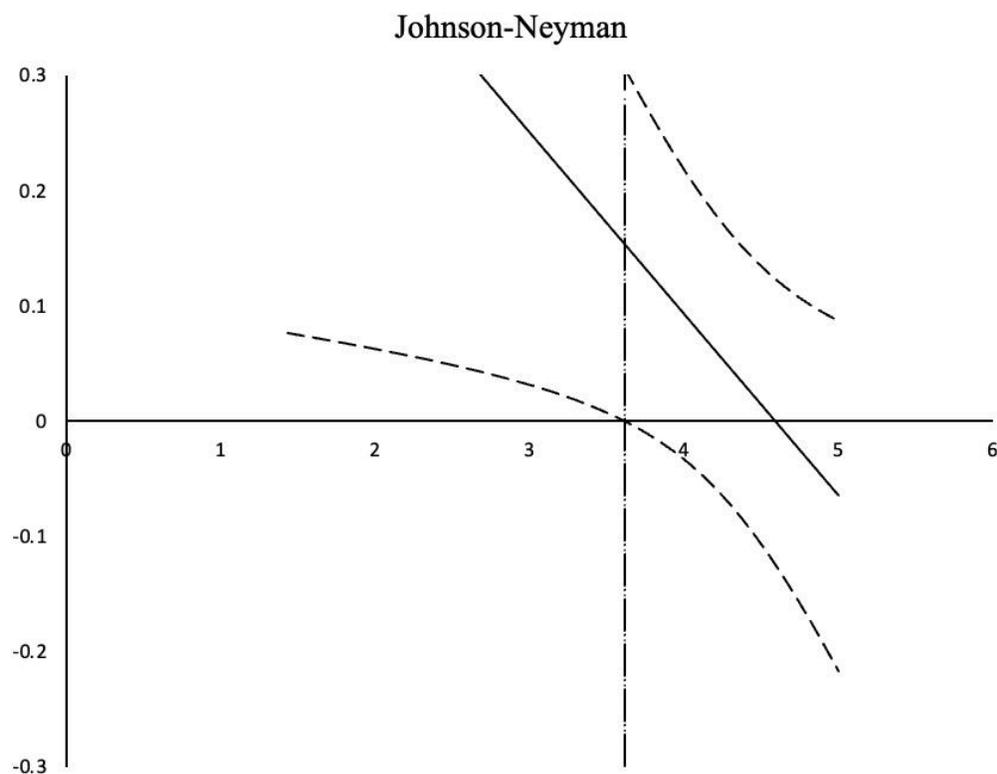
*Simple Moderation Between Parental Phubbing and Children's Externalizing Problems by Parent-Child Closeness for 6-8-year-olds.*



*Note.* \*  $p < .01$

**Figure 4**

*Johnson-Neyman Plot of Moderation Between Parental Phubbing and Children's Externalizing Problems by Parent-Child Closeness for 6-8-year-old's.*



*Note.* The solid diagonal line represents the simple regression line for parental phubbing along children's externalizing problems. The confidence bands are represented by the dashed diagonal lines for upper and lower bounds of the 95% confidence interval. The vertical dashed line (value of 3.72) shows the point where the effect of parental phubbing on children's externalizing problems changes from significant (left of the vertical line) to nonsignificant (right of the line).

### **9-12-year-old's**

Likewise, when testing for moderation in the 9-12-year-old group, the overall models for children's PMU,  $F(8, 78) = 10.25, p < .001$ , internalizing,  $F(8, 78) = 3.70, p < .001$ , externalizing,  $F(8, 78) = 13.19, p < .001$ , and attention problems  $F(8, 78) = 4.08, p < .001$  were

significant. However, no significant interaction effects were found between parent-child conflict and PMU ( $b = .212, SE = .183, t = 1.15, p = .252$ ), internalizing ( $b = -.157, SE = .130, t = -1.21, p = .230$ ), externalizing ( $b = -.042, SE = .085, t = -.489, p = .626$ ) and attention problems ( $b = -.137, SE = .129, t = -1.06, p = .292$ ). Similarly, no significant interaction effect was found between parent-child closeness and PMU ( $b = .282, SE = .249, t = 1.13, p = .261$ ), internalizing ( $b = -.221, SE = .176, t = -1.25, p = .215$ ), externalizing ( $b = -.192, SE = .116, t = -1.66, p = .101$ ) and attention problems ( $b = -.231, SE = .176, t = -1.31, p = .193$ ). Overall, there were no significant moderations found for this age group.

### **Mediation**

Model 4 of the PROCESS macro in SPSS was used to investigate the mediating role of the parent-child relationship between parental phubbing, children's problematic media use and problem behaviours, controlling for the same confounding variables. Only parent-child conflict was examined as a mediator for the 6-8-year-old age group, as this was the only significant association found in the initial correlation analysis between parental phubbing and the parent-child relationship. This is in line with the mediation condition that the independent variable must have a relationship with the mediator variable in order to engage in further analyses.

The first model investigated if parent-child conflict mediated the relationship between parental phubbing and children's problematic media use. The total effect established that phubbing predicted children's PMU, confirming there was an effect to mediate, ( $b = .479, SE = .135, t = 3.55, p < .001$ ). Consistent with the correlation analysis, parental phubbing was a significant predictor of the parent-child conflict pathway,  $b = .424, SE = .137, p = .003$  (path a) and in turn, parent-child conflict was identified as a significant predictor of PMU,  $b = .447, SE = .097, p < .001$  (path b). In line with this, the total indirect effect of parental phubbing on children's

problematic media use was statistically significant ( $b = .189$ ,  $SE = .079$ ,  $95\% CI = [.052, .361]$ ), indicating that parent-child conflict influenced the relationship. Even after accounting for the mediating effect, parental phubbing still had a direct effect on children's PMU,  $b = .279$ ,  $SE = .126$ ,  $p = .03$ , demonstrating partial mediation. See Table 5 and Figure 5 to view results. A Sobel test was then conducted to calculate the indirect effect's variance and found the mediating effect of parent-child conflict was significant for children's PMU ( $z = 2.56$ ,  $SE = .074$ ,  $p = .010$ ), indicating the effect was larger than would be expected by chance.

Children's problem behaviours were examined next, and total effect revealed parental phubbing positively predicted children's internalizing ( $b = .239$ ,  $SE = .072$ ,  $t = 3.30$ ,  $p = .001$ ), and externalizing problems ( $b = .232$ ,  $SE = .079$ ,  $t = 1.62$ ,  $p = .004$ ). However, no significant relationship was found between parental phubbing and children's attention problems ( $b = .131$ ,  $SE = .81$ ,  $t = 1.62$ ,  $p = .109$ ), meaning there was no effect to mediate and thus, no mediation effect was observed.

Path a was again supported, with parental phubbing significantly predicting parent-child conflict,  $b = .476$ ,  $SE = .140$ ,  $p = .001$ . In turn, through path b, parent-child conflict significantly predicted both internalizing,  $b = .270$ ,  $SE = .050$ ,  $p < .001$ , and externalizing problems,  $b = .393$ ,  $SE = .045$ ,  $p < .001$ . Parent-child conflict had a significant indirect effect through the conflict pathways for internalizing ( $b = .129$ ,  $SE = .053$ ,  $95\% CI = [.042, .249]$ ) and externalizing problems ( $b = .187$ ,  $SE = .066$ ,  $95\% CI = [.063, .325]$ ). After accounting for the mediating effect, parental phubbing no longer had a direct effect on children's internalizing,  $b = .131$ ,  $SE = .067$ ,  $p = .056$  and externalizing problems,  $b = .043$ ,  $SE = .061$ ,  $p = .479$ , demonstrating full mediation. See Table 5 and Figure 6 to view results. Furthermore, Sobel tests revealed that the mediating effect of parent-child conflict was significant for both internalizing ( $z = 2.88$ ,  $SE = .045$ ,  $p =$

.004) and externalizing problems, ( $z = 3.16$ ,  $SE = .059$ ,  $p < .001$ ), supporting that this effect was also unlikely due to chance.

**Table 5**

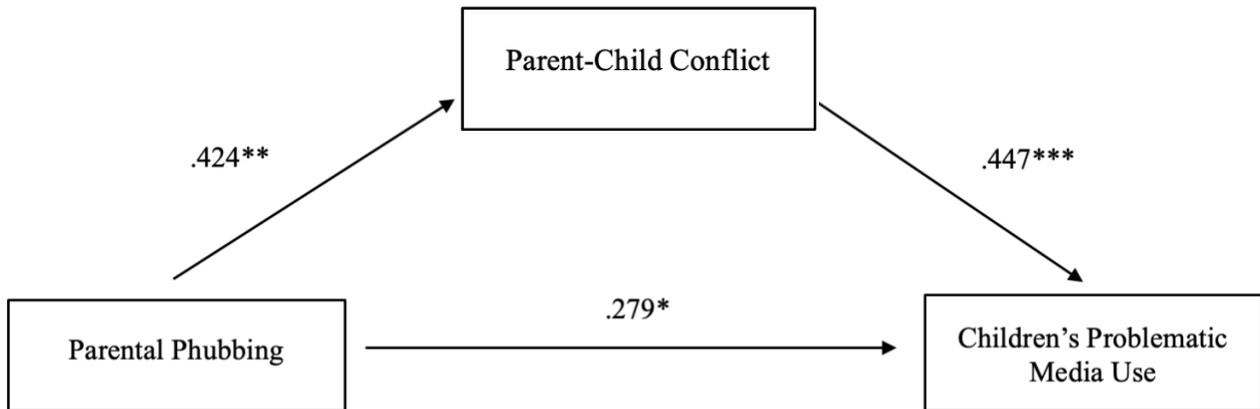
*Results of Mediation Analysis for 6-8-year-old's.*

Variable	Effect	Path	b	SE	95% CI	
					Lower	Upper
<i>PMU</i>						
	Total	Phub → PMU	.479	.135	.211	.747
	Indirect	Phub → Conf → PMU	.189	.079	.052	.361
	Direct	Phub → PMU	.279	.126	.028	.530
<i>Int</i>						
	Total	Phub → Int	.239	.072	.095	.383
	Indirect	Phub → Conf → Int	.127	.053	.042	.249
	Direct	Phub → Int	.131	.067	-.003	.265
<i>Ext</i>						
	Total	Phub → Ext	.232	.079	.075	.390
	Indirect	Phub → Conf → Ext	.187	.066	.063	.325
	Direct	Phub → Ext	.043	.061	-.077	.164

*Note.* *PMU* = Problematic media use, *Int* = Internalizing problems, *Ext* = Externalizing problems.

**Figure 5**

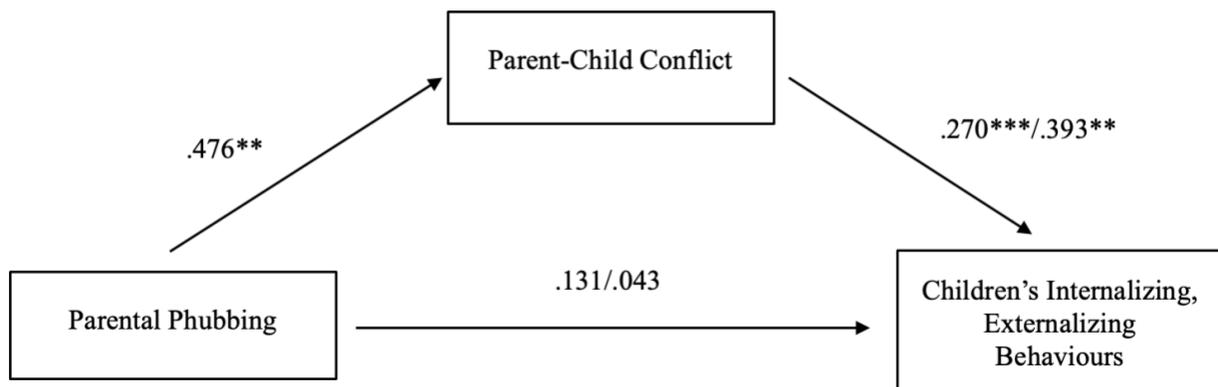
*Mediation Model of the Parent-Child Relationship on the Association Between Parental Phubbing and Children's Problematic Media Use for 6-8-year-old's.*



*Note.* \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

**Figure 6**

*Mediation Model of the Parent-Child Relationship on the Associations Between Parental Phubbing and Children's Internalizing and Externalizing Problems for 6-8-year-old's.*



*Note.* \*\*  $p < .001$ , \*  $p < .01$ , \*  $p < .05$ . Internalizing and externalizing scores are presented before and after the slash respectively.

## Discussion

The pervasive use of smartphones in everyday life has greatly transformed how people interact and communicate, particularly within the family context. For instance, parental phubbing, a state of parental distraction and exclusion, has been identified as a serious risk factor for children's mental health and development. However, the majority of research on parental phubbing to date has been conducted with Chinese children and adolescents, and suggests that the effects of phubbing may be exacerbated by China's collectivist culture, where family relations are highly emphasized (Zhao et al., 2023; Wang et al., 2020). These studies call for further investigation in individualistic cultures, where greater value is placed on autonomy, to determine if similar findings can be obtained. Furthermore, there is a lack of research on parental phubbing during middle childhood, despite this being a developmental period in which parental responsiveness plays a crucial role in children's well-being (Cooke et al., 2022; Deneault et al., 2022). To address these gaps, data were collected from 186 Canadian caregivers who were asked to reflect on the frequency of their phubbing habits, child's behavioural outcomes, and the quality of their relationship with their child. This study had three primary aims: (1) to examine the associations between phubbing, PMU and problem behaviours, (2) to investigate whether the parent-child relationship moderated these associations; and (3) to explore whether the parent-child relationship mediated the link between phubbing and the child outcomes.

### **Associations Between Parental Phubbing and Child Outcomes**

#### ***Problematic Media Use***

It was expected that parental phubbing would be positively associated with children's problematic media use, and this was observed across both age groups. This finding supports previous research that parental phubbing negatively influences problematic media practices in

Chinese preschoolers (Li et al., 2024; Zhang, Cao, et al., 2024; Zhang, Liu, et al., 2024) and adolescents (Geng et al., 2021; Hong et al., 2019; Niu et al., 2020; Xie et al., 2019; Zhang et al., 2021). If children frequently observe their parents engaging with their phone, they may view phubbing as a more acceptable and normative behaviour. In line with social learning theory (Bandura, 1971), they may then imitate these behaviours and develop similar maladaptive media habits. This finding also supports the Interactive Theory of Childhood Problematic Media Use framework (Domoff et al. 2020), by suggesting parental phubbing can directly influence children's problematic media use as a proximal factor. The significant association between phubbing and problematic media use across all ages of middle childhood (6-12) extends previous research by highlighting that this effect is not limited to a specific developmental range.

### ***Problem Behaviours***

Parental phubbing was also hypothesized to be positively related to all three of the children's problem behaviours (internalizing, externalizing, attention problems). For the 6-8-year-old age group, this hypothesis was mostly supported, as parental phubbing showed a positive relationship with both children's internalizing and externalizing problems. This aligns with parental acceptance-rejection theory (Rohner et al., 2005) and previous studies showing that parental phone use negatively affects specific internalizing and externalizing problems in children and adolescents, such as loneliness (Wang, Zhao, et al., 2022), depression (Xie & Xie, 2019; Yang et al., 2023), social withdrawal and aggression (Wang, Qiao, et al., 2022; Yang et al., 2023; Zhao et al., 2023). Additionally, children in early middle childhood are still developing their emotional regulation skills, which are key predictors of internalizing and externalizing problems (Morris et al., 2017). Parents play an important role in supporting this development through responsive and warm interactions. However, when parents phub, children may feel that

their parents view their phones as more important than them (McDaniel & Coyne, 2016), and become frustrated, especially if the reason for the interruption is unclear. As children's emotional regulation skills are still highly susceptible to parental influence at this time, their frustration may be more likely to manifest as behavioural issues, such as emotional distress or acting out (Lv et al., 2022).

There was no association between phubbing and children's attention problems, which was contrary to what was expected. Children's attention problems may be driven by different underlying processes than those associated with internalizing and externalizing problems. For example, from around 18 months onward, children's sustained attention develops rapidly and serves as a key predictor of later attention problems (Ruff & Rothbart, 2001). As a result, children become increasingly able to manage their attention despite distractions (Ruff & Rothbart, 2001). Meanwhile, behavioural regulation, another key predictor of problem behaviours, typically does not develop until around 36 months (Kopp, 1982). van Aken et al. (2008) suggested that since children's attention capacities develop quicker than their self-regulation skills, the decrease of attention problems might precede the decrease of problem behaviours. Therefore, parental phubbing may be more likely to disrupt children's emotional and behavioural regulation, manifesting as internalizing or externalizing problems, rather than directly impacting children's attention functioning.

Additionally, no associations were found between any of the problem behaviours and phubbing for the 9-12-year-old age group, contrary to the hypothesis. This may be attributed to multiple factors, such as changes in family dynamics. As children grow older, they become more autonomous and begin spending more time independently and with peers (Bhana, 2010). Consequently, they may rely less on constant attention from their parents, and thus be less

affected by periods of parental inattention (e.g., phubbing). This nonsignificant finding may also reflect the advancing cognitive and socio-emotional skills of older children, such as increased cognitive restructuring and perspective-taking abilities (Bengtsson & Arvidsson, 2011). Older children may be better able to understand some of their parents' intentions behind phubbing (e.g., responding to an urgent message) or reframe the behaviour as less rejecting or neglectful. These strategies may help older children experience less distress when being phubbed, and in turn, reduce the likelihood of them exhibiting behaviour problems.

### **The Moderating Role of the Parent-Child Relationship**

It was expected that a positive parent-child relationship, characterized by higher levels of closeness and lower levels of conflict, would mitigate against the negative effects of phubbing on children's PMU and problem behaviours. This hypothesis was only supported by one significant moderation discovered in the 6-8-year-old group, for children's externalizing problems. As parent-child closeness increased, the negative impact of parental phubbing on children's externalizing problems progressively decreased until it was no longer statistically significant. This finding supports the well-established idea that parent-child closeness is a key protective factor that can buffer children against negative experiences (Xie et al., 2021). When children experience warmth and security within their relationships with their parents, they may be better able to cope with stressful situations, such as being ignored or dismissed (e.g. phubbing) and demonstrate fewer externalizing problems. This result also aligns with previous work that has identified parent-child closeness to be a protective factor against an increase in externalizing problems (Lionetti et al., 2022).

However, the nonsignificant findings for children's PMU, internalizing and attention problems, as well as across all the variables for 9-12-year-old age group, were contrary to the

hypothesis. One possible reason for this may be that other important family variables influence these relationships. For example, parenting profiles characterized by different levels of parental phubbing and authoritativeness have been associated with children's behavioural difficulties (Wang et al., 2024). Another study found that paternal coparenting directly mitigated the influence of mother phubbing on child problematic media use (Zhang, Liu, et al., 2024). Additional factors such as these may have introduced additional variability, making it more difficult to detect a significant moderation effect. Furthermore, for the 9-12-year-old group, it is well established that the parent-child relationship undergoes significant changes during the transition from middle childhood to adolescence (Yan et al., 2019). This developmental period is often characterized by increases in parent-child conflict and decreases in parent-child warmth or closeness (Marceau et al., 2014). As a result, parent-child closeness may not play as central a role in buffering against negative influences, such as parental phubbing. At the same time, some increase in parent-child conflict is considered normative at this stage (Hofer et al., 2013), and therefore may not heighten any effects of phubbing on children's behaviour.

### **The Mediating Role of the Parent-Child Relationship**

Finally, it was expected that parental phubbing would indirectly affect children's PMU and problem behaviours through the parent-child relationship. Partially in line with this hypothesis, only parent-child conflict significantly mediated the relationship between phubbing and children's PMU, internalizing, and externalizing problems for the 6-8-year-olds. At the first stage in the mediation pathway, higher levels of parental phubbing were associated with higher levels of parent-child conflict. This makes sense when considering that phubbing is not a passive behaviour, but rather actively interferes with parent-child interactions in ways that are likely to provoke frustration and opposition. Supporting this idea, prior research has found that parents

who are interrupted by their children when on their phones may respond with impatience and irritability, increasing the likelihood of conflict (Kildare, 2017; Radesky et al., 2014). Moreover, frequent parental engagement with devices hinders the development of secure parent-child relationships by disrupting parents' emotional availability and responsiveness to their children (Lv et al., 2022). In line with attachment theory, these types of disruptions may contribute to children developing insecure attachment, which has been linked with more conflictual and less supportive interactions with their parents (Allen et al., 1994).

### ***Problematic Media Use***

Attachment theory may also help explain why parent-child conflict contributed to children's PMU, the second part of the mediation pathway. Given children's innate need to form emotional bonds (Bowlby, 1982), they may turn to media use to fulfill their unmet emotional needs, seeking connection, validation, or support that they feel is lacking in their relationship with a distracted caregiver. Alternatively, PMU may also serve as a coping mechanism, helping children escape stress or avoid conflict with their parents. Altogether, this partial mediation finding aligns with prior work that found parent-child conflict and the parent-child relationship mediated the relationship between phubbing and children's electronic media use, as well as adolescents' problematic mobile phone use (Liu et al., 2024; Niu et al., 2020). These findings also lend further support to the Interactive theory of Problematic Media Use (Domoff et al., 2020) by emphasizing that proximal influences such as phubbing are likely to sustain children's problematic media use through parent-child conflict, which acts as an important maintaining factor. The IT-CPU also suggests that conflict can mediate the relationship between phubbing and PMU by creating an environment in which children's media use is reinforced (Domoff et al., 2020). For example, children engaging in PMU may be more likely to resist stopping media use

or persistently request access to devices. In turn, parents who want to avoid conflict with their children may concede and choose to hand over the device, positively reinforcing their child's noncompliance around media use limits. This cycle, driven by ongoing parent-child conflict, could perpetuate problematic use.

### ***Problem Behaviours***

Unlike problematic media use, parent-child conflict fully mediated the relationship between phubbing and children's internalizing and externalizing problems. In other words, once parent-child conflict was introduced into the model, phubbing no longer directly predicted these problem behaviours. Instead, parent-child conflict contributed to increased internalizing and externalizing problems in children. This finding reinforces a large body of literature identifying parental-child conflict as a key factor contributing to child maladjustment and behavioural problems (Burt et al., 2005; Georgiou & Fanti, 2014; Hofer et al., 2013; Xuan et al., 2018; Weaver et al., 2014). Frequent parent-child conflict can create a hostile family environment, eliciting negative emotional reactions in children (e.g., sadness, worry, anxiety, and hopelessness), and increasing their vulnerability to internalizing problems (Xuan et al., 2018). On the other hand, social learning theory proposes that children who consistently observe and experience conflict and aggressive behaviours from their parents are more likely to imitate and model these behaviours themselves (Bandura, 1971). Children exposed to high, recurring levels of parent-child conflict are also more likely to learn and adopt poor conflict resolution skills, such as engaging in less problem solving and more deviant behaviours (Donohue et al., 2022). Both of these patterns are likely to contribute to children's development of externalizing problems.

Finally, the present study was unable to explore any mediation models for the 9-12 age group, as phubbing was not found to significantly predict parent-child conflict or closeness. This was contrary to what was expected, as previous research has identified parental phubbing harms parent-child relationships (Chotpitayasunondh & Douglas, 2018; McDaniel & Radesky, 2018; Niu et al., 2020). However, these nonsignificant results may again reflect growing autonomy and evolving relationship with their family in older children (Bhana, 2010; Marceau et al., 2014). Older children spend more time on screens and use laptops and phones more than younger children (Danet et al., 2020; Rideout, 2015). As children themselves become more engaged in their own devices, they may be less likely to notice or be bothered by their parents' phubbing. This may reduce the likelihood of phubbing contributing to parent-child conflict because children have normalized phubbing as typical behaviour due to their own technology use (McDaniel, 2019). Alternatively, children's digital engagement may distract them from in-person interactions with their parents, reducing opportunities for face-to-face exchanges in which phubbing would be noticeable (Stockdale et al., 2018).

### **Parent-Child Closeness versus Conflict**

The current study provides interesting insights into the different roles parent-child conflict and closeness play in the relationship between parental phubbing and children's outcomes. Specifically, closeness had only a moderating influence, where higher levels of closeness reduced the negative effect of phubbing on children's behaviour. In contrast, conflict did not act as a moderator but rather was directly influenced by phubbing and, in turn, mediated its effects on children's behaviour. These distinctive roles are in line with previous work, which has shown closeness tends to serve as a protective factor, providing warmth, emotional support, and attachment security that buffer children from negative influences (Driscoll, 2011). Whereas,

high levels of conflict have been identified as more of a risk factor, directly associated with and often mediating the link between parental behaviours and children's negative developmental outcomes (Lougheed et al., 2022; Geng et al., 2021; Zhang & Wang, 2025). Taken together, these findings suggest that fostering closeness and reducing conflict in the parent-child relationship may serve as a key resilience factor and be critical for mitigating the adverse effects of parental phubbing.

### **Limitations, Future Directions, and Implications**

There are several limitations that should be considered for the present study. First, a cross-sectional design was used, which limited our ability to infer causal relationships between parental phubbing and children's PMU and problem behaviours. Additionally, cross-sectional designs can be problematic when testing mediating effects, as it is difficult to establish the temporal sequence among the predictor, mediator, and outcome variables. While we did not examine parental phubbing from a bidirectional perspective, previous research suggests that children's problem behaviours and PMU can affect parents' engagement with technology (Geng et al., 2021; McDaniel & Radesky, 2018). Longitudinal research is needed to better understand these dynamics, and to explore the long-term consequences of phubbing for this age group. Second, this study relied exclusively on self-report data from parents, which may have introduced response biases that influenced reported scores. Specifically, parents may have underestimated their phubbing behaviours or children's behaviours, potentially due to social desirability bias or other forms of response bias. Future work should attempt to incorporate more observational or experimental assessments of phubbing, and include reports from multiple family members (i.e., parent and child, multiple parents). Finally, while this study provides support for the effects of phubbing within a Western context, generalizability is still limited by the

predominantly Caucasian sample. How people experience and respond to phubbing may vary across cultures (Abeele, 2018), therefore future research would benefit from examining these behaviours in more diverse and heterogeneous populations.

Regardless of these limitations, the current study still holds important implications for theory and practice. These findings contribute to a growing body of literature highlighting the importance of parents modelling healthy digital use as well as prioritizing technology-free time with their children (Xu & Xie, 2023). This study also emphasizes the critical role of the parent-child relationship, which appears to function as both a protective factor and as a mechanism through which phubbing influences children's behaviour. Our results suggest that families could benefit from parenting programs that educate caregivers on the negative impacts of phubbing and promote more mindful digital practices. In addition, intervention programs aiming at strengthening parent-child closeness and reducing conflict may be particularly effective in reducing the negative effects of phubbing on children's outcomes. Finally, this study highlights that children aged 6-8 may be especially vulnerable to parental phubbing on their well-being and digital use, suggesting that intervention and prevention programs should prioritize this age group.

### **Conclusion**

The present study advances the literature on parental phubbing and child behavioural outcomes by examining its effects on school-aged children within a Canadian context. Correlational analyses revealed that phubbing was significantly positively associated with children's PMU, as well as internalizing and externalizing problems in younger middle childhood. In early adolescence, phubbing was positively correlated with children's problematic media use. Additionally, the moderation and mediation models produced several significant findings for 6-8-year-old age group: (1) parent-child closeness significantly moderated the

relationship between parental phubbing and children's externalizing problems (2) parent-child conflict partially mediated the effect of phubbing on children's problematic media and (3) conflict fully mediated the effect of parental phubbing on children's internalizing and externalizing problems. Altogether, these findings provide an updated look on Canadian family's digital behaviours for possible future interventions and strategies focused on promoting healthier family environments.

## References

- Abeele, M. M. P., Antheunis, M. L., & Schouten, A. P. (2016). The effect of mobile messaging during a conversation on impression formation and interaction quality. *Computers in Human Behavior, 62*, 562–569. <https://doi.org/10.1016/j.chb.2016.04.005>
- Abdullah, N. N., Mohamed, S., Abu Bakar, K., & Satari, N. (2022). The influence of sociodemographic factors on mobile device use among young children in Putrajaya, Malaysia. *Children, 9*(2), <https://doi.org/10.3390/children9020228>
- Acar, I. H., Uçuş, Ş., & Yıldız, S. (2019). 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>
- Achenbach, T. M., Ivanova, M. Y., Rescorla, L. A., Turner, L. V., & Althoff, R. R. (2016). Internalizing/externalizing problems: review and recommendations for clinical and research applications. *Journal of the American Academy of Child & Adolescent Psychiatry, 55*(8), 647–656. <https://doi.org/10.1016/j.jaac.2016.05.012>
- Adelantado-Renau M., Moliner-Urdiales D., Cavero-Redondo I., Beltran-Valls M.R., Martínez-Vizcaíno V., Álvarez-Bueno C. (2019) Association between screen media use and academic performance among children and adolescents: A systematic review and meta-analysis. *JAMA Pediatr, 173*(11):1058-1067. doi: 10.1001/jamapediatrics.2019.3176. PMID: 31545344; PMCID: PMC6764013.
- Allen, J. P., Hauser, S. T., Bell, K. L., & O'Connor, T. G. (1994). Longitudinal assessment of autonomy and relatedness in adolescent-family interactions as predictors of adolescent ego development and self-esteem. *Child Development, 65*(1), 179–194. <https://doi.org/10.2307/1131374>

- Aloia, L. S., & Warren, R. (2019). Quality parent-child relationships: The role of parenting style and online relational maintenance behaviors. *Communication Reports (Pullman, Wash.)*, 32(2), 43–56. <https://doi.org/10.1080/08934215.2019.1582682>
- Ashford, J., Lier, P. A. C. V., Timmermans, M., Cuijpers, P., & Koot, H. M. (2008). Prenatal smoking and internalizing and externalizing problems in children studied from childhood to late adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry*, 47(7), 779–787. <https://doi.org/10.1097/CHI.0b013e318172eefb>
- Bai, Q., Bai, S., Dan, Q., Lei, L., & Wang, P. (2020). Mother phubbing and adolescent academic burnout: The mediating role of mental health and the moderating role of agreeableness and neuroticism. *Personality and Individual Differences*, 155, Article 109622. <https://doi.org/10.1016/j.paid.2019.109622>
- Balta, S., Emirtekin, E., Kircaburun, K., & Griffiths, M. D. (2020). Neuroticism, trait fear of missing out, and phubbing: the mediating role of state fear of missing out and problematic Instagram use. *International Journal of Mental Health and Addiction*, 18(3), 628–639. <https://doi.org/10.1007/s11469-018-9959-8>
- Barkley, R.A. (1998). *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment* (2nd edn). New York: The Guildford Press.
- Basten, M., Tiemeier, H., Althoff, R. R., van de Schoot, R., Jaddoe, V. W. V., Hofman, A., Hudziak, J. J., Verhulst, F. C., & van der Ende, J. (2016). The stability of problem behavior across the preschool years: An empirical approach in the general population. *Journal of Abnormal Child Psychology*, 44(2), 393–404. <https://doi.org/10.1007/s10802-015-9993-y>
- Bandura, A. (1971). *Social Learning Theory*. New York: General Learning Press. General

Learning Press, New York.

- Bengtsson, H., & Arvidsson, Å. (2011). The impact of developing social perspective-taking skills on emotionality in middle and late childhood. *social development. Oxford, England, 20(2)*, 353–375. <https://doi.org/10.1111/j.1467-9507.2010.00587.x>
- Bhana, A. (2010). Middle childhood and pre-adolescence. In I. Petersen, A. Bhana, A. J. Flisher, L. Swartz, & L. Richter (Eds.), *Promoting Mental Health in Scarce-Resource Contexts: Emerging Evidence and Practice* (pp. 124–142). HSRC Press, Cape Town. <http://hdl.handle.net/20.500.11910/4374>
- Bowlby, J. (1988). The origins of attachment theory. *A Secure Base: Parent-child attachment and Healthy Human Development* (pp.20-38). New York, NY: Basic Books.
- Braune-Krickau, K., Schneebeili, L., Pehlke-Milde, J., Gemperle, M., Koch, R., & von Wyl, A. (2021). Smartphones in the nursery: Parental smartphone use and parental sensitivity and responsiveness within parent-child interaction in early childhood (0-5 years): A scoping review. *Infant Mental Health Journal, 42(2)*, 161–175. <https://pubmed.ncbi.nlm.nih.gov/33452702/>.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In R. M. Lerner & W. Damon (Eds.), *Handbook of child psychology: Theoretical models of human development* (6th ed., pp. 793–828). John Wiley & Sons, Inc.
- Burt, S. A., McGue, M., Kueger, R. F., & Iacono, W. G. (2005). How are parent–child conflict

- and childhood externalizing symptoms related over time? Results from a genetically informative cross-lagged study. *Development and Psychopathology*, *17*(1), 145–165. <https://doi.org/10.1017/S095457940505008X>
- Canadian Pediatric Society. (2019) Digital media: Promoting healthy screen use in school-aged children and adolescents. *Paediatrics & Child Health*, *24*(6), 402–408. <https://doi.org/10.1093/pch/pxz095>
- Capilla Garrido, E., Issa, T., Gutiérrez Esteban, P., & Cubo Delgado, S. (2021). A descriptive literature review of phubbing behaviors. *Heliyon*, *7*(5), e07037. <https://doi.org/10.1016/j.heliyon.2021.e07037>
- Chen, Y., Zhu, J., Ye, Y., Huang, L., Yang, J., Chen, L., & Zhang, W. (2021). Parental rejection and adolescent problematic mobile phone use: Mediating and moderating roles of school engagement and impulsivity. *Current Psychology (New Brunswick, N.J.)*, *40*(10), 5166–5174. <https://doi.org/10.1007/s12144-019-00458-9>
- Chotpitayasunondh, V., & Douglas, K. M. (2016). How “phubbing” becomes the norm: The antecedents and consequences of snubbing via smartphone. *Computers in Human Behavior*, *63*, 9–18. <https://doi.org/10.1016/j.chb.2016.05.018>
- Climie, E. A., & Mitchell, K. (2017). Parent-child relationship and behavior problems in children with ADHD. *International Journal of Developmental Disabilities*, *63*(1), 27–35. <https://doi.org/10.1080/20473869.2015.1112498>
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*(2), 310–357. <https://doi.org/10.1037/0033-2909.98.2.310>
- Cooke, J. E., Deneault, A., Devereux, C., Eirich, R., Fearon, R. M. P., & Madigan, S. (2022).

- Parental sensitivity and child behavioral problems: A meta-analytic review. *Child Development*, 93(5), 1231–1248. <https://doi.org/10.1111/cdev.13764>
- Coyne, S. M., Padilla-Walker, L.M., Day, R.D., Harper, J., Stockdale, L. (2014) A friend request from dear old dad: associations between parent-child social networking and adolescent outcomes. *Cyberpsychol Behav Soc Netw*.17(1): 8-13. <https://doi.org/10.1089/cyber.2012.0623>.
- Cox, M. J., & Paley, B. (2003). Understanding families as systems. *Current Directions in Psychological Science: A Journal of the American Psychological Society*, 12(5), 193–196. <https://doi.org/10.1111/1467-8721.01259>
- Danet, M. (2020). Parental concerns about their school-aged children’s use of digital devices. *Journal of Child and Family Studies*, 29(10), 2890–2904. <https://doi.org/10.1007/s10826-020-01760-y>
- Dennis, C.-L., Carsley, S., Brennenstuhl, S., Brown, H. K., Marini, F., Bell, R. C., Miller, A., Ravindran, S., Damp, V., apos, Paiva, Dol, J., & Birken, C. S. (2022). Screen use and internet addiction among parents of young children: A nationwide Canadian cross-sectional survey. *PLoS ONE*, 17(1), <https://doi.org/10.1371/journal.pone.0257831>
- Deneault, A.-A., Plamondon, A., Neville, R. D., Eirich, R., McArthur, B. A., Tough, S., & Madigan, S. (2024). Perceived parental distraction by technology and mental health among emerging adolescents. *JAMA Network Open*, 7(8), e2428261-. <https://doi.org/10.1001/jamanetworkopen.2024.28261>
- Domoff, S. E., Borgen, A. L., & Radesky, J. S. (2020). Interactional theory of childhood problematic media use. *Human Behavior and Emerging Technologies*, 2(4), 343–353. <https://doi.org/10.1002/hbe2.217>

- Domoff, S. E., Harrison, K., Gearhardt, A. N., Gentile, D. A., Lumeng, J. C., & Miller, A. L. (2019). Development and validation of the problematic media use measure: a parent report measure of screen media “addiction” in children. *Psychology of Popular Media Culture, 8*(1), 2–11. <https://doi.org/10.1037/ppm0000163>
- Donohue, E., Halgunseth, L. C., Chilenski, S. M., & Perkins, D. F. (2022). Parent–child recurring conflict: a mediator between parental anger management and adolescent behavior. *Family and Consumer Sciences Research Journal, 51*(1), 6–19. <https://doi.org/10.1111/fcsr.12450>
- Driscoll, K., & Pianta, R. C. (2011). Mothers’ and fathers’ perceptions of conflict and closeness in parent- child relationships during early childhood. *Journal of Early Childhood and Infant Psychology, 7*, 1-24.
- Niu, G., Yao, L., Wu, L., Tian, Y., Xu, L., & Sun, X. (2020).
- Dubois-Comtois, K., Moss, E., Cyr, C., & Pascuzzo, K. (2013). Behavior problems in middle childhood: the predictive role of maternal distress, child attachment, and mother-child interactions. *Journal of Abnormal Child Psychology, 41*(8), 1311–1324. <https://doi.org/10.1007/s10802-013-9764-6>
- Eales, L., Gillespie, S., Alstat, R. A., Ferguson, G. M., & Carlson, S. M. (2021). Children’s screen and problematic media use in the United States before and during the COVID-19 pandemic. *Child Development, 92*(5), e866–e882. <https://doi.org/10.1111/cdev.13652>
- Eisenberg, N., Sadovsky, A., Spinrad, T. L., & Fabes, R. A. (2005). The relations of problem behavior status to children’s negative emotionality, effortful control, and impulsivity: Concurrent relations and prediction of change. *Developmental Psychology, 41*(1), 193–.
- Elhai, J. D., Dvorak, R. D., Levine, J. C., & Hall, B. J. (2017). Problematic smartphone use: A

- conceptual overview and systematic review of relations with anxiety and depression psychopathology. *Journal of Affective Disorders*, 207, 251–259. <https://doi.org/10.1016/j.jad.2016.08.030>
- Espinet, S. D., Graziosi, G., Toplak, M. E., Hesson, J., & Minhas, P. (2022). A review of Canadian diagnosed ADHD prevalence and incidence estimates published in the past decade. *Brain Sciences*, 12(8), Article 8. <https://doi.org/10.3390/brainsci12081051>
- Evans, S., Ling, M., Hill, B., Rinehart, N., Austin, D., & Sciberras, E. (2018). Systematic review of meditation-based interventions for children with ADHD. *European Child & Adolescent Psychiatry*, 27(1), 9–27. <https://doi.org/10.1007/s00787-017-1008-9>
- Frackowiak, M., Ochs, C., Wolfers, L., & Vanden Abeele, M. (2023.). Commentary: Technoference or parental phubbing? A call for greater conceptual and operational clarity of parental smartphone use around children. *Journal of Child Psychology and Psychiatry*. <https://doi.org/10.1111/jcpp.13917>
- Friedman, N. P., Haberstick, B. C., Willcutt, E. G., Miyake, A., Young, S. E., Corley, R. P., & Hewitt, J. K. (2007). Greater attention problems during childhood predict poorer executive functioning in late adolescence. *Psychological Science*, 18(10), 893–900. <https://doi.org/10.1111/j.1467-9280.2007.01997.x>
- Geng, J., Lei, L., Ouyang, M., Nie, J., & Wang, P. (2021). The influence of perceived parental phubbing on adolescents' problematic smartphone use: A two-wave multiple mediation model. *Addictive Behaviors*, 121, Article 106995. <https://doi.org/10.1016/j.addbeh.2021.106995>
- Georgiou, S. N., & Fanti, K. A. (2014). Transactional associations between mother-child conflict

- and child externalizing and internalising problems. *Educational Psychology (Dorchester-on-Thames)*, 34(2), 133–153. <https://doi.org/10.1080/01443410.2013.785055>
- Goodman, M., Waters, S. F., & Thompson, R. A. (2012). Parent-offspring conflict. *Encyclopedia of Human Behavior* (Second Edition, Vol. 3, pp. 28–33). Elsevier Inc. <https://doi.org/10.1016/B978-0-12-375000-6.00267-6>
- Griffin, M., Martino, R. J., LoSchiavo, C., Comer-Carruthers, C., Krause, K. D., Stults, C. B., & Halkitis, P. N. (2022). Ensuring survey research data integrity in the era of internet bots. *Quality & Quantity*, 56(4), 2841–2852. <https://doi.org/10.1007/s11135-021-01252-1>
- Grusec, J. E. (2011). Socialization processes in the family: Social and emotional development. *Annual Review of Psychology*, 62(1), 243–269. <https://doi.org/10.1146/annurev.psych.121208.131650>
- Hefner, D., Knop, K., Schmitt, S., & Vorderer, P. (2019). Rules? Role model? Relationship? The impact of parents on their children’s problematic mobile phone involvement. *Media Psychology*, 22(1), 82–108. <https://doi.org/10.1080/15213269.2018.1433544>
- Hiniker, A., Schoenebeck, S. Y., & Kientz, J. A. (2016). Not at the dinner table: Parents’ and children’s perspectives on family technology rules. *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*, 1376–1389. <https://doi.org/10.1145/2818048.2819940>
- Hiniker, A., Sobel, K., Suh, H., Sung, Y.-C., Lee, C. P., & Kientz, J. A. (2015). Texting while parenting: How adults use mobile phones while caring for children at the playground. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, 727–736. <https://doi.org/10.1145/2702123.2702199>
- Hofer, C., Eisenberg, N., Spinrad, T. L., Morris, A. S., Gershoff, E., Valiente, C., Kupfer, A., &

- Eggum, N. D. (2013). Mother-adolescent conflict: stability, change, and relations with externalizing and internalizing behavior problems. *Social Development (Oxford, England)*, 22(2), 259–279. <https://doi.org/10.1111/sode.12012>
- Hong, W., Liu, R.-D., Ding, Y., Oei, T. P., Zhen, R., & Jiang, S. (2019). Parents' phubbing and problematic mobile phone use: the roles of the parent–child relationship and children's self-esteem. *Cyberpsychology, Behavior, and Social Networking*, 22. <https://doi.org/10.1089/cyber.2019.0179>
- Ianni, L., Mazer, B., Thomas, A., & Snider, L. (2021). The role of occupational therapy with children with attention deficit hyperactivity disorder (ADHD): a Canadian national survey. *Journal of Occupational Therapy, Schools, & Early Intervention*, 14(2), 162–183. <https://doi.org/10.1080/19411243.2020.1822259>
- Inoue, S., Yorifuji, T., Kato, T., Sanada, S., Doi, H., & Kawachi, I. (2016). Children's media use and self-regulation behavior: longitudinal associations in a nationwide Japanese study. *Maternal and Child Health Journal*, 20(10), 2084–2099. <https://doi.org/10.1007/s10995-016-2031-z>
- Jiang, P., Yang, X., & Zhu, L. (2024). Technoference interacts with parenting practices to predict children's attentional control indexed by intraindividual reaction time variability. *Journal of Child and Family Studies*, 33(6), 1712–1725. <https://doi.org/10.1007/s10826-024-02835-w>
- Kadylak, T., Makki, T. W., Francis, J., Cotten, S. R., Rikard, R. V., & Sah, Y. J. (2018). Disrupted copresence: Older adults' views on mobile phone use during face-to-face interactions. *Mobile Media & Communication*, 6(3), 331–349. <https://doi.org/10.1177/2050157918758129>

- Karadağ, E., Tosuntaş, Ş. B., Erzen, E., Duru, P., Bostan, N., Şahin, B. M., Çulha, İ., & Babadağ, B. (2015). Determinants of phubbing, which is the sum of many virtual addictions: A structural equation model. *Journal of Behavioral Addictions, 4*(2), 60–74.  
<https://doi.org/10.1556/2006.4.2015.005>
- Karreman, A., de Haas, S., van Tuijl, C., van Aken, M. A. G., & Deković, M. (2010). Relations among temperament, parenting and problem behavior in young children. *Infant Behavior and Development, 33*(1), 39–49. <https://doi.org/10.1016/j.infbeh.2009.10.008>
- Kildare, C. A., & Middlemiss, W. (2017). Impact of parent's mobile device use on parent-child interaction: A literature review. *Computers in Human Behavior, 75*, 579–593.  
<https://doi.org/10.1016/j.chb.2017.06.003>
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox. A social technology that reduces social involvement and psychological well-being? *The American Psychologist, 53*(9), 1017-1031. <https://doi.org/10.1037//0003-066x.53.9.1017>
- Kroshus, E., Tandon, P. S., Zhou, C., Johnson, A. M., Steiner, M. K., & Christakis, D. A. (2022). Problematic child media use during the covid-19 pandemic. *Pediatrics, 150*(3), e2021055190. <https://doi.org/10.1542/peds.2021-055190>
- Kushlev, K., & Dunn, E. W. (2019). Smartphones distract parents from cultivating feelings of connection when spending time with their children. *Journal of Social and Personal Relationships, 36*(6), 1619–1639. <https://doi.org/10.1177/0265407518769387>
- Lau (2024). This type of screen time has the worst effect on kids: Experts. CTV Montreal.  
<https://montreal.ctvnews.ca/this-type-of-screen-time-has-the-worst-effect-on-kids-experts-1.6899284>

- Lionetti, F., Spinelli, M., Moscardino, U., Ponzetti, S., Garito, M. C., Dellagiulia, A., Aureli, T., Fasolo, M., & Pluess, M. (2023). The interplay between parenting and environmental sensitivity in the prediction of children's externalizing and internalizing behaviors during COVID-19. *Development and Psychopathology*, *35*(3), 1390–1403. <https://doi.org/10.1017/S0954579421001309>
- Liu, J. (2004). Childhood externalizing behavior: Theory and implications. *Journal of Child and Adolescent Psychiatric Nursing*, *17*(3), 93–103. <https://doi.org/10.1111/j.1744-6171.2004.tb00003.x>
- Liu, X., Geng, S., Lei, T., Cheng, Y., & Yu, H. (2024). Connections between parental phubbing and electronic media use in young children: the mediating role of parents; child conflict and moderating effect of child emotion regulation. *Behavioral Sciences*, *14*(2). <https://doi.org/10.3390/bs14020119>
- Liu, Y.-L. (2003). Parent-child interaction and children's depression: The relationships between Parent-child interaction and children's depressive symptoms in Taiwan. *Journal of Adolescence*, *26*(4), 447–457. [https://doi.org/10.1016/S0140-1971\(03\)00029-0](https://doi.org/10.1016/S0140-1971(03)00029-0)
- Lougheed, J. P., Duncan, R. J., Keskin, G., & Marceau, K. (2022). Longitudinal associations between mother-child conflict and child internalizing problems in mid-childhood. *Development and Psychopathology*, *34*(1), 263–272. <https://doi.org/10.1017/S0954579420000863>
- Luo, L., & Qiu, Y. (2024). Parent-child relationship and social competence in Chinese preschoolers: A latent class analysis. *Children and Youth Services Review*, *163*, Article 107716. <https://doi.org/10.1016/j.childyouth.2024.107716>
- Lv, H., Ye, W., Chen, S., Zhang, H., & Wang, R. (2022). The effect of mother phubbing on

- young children's emotional and behavioral problems: a moderated mediation model of mother-child attachment and parenting stress. *International Journal of Environmental Research and Public Health*, 19(24), Article 24. <https://doi.org/10.3390/ijerph192416911>
- Macquarie Dictionary. (2013, October 7). *Phubbing: A word is born* [Video]. Adland. <https://adland.tv/macquarie-dictionary-phubbing-word-born-2013-230-australia/>
- Madigan, S., Atkinson, L., Laurin, K., & Benoit, D. (2013). Attachment and internalizing behavior in early childhood: A meta-analysis. *Developmental Psychology*, 49(4), 672–689. <https://doi.org/10.1037/a0028793>
- Mangan, E., Leavy, J. E., & Jancey, J. (2018). Mobile device use when caring for children 0-5 years: A naturalistic playground study. *Health Promotion Journal of Australia*, 29(3), 337–343. <https://doi.org/10.1002/hpja.38>
- Manassis, K. (2011). Child-parent relations: Attachment and anxiety disorders. In W. K. Silverman & A. P. Field (Eds.), *Anxiety disorders in children and adolescents* (pp. 280 – 298). Cambridge University Press. doi:10.1017/CBO97805119 94920.014
- Marceau, K., Ram, N., & Susman, E. J. (2015). Development and lability in the parent-child relationship during adolescence: associations with pubertal timing and tempo. *Journal of Research on Adolescence*, 25(3), 474–489. <https://doi.org/10.1111/jora.12139>
- McDaniel, B. T., & Coyne, S. M. (2016). Technology interference in the parenting of young children: Implications for mothers' perceptions of coparenting. *The Social Science Journal (Fort Collins)*, 53(4), 435–443. <https://doi.org/10.1016/j.soscij.2016.04.010>
- McDaniel, B. T., & Radesky, J. S. (2018a). Technoferece: parent distraction with technology and associations with child behavior problems. *Child Development*, 89(1), 100–109. <https://doi.org/10.1111/cdev.12822>

- McDaniel, B. T., & Radesky, J. S. (2018b). Technoference: Longitudinal associations between parent technology use, parenting stress, and child behavior problems. *Pediatric Research*, *84*(2), 210–218. <https://doi.org/10.1038/s41390-018-0052-6>
- McDaniel, B. T. (2019). Parent distraction with phones, reasons for use, and impacts on parenting and child outcomes: A review of the emerging research. *Human Behavior and Emerging Technologies*, *1*(2), 72-80. <https://doi.org/10.1002/hbe2.139>
- McKee, L., Colletti, C., Rakow, A., Jones, D. J., & Forehand, R. (2008). Parenting and child externalizing behaviors: Are the associations specific or diffuse? *Aggression and Violent Behavior*, *13*(3), 201–215. <https://doi.org/10.1016/j.avb.2008.03.005>
- Mesman, J., Bongers, I. L., & Koot, H. M. (2001). Preschool developmental pathways to preadolescent internalizing and externalizing problems. *Journal of Child Psychology and Psychiatry*, *42*(5), 679–689. <https://doi.org/10.1111/1469-7610.00763>
- Morris, A. S., Criss, M. M., Silk, J. S., & Houtberg, B. J. (2017). The impact of parenting on emotion regulation during childhood and adolescence. *Child Development Perspectives*, *11*(4), 233–238. <https://doi.org/10.1111/cdep.12238>
- Nazir, T. & Pişkin, M. (2016). Phubbing: a technological invasion which connected the world but disconnected humans. *International Journal of Indian Psychology*, *3*(4). <https://doi.org/10.25215/0304.195>
- Nikken, P., & Jansz, J. (2014). Developing scales to measure parental mediation of young children's internet use. *Learning, Media and Technology*, *39*(2), 250–266. <https://doi.org/10.1080/17439884.2013.782038>
- Niu, G., Yao, L., Wu, L., Tian, Y., Xu, L., & Sun, X. (2020). Parental phubbing and adolescent

- problematic mobile phone use: The role of parent-child relationship and self-control. *Children and Youth Services Review*, 116, 105247-<https://doi.org/10.1016/j.chidyouth.2020.105247>
- Olivier, E., Morin, A. J. S., Langlois, J., Tardif-Grenier, K., & Archambault, I. (2020). Internalizing and externalizing behavior problems and student engagement in elementary and secondary school students. *Journal of Youth and Adolescence*, 49(11), 2327–2346. <https://doi.org/10.1007/s10964-020-01295-x>
- Government of Ontario. (2022). *Focusing on middle childhood*. <https://www.ontario.ca/document/gearing-up/focusing-middle-childhood#ref-2>
- Pancani, L., Gerosa, T., Gui, M., & Riva, P. (2021). “Mom, dad, look at me”: The development of the Parental Phubbing Scale. *Journal of Social and Personal Relationships*, 38(2), 435–458. <https://doi.org/10.1177/0265407520964866>
- Popov, L. M., & Ilesanmi, R. A. (2015). Parent-child relationship: Peculiarities and outcome. *Review of European Studies*, 7(5). <https://doi.org/10.5539/res.v7n5p253>
- Podolski, C.-L., & Nigg, J. T. (2001). Parent stress and coping in relation to child ADHD severity and associated child disruptive behavior problems. *Journal of Clinical Child and Adolescent Psychology*, 30(4), 503–513. [https://doi.org/10.1207/S15374424JCCP3004\\_07](https://doi.org/10.1207/S15374424JCCP3004_07)
- Putnick, D. L., Bornstein, M. H., Lansford, J. E., Malone, P. S., Pastorelli, C., Skinner, A. T., Sorbring, E., Tapanya, S., Uribe Tirado, L. M., Zelli, A., Alampay, L. P., Al-Hassan, S. M., Bacchini, D., Bombi, A. S., Chang, L., Deater-Deckard, K., Di Giunta, L., Dodge, K. A., & Oburu, P. (2015). Perceived mother and father acceptance-rejection predict four

- unique aspects of child adjustment across nine countries. *Journal of Child Psychology and Psychiatry*, 56(8), 923–932. <https://doi.org/10.1111/jcpp.12366v>
- Qiao, L., & Liu, Q. X. (2020). The effect of technoference in parent child relationships on adolescent smartphone addiction: the role of cognitive factors. *Children and Youth Services Review*, 118. <https://doi.org/10.1016/j.childyouth.2020.105340>.
- Qiao, L., & Liu, Q. X. (2020). The effect of technoference in parent child relationships on adolescent smartphone addiction: the role of cognitive factors. *Children and Youth Services Review*, 118. <https://doi.org/10.1016/j.childyouth.2020.105340>.
- Qiu, C., Li, R., Luo, H., Li, S., & Nie, Y. (2022). Parent-child relationship and smartphone addiction among Chinese adolescents: A longitudinal moderated mediation model. *Addictive Behaviors*, 130. <https://doi.org/10.1016/j.addbeh.2022.107304>
- Radesky, J. S., Kistin, C. J., Zuckerman, B., Nitzberg, K., Gross, J., Kaplan-Sanoff, M., Augustyn, M., & Silverstein, M. (2014). Patterns of mobile device use by caregivers and children during meals in fast food restaurants. *Pediatrics (Evanston)*, 133(4), e843–e849. <https://doi.org/10.1542/peds.2013-3703>
- Radesky, J. S., Kistin, C., Eisenberg, S., Gross, J., Block, G., Zuckerman, B., & Silverstein, M. (2016). Parent perspectives on their mobile technology use: The excitement and exhaustion of parenting while connected. *Journal of Developmental & Behavioral Pediatrics*, 37(9), 694–701. <https://doi.org/10.1097/DBP.0000000000000357>
- Rega, V., Gioia, F., & Boursier, V. (2023). Problematic media use among children up to the age of 10: a systematic literature review. *International Journal of Environmental Research and Public Health*, 20(10), Article 10. <https://doi.org/10.3390/ijerph20105854>
- Rideout, V. (2015). The common sense census: media use by tweens and teens (p. 104).

- Common Sense*. [https://www.commonsemmedia.org/sites/default/files/uploads/research/census\\_researchreport.pdf](https://www.commonsemmedia.org/sites/default/files/uploads/research/census_researchreport.pdf).
- Roberts, J. A., & David, M. E. (2016). My life has become a major distraction from my cell phone: Partner phubbing and relationship satisfaction among romantic partners. *Computers in Human Behavior*, *54*, 134–141. <https://doi.org/10.1016/j.chb.2015.07.058>
- Roberts, J. A., & David, M. E. (2017). Put down your phone and listen to me: How boss phubbing undermines the psychological conditions necessary for employee engagement. *Computers in Human Behavior*, *75*, 206–217. <https://doi.org/10.1016/j.chb.2017.05.021>
- Rohner, R. P., Khaleque, A., & Cournoyer, D. E. (2005). Parental acceptance-rejection: Theory, methods, cross-cultural evidence, and implications. *Ethos*, *33*(3), 299–334.
- Rothbaum, F., Rosen, K. S., Pott, M., & Beatty, M. (1995). Early parent-child relationships and later problem behavior: A longitudinal study. *Merrill-Palmer Quarterly*, *41*(2), 133–151.
- Rozenblatt-Perkal, Y., Davidovitch, M., & Gueron-Sela, N. (2022). Infants' physiological and behavioral reactivity to maternal mobile phone use-An experimental study. *Computers in Human Behavior*, *127*. <https://doi.org/10.1016/j.chb.2021.107038>
- Ruff, H. A., & Rothbart, M. K. (2001). Attention in early development: Themes and variations (1st ed.). *Oxford University Press*. <https://doi.org/10.1093/acprof:oso/9780195136326.001.0001>
- Samkange-Zeeb, F., & Blettner, M. (2009). Emerging aspects of mobile phone use. *Emerging Health Threats Journal*, *2*, e5–e5. <https://doi.org/10.1038/ehj.09.005>
- Sakamoto, N., Kabaya, K., & Nakayama, M. (2022). Sleep problems, sleep duration, and use of digital devices among primary school students in Japan. *BMC Public Health*, *22*(1), 1006. <https://doi.org/10.1186/s12889-022-13389-1>

- Scaramella, L. V., & Leve, L. D. (2004). Clarifying parent–child reciprocities during early childhood: the early childhood coercion model. *Clinical Child and Family Psychology Review*, 7(2), 89–107. <https://doi.org/10.1023/B:CCFP.0000030287.13160.a3>
- Schmengler, H., Peeters, M., Stevens, G. W. J. M., Kunst, A. E., Hartman, C. A., Oldehinkel, A. J., & Vollebergh, W. A. M. (2023). Educational level, attention problems, and externalizing behaviour in adolescence and early adulthood: the role of social causation and health-related selection—the TRAILS study. *European Child & Adolescent Psychiatry*, 32(5), 809–824. <https://doi.org/10.1007/s00787-021-01913-4>
- Schwab, K. A., Sherman, B., & Goldenberg, M. (2024). Too many bots: a lesson for online quantitative data collection. *Journal of Park and Recreation Administration*, 42(2), 87–95. <https://doi.org/10.18666/JPRA-2023-12011>
- Sharaievska, I., & Stodolska, M. (2017). Family satisfaction and social networking leisure. *Leisure Studies*, 36(2), 231–243. <https://doi.org/10.1080/02614367.2016.1141974>
- Shen, X., Xie, X., & Wu, S. (2023). Do adolescents addict to internet games after being phubbed by parents? The roles of maladaptive cognition and self-esteem. *Current Psychology*, 42(3), 2255–2267. <https://doi.org/10.1007/s12144-022-03255-z>
- Shi, D., Xu, Y., & Chu, L. (2024). The association between parents phubbing and prosocial behavior among Chinese preschool children: a moderated mediation model. *Frontiers in Psychology*, 15, 1338055–1338055. <https://doi.org/10.3389/fpsyg.2024.1338055>
- Silver, L., Huang, C., & Taylor, K. (2022, April 5). *Internet, smartphone, and social media use in advanced economies: 2022*. Pew Research Center. <https://www.pewresearch.org/global/2022/04/05/internet-smartphone-and-social-media-use-in-advanced-economies-2022/>
- Solecki, S. (2022). The phubbing phenomenon: The impact on parent-child relationships.

- Journal of Pediatric Nursing*, 62, 211–214. <https://doi.org/10.1016/j.pedn.2021.09.027>
- Statistics Canada. (2022). *Canadian Internet Use Survey 2020* Government of Canada. <https://www150.statcan.gc.ca/n1/daily-quotidien/210622/dq210622b-eng.htm>
- Stockdale, L. A., Coyne, S. M., & Padilla-Walker, L. M. (2018). Parent and child technoference 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>
- Swing, E. L., Gentile, D. A., Anderson, C. A., & Walsh, D. A. (2010). Television and video game exposure and the development of attention problems. *Pediatrics (Evanston)*, 126(2), 214–221. <https://doi.org/10.1542/peds.2009-1508>
- Takahashi, M., Adachi, M., Nishimura, T., Hirota, T., Yasuda, S., Kuribayashi, M., & Nakamura, K. (2018). Prevalence of pathological and maladaptive Internet use and the association with depression and health-related quality of life in Japanese elementary and junior high school-aged children. *Social Psychiatry and Psychiatric Epidemiology*, 53(12), 1349–1360. <https://doi.org/10.1007/s00127-018-1605-z>
- Thornton, A., Orbuch, T. L., & Axinn, W. G. (1995). Parent-child relationships during the transition to adulthood. *Journal of Family Issues*, 16(5), 538–564. <https://doi.org/10.1177/019251395016005003>
- Tong, W., Jia, J., Wang, P., & He, W. (2024). The associations between parental phubbing, adolescent phubbing, and adolescents' adjustments: a cross-lagged panel network analysis. *Journal of Youth and Adolescence*, 53(7), 1529–1541. <https://doi.org/10.1007/s10964-023-01909-0>
- Vanassche, S., Sodermans, A. K., Matthijs, K., & Swicegood, G. (2014). The effects of family

- type, family relationships and parental role models on delinquency and alcohol use among Flemish adolescents. *Journal of Child and Family Studies*, 23(1), 128–143. <https://doi.org/10.1007/s10826-012-9699-5>
- van Aken, C., Junger, M., Verhoeven, M., van Aken, M. A. G., & Deković, M. (2008). The longitudinal relations between parenting and toddlers' attention problems and aggressive behaviors. *Infant Behavior & Development*, 31(3), 432–446. <https://doi.org/10.1016/j.infbeh.2007.12.016>
- Valkenburg, P. M., & Peter, J. (2007). Online communication and adolescent well-being: Testing the stimulation versus the displacement hypothesis. *Journal of Computer-Mediated Communication*, 12(4), 1169–1182.
- Vieira, J. M., Matias, M., Ferreira, T., Lopez, F. G., & Matos, P. M. (2016). Parents' work-family experiences and children's problem behaviors: The mediating role of the parent-child relationship. *Journal of Family Psychology*, 30(4), 419–430. <https://doi.org/10.1037/fam0000189>
- Wang, X., Gao, L., Yang, J., Zhao, F., & Wang, P. (2020). Parental phubbing and adolescents' depressive symptoms: self-esteem and perceived social support as moderators. *Journal of Youth and Adolescence*, 49(2), 427–437. <https://doi.org/10.1007/s10964-019-01185-x>
- Wang, X., Qiao, Y., Li, W., & Lei, L. (2022). Parental phubbing and children's social withdrawal and aggression: A moderated mediation model of parenting behaviors and parents' gender. *Journal of Interpersonal Violence*, 37(21–22), <https://doi.org/10.1177/08862605211042807>
- Wang, X., Qiao, Y., & Wang, S. (2023). Parental phubbing, problematic smartphone use, and

- adolescents' learning burnout: A cross-lagged panel analysis. *Journal of Affective Disorders*, 320, 442–449. <https://doi.org/10.1016/j.jad.2022.09.163>
- Wang, Y., Xia, Q., Gu, L., & Li, F. (2024). Chinese college teachers' work-family conflict and their preschool children's problem behaviors: The mediating effects of parental phubbing and children's problematic media use. *Early Child Development and Care*, 194(3), 478–491. <https://doi.org/10.1080/03004430.2024.2329685>
- Wang, P., Zhao, M., Li, B., Wang, X., Xie, X., Geng, J., Nie, J., Zeng, P., & Mao, N. (2022). Mother phubbing and adolescent loneliness: a mediation model of mother–adolescent communication and perceived mother acceptance. *Social Science Computer Review*, 40(6), 1562–1577. <https://doi.org/10.1177/08944393211017263>
- Weaver, C. M., Shaw, D. S., Crossan, J. L., Dishion, T. J., & Wilson, M. N. (2015). Parent–child conflict and early childhood adjustment in two-parent low-income families: parallel developmental processes. *Child Psychiatry and Human Development*, 46(1), 94–107. <https://doi.org/10.1007/s10578-014-0455-5>
- Werling, A. M., Kuzhippallil, S., Emery, S., Walitza, S., & Drechsler, R. (2022). Problematic use of digital media in children and adolescents with a diagnosis of attention-deficit/hyperactivity disorder compared to controls. A meta-analysis. *Journal of Behavioral Addictions*, 11(2), 305–325. <https://doi.org/10.1556/2006.2022.00007>
- Wu, C. Y., & Lee, T. S.-H. (2020). Impact of parent–child relationship and sex on trajectories of children internalizing symptoms. *Journal of Affective Disorders*, 260, 167–173. <https://doi.org/10.1016/j.jad.2019.09.016>
- Xie, X., & Xie, J. (2019). Parental phubbing accelerates depression in late childhood and

- adolescence: A two-path model. *Journal of Adolescence*, 78(1), 43–52. <https://doi.org/10.1016/j.adolescence.2019.12.004>
- Xie, M., Nuttall, A. K., Johnson, D. J., & Qin, D. B. (2021). Longitudinal associations between mother-child and father-child closeness and conflict from middle childhood to adolescence. *Family Relations*, 70(3), 866–879. <https://doi.org/10.1111/fare.12531>
- Xu, C., & Xie, X. (2023). Put down the phone and accompany me: How parental phubbing undermines prosocial behavior of early adolescents. *Children and Youth Services Review*, 149, 106958-. <https://doi.org/10.1016/j.childyouth.2023.106958>
- Xuan, X., Chen, F., Yuan, C., Zhang, X., Luo, Y., Xue, Y., & Wang, Y. (2018). The relationship between parental conflict and preschool children's behavior problems: A moderated mediation model of parenting stress and child emotionality. *Children and Youth Services Review*, 95, 209–216. <https://doi.org/10.1016/j.childyouth.2018.10.021>
- Yan, J., Schoppe-Sullivan, S. J., & Feng, X. (2019). Trajectories of mother-child and father-child relationships across middle childhood and associations with depressive symptoms. *Development and Psychopathology*, 31(4), 1381–1393. <https://doi.org/10.1017/S0954579418000809>
- Yarrish, C., Groshon, L., Mitchell, J. D., Appelbaum, A., Klock, S., Winternitz, T., & Friedman-Wheeler, D. G. (2019). Finding the signal in the noise: Minimizing responses from bots and inattentive humans in online research. *The Behavior Therapist*, 42(7), 235–242
- Yang, W., Tang, L., Shen, X., Niu, G., Shi, X., Jin, S., Zhang, Y., & Yuan, Z. (2023). Parental phubbing and adolescent depressive symptoms during Covid-19: a serial mediating model. *Behavioral Sciences*, 13(5), 371-. <https://doi.org/10.3390/bs13050371>

- Zhang, Y., Ding, Q., & Wang, Z. (2021). Why parental phubbing is at risk for adolescent mobile phone addiction: A serial mediating model. *Children and Youth Services Review, 121*, 105873-. <https://doi.org/10.1016/j.chidyouth.2020.105873>
- Zhang, J., Dong, C., Jiang, Y., Zhang, Q., Li, H., & Li, Y. (2023). Parental phubbing and child social-emotional adjustment: a meta-analysis of studies conducted in China. *Psychology Research and Behavior Management, Volume 16*, 4267–4285. <https://doi.org/10.2147/PRBM.S417718>
- Zhang, J., Cao, Y., & Li, Y. (2024). Screen preference and extraversion: key factors in the link between mother phubbing and preschoolers' problematic media use. *Early Child Development and Care, 194*(11–12), 1183–1195. <https://doi.org/10.1080/03004430.2024.2409691>
- Zhang J., Liu M., Zhang Q., & Li Y. (2024). Mother phubbing and child problematic media use: The role of mother-child relationship and paternal coparenting mother phubbing and child problematic media use: the role of mother-child relationship and paternal coparenting. *Psychology Research and Behavior Management, 17*, 3327–3339. <https://doi.org/10.2147/PRBM.S431065>
- Zhao, J., Guo, Z., Shi, H., Yu, M., Jiao, L., & Xu, Y. (2023). The relationship between parental Phubbing and interpersonal aggression in adolescents: the role of rejection sensitivity and school climate. *Journal of Interpersonal Violence, 38*(11–12), 7630–7655. Los Angeles, CA: SAGE Publications.
- Zhu, X., Deng, C., & Bai, W. (2023). Parental control and adolescent internet addiction: The moderating effect of parent-child relationships. *Frontiers in Public Health, 11*. <https://doi.org/10.3389/fpubh.2023.1190534>

Zhu, Y., Deng, L., & Wan, K. (2022). The association between parent-child relationship and problematic internet use among English- and Chinese-language studies: A meta-analysis. *Frontiers in Psychology, 13*. <https://doi.org/10.3389/fpsyg.2022.885819>

## Appendix A

### Recruitment Scripts and Resources

#### Attachment-Di: Initial Contact Email

Dear [*insert contact name*],

My name is [*group member name*] and I am reaching out on behalf of a group of graduate psychology students from Trent University. We are currently conducting a study investigating how children use and interact with digital devices at home, as well as understand the role parents play in child(ren)'s use of technology. We are looking to recruit parents/guardians of children aged 0-12 to complete our 15–25-minute digital survey, and we are hoping you can assist us in advertising our study by distributing our study advertisement to your parent email list. If this is not a possibility, we also have physical flyers that we could display around your organization's premises. There are no known harms or risks associated with participating in this study and participation is completely voluntary. After participating in the questionnaire, parents will have a chance to enter a draw for one of four \$50 Amazon e-gift cards.

If you would be willing to distribute our study survey; if you would like additional information to assist you in reaching a decision; or if you have any questions regarding this study, please contact me by email at [*email address*] or simply reply to this email. If you agree to assist us, we would ask you to sign a pre-drafted letter to our ethics board that affirms your agreement to distribute our study advertisement and questionnaire. Once we have received ethics approval at a later date, we will contact you again to plan the distribution of our study advertisement and questionnaire.

Our hope is that the knowledge gained from this study will be beneficial to families in Canada, as well as the broader research community. I very much look forward to hearing from you and I thank you for your consideration.

[*Name of Student Investigator*]  
Master's Candidate  
Department of Psychology  
Trent University

#### Attachment-Dii: Online Moderator Message

My name is [*group member name*] and I am reaching out on behalf of a group of graduate psychology students from Trent University. We are currently conducting a study investigating how children use and interact with digital devices at home, as well as understand the role parents play in child(ren)'s use of technology. We are looking to recruit parents of children aged 0-12 to complete our 15–25-minute digital survey, and we are hoping you can assist us in advertising our study by posting our study advertisement on your [*group/forum*], [*insert page/forum title*]. There are no known harms or risks associated with participating in this study and participation of any parent is completely voluntary. After participating in the questionnaire, participants will have a chance to enter a draw for one of four \$50 Amazon e-gift cards. This study has been reviewed and received ethics clearance through the University of Trent Research Ethics Board.

If you would be willing to distribute our study survey; if you would like additional information to assist you in reaching a decision; or if you have any questions regarding this study, please contact me by email at [*email address*] or reply to this message. We have a post template for the participants drafted, so, if you are willing to distribute the survey, you need only post it on your [*group/forum*]. We ask that if you make this post, please disable commenting and likes to uphold the anonymity of your group members.

Our hope is that the knowledge gained from this study will be beneficial to families in Canada, as well as the broader research community. I very much look forward to hearing from you and I thank you for your consideration.

[*Name of Student Investigator*]  
Master's Candidate  
Department of Psychology  
Trent University

### Attachment D-iii: Parent Message

Dear Parents/Guardians,

If you are a parent of at least one child between the ages of 0-12, you are invited to participate in a survey on your children's use of digital technology. The purpose of this survey is to see how children use and interact with digital devices at home, as well as understand your role in your child(ren)'s use of technology. This is a research project being conducted by a psychology graduate research team at Trent University. This study has been reviewed and received ethics clearance through the University of Trent Research Ethics Board. It should take approximately 15-25 minutes of your time to complete. Please note that this research is anonymous and confidential. Your personal information will not be associated with your responses in this study.

Your participation in this survey is completely voluntary. You may refuse to take part in the research or exit the survey at any time without penalty. In appreciation of your time commitment, you may choose to enter a draw for one of four \$50 amazon e-gift cards. Your responses will help us create a clearer picture of Canadian children's digital technology use.

Please click the link to the survey below to participate. You may use a smartphone or computer to participate: [https://trentu.qualtrics.com/jfe/form/SV\\_6S5q2X4IORJgEF8](https://trentu.qualtrics.com/jfe/form/SV_6S5q2X4IORJgEF8)

### Attachment D-iv: Survey Advert



## PARTICIPANTS NEEDED

### FOR 15-25 MINUTE STUDY INVESTIGATING CHILDREN'S DIGITAL HABITS

#### This study explores:

- How children use/interact with digital devices at home
- The role parents play in their children's use of technology

#### Who do we need?

- Parents/guardians of a child ages 0 to 12
- Be at least 16 years of age



Complete the survey for a chance to **WIN** one of  
four \$50 Amazon gift cards

TO COMPLETE THIS SURVEY

## SCAN OR CLICK THE LINK BELOW



[https://trentu.qualtrics.com/jfe/form/SV\\_6S5q2X4IORJgEF8](https://trentu.qualtrics.com/jfe/form/SV_6S5q2X4IORJgEF8)

Study valid until: **JULY 2025**

QUESTIONS? CONTACT US AT: [yukefu@trentu.ca](mailto:yukefu@trentu.ca)

## Appendix B

### In-Person Contact Protocol

#### Key Points for In-Person Contact

*The purpose of this visit is to give owners/managers of the organizations of interest a brief description of the study and see whether they would be willing to advertise the study to the parents at their organization.*

Why are we visiting this organization?

- Reaching out on behalf of Dr. Liu's lab at Trent University regarding the Digital Literacy Project
- We are currently conducting a study investigating children's use of digital technology
- Looking to recruit parents/guardians of children ages 0-12 to complete our 15–25-minute online survey and we are aware that parents of children ages [insert ages] attend this organization.
- We are wondering if the organization could assist us in participant recruitment

If they want to know more about the purpose of the study

- This study aims to understand how children use and interact with digital devices at home.
- Also, how parental beliefs, behaviours and the role parent's relationship with their child plays in children's technological usage.

If they want to know what are the risks and benefits of the study?

- All participants can choose to enter a draw to win one of four \$50 Amazon e-gift cards
- While there are no known harms associated with participating in this study, some participants may experience an emotional reaction when answering questions regarding their family, parenting beliefs, and parenting practices.
- However, the questions used in the present study should not cause distress by themselves.
- Participation of any parent is completely voluntary and all participants will receive informed consent and be reminded of their rights to participant or withdraw at any point within the survey.

If they agree to help advertise

- Thank them for their help and give them a copy of the pre-drafted letter to sign
- Give them our contact information in case they have any questions and decide on the best method (e.g., email, phone, in-person) to get back in touch with them about study distribution after we have received ethical clearance

If the person does not agree to help advertise

- Thank them for their time and leave
- There will be no further contact

## Appendix C

### Organization Advertising Consent Form

#### **Letter to REB**

Dear Trent REB,

As an owner/manager of \_\_\_\_\_  
I am writing to affirm that I agree to assist the Trent research team investigating children's use of technology in the distribution of their study advertisement and questionnaire. I will distribute these resources to the parents that use my organization either electronically via email or physically through flyers displayed on my premises.

I assert that I have been informed of the nature of this research, of the benefits and risks to my clients if they choose to participate, and that my assistance is strictly voluntary. Any questions or concerns have been answered and I am aware that I may contact the researchers if I have any additional questions.

Thank you,

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature or Initials: \_\_\_\_\_

## Appendix D

### Informed Consent Form

1



#### Informed Consent Form

Department of Psychology

#### Children's Digital Literacy and Multimodal Practices in Canada

**Principal Investigator:** Yuke Fu  
Department of Psychology  
Trent University  
[yukefu@trentu.ca](mailto:yukefu@trentu.ca)  
(705) 748-1011 ext. 7471

**Supervisor:** Dr. Mowei Liu  
Department of Psychology  
Trent University  
[moweiliu@trentu.ca](mailto:moweiliu@trentu.ca)  
(705) 748-1011 ext. 7472

**PURPOSE:** The present study explores child development in an increasingly digital society. This study aims to understand how children use and interact with digital devices at home. Further, this investigation is interested in understanding the role parents play in shaping children's experiences with digital technology.

**DESCRIPTION OF THE STUDY:** As a participant, you will be asked to complete a questionnaire consisting of a variety multiple choice, free response, and open-ended questions. At the beginning of the questionnaire, you will receive a demographic form to complete (e.g., your age, your ethnicity, your child's age). Next, according to the age of your children, you will be asked to complete 5 to 8 measures. The first five measures will assess your family's digital resources, your child's likelihood and ability to interact with a variety of digital devices at home (i.e., multimodal practices and digital literacy), your beliefs regarding your child's digital technology use and your smartphone usage and habits. If your child is aged 6 or older, an additional set of three measures will be administered to examine your child's screen media usage, your child's problem behaviours, and your relationship with your child. The questionnaire is hosted online and can be completed on both computer and handheld devices. It is estimated that the questionnaire will take approximately 15-25 minutes to complete

**INCLUSION CRITERIA:** To participate in this study, you must be:

- A parent or guardian of at least one child aged between 0 and 12 years old.
- 16 years of age or older.
- Able to understand written English.

**BENEFITS:** When participating in the questionnaire, you will have a chance to enter a draw for one of four \$50 Amazon e-gift cards if you so choose. To enter the draw, you will be asked to input your email at the end of the questionnaire. Note that your email will not be connected to your questionnaire responses. Aside from the draw, by participating in the study, you might think about the pros and cons of your child(ren)'s use of technology. This topic is important to contemplate as society becomes increasingly digital in nature.

**FORESEEABLE RISKS:** There are no known harms associated with participating in this study. There is a small possibility that a person may experience an emotional reaction when answering questions regarding their family, parenting beliefs, and parenting practices. However, the questions used in the present study should not independently evoke distress. Remember that you also have the right to take a break, not answer a question, or withdraw from the study without consequence.

**CONFIDENTIALITY:** Your questionnaire data are not linked to your name or any personal information. The data will not be revealed to anyone by the research team unless they are required to do so by law (i.e., subpoena). No identifiable information will ever appear in reports, presentations, or publications that use the study data. Other research team members may be involved in the research process; however, these individuals have been trained in ethics and have signed a research confidentiality statement.

**PARTICIPATION:** Participation in this study is completely voluntary and you have the right to withdraw from the study at any time without penalty or consequence by closing the browser window. You may also skip any questions that you find uncomfortable. At the end of the questionnaire, you will have the option to withdraw your data. However, please note that once your questionnaire responses have been submitted, there will be no ability to identify which data is yours for deletion.

**INFORMATION STORAGE:** Electronic questionnaire data will be hosted on the servers of the survey hosting company Qualtrics. Qualtrics servers are both anonymous and secured/encrypted (i.e., via Transport Layer Security and an Intrusion Detection System). Qualtrics will not make this data available to any party unless required by a valid court order, search warrant, or subpoena. Data will be stored on Trent's encrypted cloud storage system (OneDrive). During data analysis, researchers will store study data on a password protected computer in a secure lab room. All electronic files will be encrypted, and researchers will destroy the data five years after the last publication or presentation of the findings.

**CONFLICT OF INTEREST:** The researchers have no commercial interest in completing this study. Any raw data collected through this study and any subsequent publications, presentations, and reports are the property of and are managed by the researchers exclusively.

If you have any questions about the study, you may contact Yuke Fu or Dr. Mowei Liu using the contact information listed at the beginning of this document. If you have any questions about the ethics of the study, you may contact the compliance officer at the Trent University Research Office at (705) 748-1011 ext. 7866.

**STATEMENT OF CONSENT:** The research study and procedures have been clearly explained. The potential harms and benefits of this study have also been explained. I know that I may contact the researchers if I have any questions about the study or the research process. I understand that this project has received approval from the Trent University Research Ethics

Board (REB file number: 28464). After reading this letter of consent, I willingly agree to participate in the study and have the data collected/stored as outlined in this document.

If you consent to participate in this study, you will be asked to confirm on the following page. Please click the arrow below to begin the questionnaire.

## Appendix E

### Demographic and General Information Questionnaire

1. What option best describes where you currently reside?
  - City
  - Town
  - Rural Area (e.g., village, hamlet, farmland).
2. What ethnicity do you identify as?
  - Asian or Pacific Islander
  - Black or African American
  - Hispanic or Latino
  - Native American or Alaskan Native
  - White or Caucasian
  - Multiracial or Biracial
  - Ethnicity not listed (please specify): \_\_\_\_\_
3. What is your age in years? \_\_\_\_\_
4. How many children aged 0-17 live in your family? \_\_\_\_\_
5. How many adults (18+ years old) live in your family? \_\_\_\_\_
6. What is the age of your child in years? \*Reminder: if you have two or more children who are between the ages of 0-8, please choose one of them to answer the following questions about. \*
  - Younger than 1
  - 1
  - 2
  - 3
  - 4
  - 5
  - 6
  - 7
  - 8
7. What is the biological sex of your child?
  - Male
  - Female
  - Other (please specify) \_\_\_\_\_
8. What is your relationship to the child?
  - Mother
  - Father
  - Guardian
  - Other (please specify) \_\_\_\_\_
9. What level of education have the parents of the child completed?
 

Mother:

  - Less than a high school diploma (1)
  - High school diploma (2)
  - College degree (3)
  - Bachelor's degree (4)
  - Master's Degree (5)
  - Doctorate (6)
  - Professional Degree (e.g., Doctor of Medicine, M.D.) (7)
  - Other (please specify)

Father:

  - Less than a high school diploma
  - High school diploma
  - College degree
  - Bachelor's degree
  - Master's Degree
  - Doctorate
  - Professional degree (e.g., Doctor of Medicine, M.D.)
  - Other (please specify)
10. Please estimate your annual family income (in Canadian dollars). \_\_\_\_\_

## Appendix F

### Parental Phubbing Scale

Please indicate the frequency in which you engage in the following behaviours regarding smartphone usage.

Answer scale:

1 ----- 2 ----- 3 ----- 4 ----- 5  
 Never                      Rarely                      Sometimes                      Often                      All the time

26. During a typical mealtime that my child and I spend together, I pull out and check my smartphone.
27. I place my smartphone where I can see it when my child and I are together.
28. I keep my smartphone in my hand when I am with my child.
29. When my smartphone rings or beeps, I pull it out even if my child and I are in the middle of a conversation/interaction.
30. I glance at my smartphone when talking/interacting with my child.
31. During leisure time that my child and I are able to spend together, I use my smartphone.
32. I do not use my smartphone when my child and I are talking/interacting.
33. I use my smartphone when my child and I are out together.
34. If there is a lull in the conversation/interaction when I am with my child, I will check my smartphone.

## Appendix G

### Problematic Media Use Measure: Short Form

The following questions concern your child's screen media usage. Please select the extent to which you agree with the following statements.

Answer scale:

1 -----	2 -----	3 -----	4 -----	5 -----
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

54. It is hard for my child to stop using screen media.
55. Screen media is the only thing that seems to motivate my child
56. Screen media is all that my child seems to think about.
57. My child's screen media use interferes with family activities.
58. My child's screen media use causes problems for the family.
59. My child becomes frustrated when my child cannot use screen media.
60. If you are paying attention to this questionnaire, please select (2) Disagree
61. The amount of time my child wants to use screen media keeps increasing.
62. My child sneaks using screen media.
63. When my child has a bad day, screen media seems to be the only thing that helps them feel better.

## Appendix H

### Brief Problem Monitor

63. Below is a list of items that describes children. Please rate each item to describe your child now or within the past 7 days.

	0= Not True (As far as you know)	1= Somewhat True	2= Very True
Acts too young for her/his age	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Argues a lot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fails to finish things he/she starts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Can't concentrate, can't pay attention for long	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Can't sit still, restless or hyperactive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Destroys things belonging to his/her family or others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disobedient at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disobedient at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feels worthless or inferior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Impulsive or acts without thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too fearful or anxious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feels too guilty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self-conscious or easily embarrassed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inattentive or easily distracted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stubborn, sullen or irritable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Temper tantrums or hot temper	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Threatens people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unhappy, sad or depressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix I

### Child-Parent Relationship Scale

64. Please reflect on the degree to which each of the following statements currently applies to your relationship with your child.

1 -----	2 -----	3 -----	4 -----	5 -----
Definitely does not apply	Not really	Neutral, not sure	Applies Somewhat	Definitively applies

65. I share an affectionate, warm relationship with my child.

66. My child and I always seem to be struggling with each other.

67. If upset, my child will seek comfort from me.

68. My child is uncomfortable with physical affection or touch from me.

69. My child values their relationship with me.

70. When I praise my child, they beam with pride.

71. My child spontaneously shares information about themselves.

72. My child easily becomes angry at me.

73. It is easy to be in tune with what my child is feeling.

74. My child remains angry or is resistant after being disciplined.

75. Dealing with my child drains my energy.

76. When my child is in a bad mood, I know we're in for a long and difficult day.

77. My child's feelings toward me can be unpredictable or can change suddenly.

78. My child is sneaky or manipulative with me.

79. My child openly shares their feelings and experiences with me.

## Appendix J

### Debriefing Form

#### Debriefing Form

#### **Children’s Digital Literacy and Multimodal Practices in Canada**

<b>Principal Investigator:</b>	Yuke Fu Department of Psychology Trent University <a href="mailto:yukefu@trentu.ca">yukefu@trentu.ca</a> (705) 748-1011 ext. 7471	<b>Supervisor:</b>	Dr. Mowei Liu Department of Psychology Trent University <a href="mailto:moweiliu@trentu.ca">moweiliu@trentu.ca</a> (705) 748-1011 ext. 7472
--------------------------------	---	--------------------	---

Thank you for your participation in this study. Your involvement has aided in the understanding of children’s digital technology use in Canada. Without you, this study could not be completed. You have contributed to the advancement of knowledge in the fields of family and developmental psychology.

This study is being conducted by a research team in the Department of Psychology at Trent University. The study has been approved by Trent’s Research Ethics Board. If you have further questions or concerns regarding the present investigation, please contact either Yuke Fu or Dr. Mowei Liu using the contact information above. Additionally, if you have questions or concerns regarding the ethics of this study, please contact the Compliance Officer at the Trent University Research Office at 705-748-1011 ext. 7050.

Some mental health care and parenting resources have been included below. If your involvement in this study has caused any psychological distress, you may contact one of the supports listed.

**If you wish to enter for a chance to win 1 of 4 \$50 Amazon e-gift cards or wish to receive a final research report in the future, click the arrow at the bottom right-hand corner of the screen to continue. The e-gift card draw will occur in [December 2023 or June 2024].**

#### *Parenting Resources:*

**Canadian Paediatric Society**  
<https://cps.ca/en/>

**Government of Canada: Parenting Resources and Support**  
<https://www.canada.ca/en/public-health/services/health-promotion/childhood-adolescence/parent/parenting-resources-support.html>

#### *Further reading:*

Dong, C., Cao, S., & Li, H. (2022). Profiles and predictors of young children’s digital literacy and multimodal practices in central China. *Early Education and Development*, 33(6), 1094–1115. <https://doi.org/10.1080/10409289.2021.1930937>

Peng, D., & Yu, Z. (2022). A literature review of digital literacy over two decades. *Education Research International*, 2022, 1–8. <https://doi.org/10.1155/2022/2533413>