

PAPER

Exploring Maladaptive Coping in Young Children Using Smartphones: A Qualitative Study

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ABSTRACT

Smartphones for children have shown both positive and negative impacts on their development. The study aimed to analyze smartphone content that affected children's maladaptive coping and the form of maladaptive coping. The study approach was qualitative phenomenology. The study's informants consisted of 30 parents, five teachers, and 30 children aged 4–6 years at an early childhood education (ECE) institution. Data were collected through in-depth interviews and observations. Based on the results of data analysis, it was known: 1) Smartphone content that causes maladaptive coping, namely in the form of overstimulating content, violent games, anger/tantrum videos, fear-inducing content, and addictive content, has an impact. 2) The characteristics of maladaptive coping behavior in children triggered by digital content. Screen time, educational approaches, and learning emotional regulation from adults were the main keys to shaping adaptive coping strategies in children.

KEYWORDS

digital exposure, early childhood, maladaptive coping, smartphone

1 INTRODUCTION

The Central Bureau of Statistics (2024) stated that 39.71 percent of early childhood had used cell phones, and 35.57 percent had accessed the internet. When broken down by age group, there were 5.88 percent of children under the age of one year who had used cell phones/devices and 4.33 percent of children under the age of one year who accessed the internet in 2024. Then, 37.02 percent of children aged 1–4 years and 58.25 percent of children aged 5–6 years used mobile phones, while 33.80 percent of children aged 1–4 years and 51.19 percent aged 5–6 years were recorded to have accessed the internet [1]. Children are mainly used for education and entertainment [2]. Furthermore, UNICEF data in 2024 showed that about 30 million children used the internet, 74% accessing smartphones without parental supervision.

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The National Institute on Drug Abuse (NIDA) showed that children aged 9–10 years who played video games for about three hours per day showed improvement in cognitive tasks measuring working memory and impulse control. However, experts recommended limiting gaming time to one to two hours daily [3]. The World Health Organization (WHO) provides clear guidelines regarding screen time for young children. For children under one year of age, no screen exposure is recommended, while for children aged 1 to 4 years, the maximum recommended duration is one hour per day, with an emphasis on the importance of physical activity and quality sleep [4]. These guidelines are based on scientific evidence showing that excessive screen time in early childhood can disrupt cognitive and language development, reduce sleep quality, and increase the risk of obesity.

In line with the WHO, UNICEF also highlights the negative impact of increased use of digital devices by children during the COVID-19 pandemic [5]. The surge in device use during this period has been linked to the emergence of symptoms of digital fatigue, anxiety disorders, decreased sleep quality, and unhealthy eating patterns. In this context, UNICEF emphasizes the importance of parents' active role in guiding children's use of technology through the creation of screen-free zones at home, active involvement in accompanying children when using technology (co-viewing and co-playing), and ensuring access to meaningful and age-appropriate digital content. UNICEF also stresses the importance of fulfilling children's rights in the digital ecosystem, including the protection of privacy, data security, and equal access to appropriate information [5].

The latest report from the Organization for Economic Co-operation and Development (OECD) states that more than 70 percent of 10-year-olds have their smartphones, and almost all 15-year-olds actively use digital devices in their daily lives [6]. The OECD notes that total digital device usage can range from 30 to 60 hours per week, encompassing activities such as learning, entertainment, and social interaction. While digital technology can support learning processes and social relationships, the OECD cautions against the potential negative impacts of inadequate supervision, such as sleep disturbances, digital addiction, and increased social isolation. Therefore, the OECD recommends a comprehensive approach involving various stakeholders, including parents, educators, policymakers, and the technology industry, to create a safe and healthy digital ecosystem for children [6].

In the context of early childhood education, smartphone use must be managed with a wise and balanced approach, including limiting usage time, selecting appropriate educational content, active involvement from adults both at home and at school, and public policies that support the best interests of children. Digital education is not just about providing access to technology but also instilling values and skills so that children can use technology responsibly from an early age. The ubiquitous smartphone can promote or hinder learning depending upon how it is used [7].

The phenomenon of smartphone use among children in Indonesia today cannot be separated from the influence of parenting culture and easy access to technology, as reflected in various international and local studies. 91.6 percent of preschool-aged children in urban areas of Indonesia use mobile phones as their primary medium, with screen time exceeding one hour per day during online learning [8]. Although most parents understand the importance of screen time limits, their implementation in daily practice often faces challenges, particularly in the context of home-based learning. With the development of digital technology, mobile learning is increasingly being used to support the educational process, including in the context of early childhood education.

The potential of technology in early childhood education (ECE) has been widely recognized [9]. Digital technology is increasingly used in all areas; its use in

kindergartens has become inevitable [10]. Schools indeed play a meaningful role in nurturing digital skills, namely through students' use of ICT in educational tasks [11]. The smartphone app based on the Theory of Planned Behavior (TPB) could significantly affect self-efficacy for online learners; it has the potential to be an effective tool for teaching an online course [12].

Mobile learning, or m-learning, utilizes mobile devices (smartphones, tablets) to provide flexible, easily accessible, and interactive learning materials [13]. Effective mobile learning design for parents and educators should consider several key principles, such as: 1) Flexibility and accessibility, where content should be accessible anytime and anywhere, accommodating the busy schedules of parents and educators [14], 2) Interactivity, interactive functional learning environment making the above feature, probably, the most important advantage of using ICT in the learning process [15], 3) Personalization, where materials can be tailored to the needs, learning styles, and conditions of the child [16], and 4) Experience-based approach, where materials should encourage parents and educators to apply direct learning in daily activities, such as stimulating children's social-emotional development at home [17].

Furthermore, [18] state that the intervention framework to support the role of parents and educators through mobile learning generally includes several stages, namely: 1) Awareness, where the intervention needs to provide initial information about the importance of the role of parents/educators in child development and the potential of mobile technology, 2) Knowledge, where the intervention needs to provide materials to support child development, 3) Skill, where interventions need to provide exercises, video tutorials, and simulations to enhance practical skills, and 4) Support, where interventions need to provide virtual community forums or online consultations so that parents and educators can exchange experiences and receive feedback. By utilizing this approach, it is hoped that both parents and educators can improve their capacity to accompany children while supporting the creation of a more collaborative, inclusive, and adaptive learning environment.

Computational thinking (CT) and coding skills are not solely the domain of secondary school students but rather essential 21st-century competencies that can be developed from preschool age through appropriate learning approaches and the use of child-friendly technology [19]. Educational mobile applications, particularly those that adopt an open-ended, game-based, and interactive learning approach, have proven to play a crucial role in introducing foundational CT and coding concepts to young children. The study also showed that short-term interventions—such as the implementation of ScratchJr with guidance—can lead to statistically significant improvements in children's understanding of CT. In general, it emphasizes the importance of learning designs that consider children's developmental stages, facilitate interaction, and encourage creativity so that the integration of CT and coding from an early age can be done effectively and meaningfully [19].

Educational apps and interactive digital content could also help children develop language and literacy skills. Such apps are specifically designed for learning and can improve children's vocabulary, reading comprehension, and communication skills [20]. Torres (2022) stated that smartphone interactive game technology can positively affect children's developmentally relevant behavior [21]. Science Direct also tried to evaluate the relationship between smartphone and tablet use and psychosocial and cognitive factors in children. The results showed that using digital devices could support children's cognitive and social development if used appropriately and with parental supervision [22].

The use of smartphones in children could affect their emotional regulation, including coping skills. Coping skills are the ability to manage stress, regulate emotions,

and adjust to challenges or pressures in everyday life [23]. In early childhood, these strategies are usually shown through emotional expression and regressive behavior, to adaptive mechanisms such as seeking help from parents or teachers. Children with good coping skills, including self-control and self-efficacy, show higher levels of resilience to stress, more positive emotions, and better social behavior [24], reduced risk of aggressive behavior [24], and are positively correlated with achieving academic goals and better learning performance [25].

Coping is divided into adaptive coping and maladaptive coping [26]. Adaptive coping is constructive, solution-focused, and supports a long-term well-being strategy. These strategies help individuals healthily reduce stress and promote resilience. Types of adaptive coping are: 1) Problem-focused coping is taking direct action to solve problems. Examples include making plans, finding solutions, and organizing time [23], and 2) Emotion-focused coping is managing negative emotions to be calmer and able to think clearly. Examples include meditation, talking to trusted people [26], talking to friends, and seeking professional help [27]. Adaptive coping needs to be trained in children from an early age, as it forms the basis of emotion regulation [28], improves adaptability [29], increases social interaction [30], and promotes early resilience [31].

Maladaptive coping is a stressful coping strategy that seems helpful in the short term but may worsen emotional, physical, or social conditions in the long term. Types of maladaptive coping are Avoidant coping, which is avoiding stressful situations or emotions without facing them, such as postponing problems or running away from responsibility [32]; Denial, which is not recognizing the existence of a problem even though it shows physical symptoms of stress [23]; Self-blame, which is constantly feeling guilty without any basis or solution [33]; and Venting, such as uncontrolled anger and slamming things [26].

Maladaptive coping is influenced by what children observe, including through smartphones. Research by Liu et al. (2023) showed that excessive consumption of entertainment content, such as videos and games, could increase children's risk of using maladaptive coping strategies. Children overexposed to entertainment content tend to avoid problems rather than face them head-on, which may hinder the development of problem-solving skills [34].

A study presented in *European Psychiatry* found that high smartphone exposure in children aged 3–5 years was strongly associated with behavioral problems, including internalizing and externalizing problems [35]. Parents should be aware of these potential impacts and guide children in developing adaptive coping strategies. However, in reality, some parents calm their children by giving them smartphones. As a result, children experience excessive dependence on smartphones to calm themselves (emotional avoidance) [36].

These findings were in line with a study published in *JAMA Pediatrics*. The study found that parents who often give digital devices to children aged 3–5 years to calm them when they are angry or sad can hinder the development of children's ability to regulate emotions independently. These children have difficulty managing emotions and exhibit aggressive behavior later in life [37]. These findings were in line with the results of a study by Burgess (2024) that children aged 2–5 years who were often given digital devices when upset tended to have difficulty regulating emotions, especially in managing anger.

Related to the various advantages and disadvantages of using smartphones in early childhood, data are needed regarding the negative impact of smartphone use, especially on coping strategies that have the potential to harm children and other parties. This study seeks to analyze 1) smartphone content that affects

maladaptive coping and its impact on children and 2) children's interest level in smartphone content.

2 METHODS

This study aimed to explore the manifestations of maladaptive coping among early childhood users of smartphone technology, highlighting the psychological and behavioral impacts of excessive and unsupervised digital device engagement. The study approach was qualitative and based on phenomenological studies. The subjects of this study were 30 parents, five teachers, and 30 children aged 4–6 years who were registered as students at ECE institutions in Indonesia. The ECE institution that was the target of this study was chosen purposively, which could support the achievement of the research objectives. This study was conducted by ethical standards. Ethical approval was obtained based on the Ethical Clearance Statement No. T/16.1/UN34.9/PT.01.04/2025, granted by the Research Ethics Committee of Yogyakarta State University. Written informed consent was obtained from all participants, ensuring they were aware of the use of the data (e.g., scientific publication) and their rights regarding personally identifiable data. Participants were assured of confidentiality and the voluntary nature of their involvement in the study.

The parameters used as the basis for selecting ECE institutions as the target of this study were: (1) children use smartphones in daily life, (2) children tend to show maladaptive coping, and (3) parents' readiness to provide information about children's coping strategies. Data collection was conducted using in-depth interviews and observations. In-depth interviews and observations were conducted at the child's residence and playground. Data analysis was conducted interactively during data collection until completion, including the steps of data collection, condensation, data presentation, and verification or conclusion drawing [38].

The coding procedure was performed manually by two independent researchers who demonstrated a high level of agreement [38]. Additional validation was performed through member checking techniques by requesting confirmation from some participants regarding the initial interpretation of the results. Demographic information about the participants, including the children's age and gender, was included to enrich the contextual interpretation of the research results. This data aims to support contextual interpretation of the results and clarify the characteristics of the participants [39]. This study has limitations in terms of its specific regional context, namely the community in the Yogyakarta region, so the transferability of the results to other regional contexts may be limited. Further research is recommended to involve cross-regional or cross-cultural samples to enhance the generalization of findings [40].

3 RESULTS AND DISCUSSION

3.1 Smartphone content that causes maladaptive coping

The findings and discussion of this study are presented in the form of narratives and interview results from each focus of the findings, namely smartphone content that influences the emergence of maladaptive coping mechanisms in children, the impact of smartphone use on children's maladaptive coping mechanisms, and the level of children's interest in smartphone content. Smartphone content that influences

the emergence is, namely, violent games, addictive content, overstimulating content, fear content, and anger/tantrums. Some children exhibit maladaptive coping when viewing such smartphone content. Each age has characteristics in interests.

Table 1. Transcription of the results of interviews with parents

Ages	Excerpt of the Responses
4-year-olds	<p>“My child likes shows with bright colors, loud sounds, and fast motion, such as YouTube Kids videos and fast-paced and brightly colored 3D cartoons such as Cocomelon, Baby Shark Dance, Little Baby Bum, and TikTok/Shorts videos. The negative impacts are that children become easily offended and have difficulty calming down when not stimulated.” (Parent 1)</p> <p>“My child prefers non-violent content, but I am worried that he could be exposed to it if I don’t supervise him. I am worried that he could be emotionally affected if he sees violent scenes. The negative impacts are that children become more anxious, have a reduced ability to concentrate on other tasks, and have low frustration tolerance.” (Parent 2)</p> <p>“My child is afraid of loud noises, shadows, monsters, or scary pictures of faces. The negative impacts are that children become tantrums when access to use a smartphone is denied and have low frustration tolerance.” (Parent 3)</p> <p>“My child is very attracted to bright, repetitive, and fun visual content such as songs and animations. The negative impacts are that children become tantrums when access to use a smartphone is denied.” (Parent 4)</p>
5-year-olds	<p>“My son enjoys content that involves physical violence, fighting, or verbal aggression; bullying depicted in cartoons (characters teasing or playing pranks on each other), and prank videos, especially among boys. The impact is that children imitate violent behavior, act aggressively, and face problems with anger or impatience, thus inhibiting the development of empathy.” (Parent 5)</p> <p>“My son still enjoys fast-paced, busy content. The impact is that children have difficulty coping with boredom or stress without digital devices, a tendency to avoid or withdraw (avoidance or withdrawal behavior).” (Parent 6)</p> <p>“My son is still afraid of dark or mysterious content. The impact is that children become afraid or anxious about things they should not be afraid of, affecting their sleep patterns or ability to cope with fear.” (Parent 7)</p>
6-year-olds	<p>“My child is interested in content that is scary and shows curiosity about scary themes like cute monsters or ghosts, and role-play content, such as pretending to be a doctor, mother, or baby. The impact is that children become afraid or anxious about things they should not be afraid of.” (Parent 8)</p> <p>“My child is beginning to show curiosity about action content such as games or movies with fight scenes. The impact is that children face problems with anger or impatience, thus inhibiting the development of empathy.” (Parent 9)</p>

Bandura (1986) stated that children learn through observation and imitation of behaviors they observe, especially from models they perceive as attractive or influential. When children are frequently exposed to media displaying aggressive or other negative behaviors, they may imitate these behaviors to cope with difficult or stressful situations.

Early childhood’s ability to record and imitate messages circulating in the environment is one of the factors causing the emergence of maladaptive coping strategies. Children learn through observation and imitation of behavior [41]. Maladaptive coping found in this study according to their respective ages are: (1) Blaming, which tends to blame oneself or other people such as parents, friends, or the environment for the problems experienced, rather than reflecting or finding solutions; (2) Denial such as not wanting to talk, hiding, or staying silent for too long when facing problems, or lying, and (3) Venting such as tantrums, excessive crying,

and aggressive behavior. Of the three findings, all were experienced and carried out by the 4–6-year-old early childhood group.

Table 2. Summary of smartphone content and its impact on children

Content that Children See	Impact on Children
Overstimulating Content	Easily irritable, more anxious, difficulty calming down when not stimulated, reduced ability to concentrate on other tasks, tantrums when denied access to smartphones, and low frustration tolerance.
Violent Games	Imitating violent behavior, acting aggressively, dealing with problems through anger or impatience, and hindering empathy development.
Anger/Tantrum-themed Videos	Imitating characters who scream, curse, or blame others when facing problems.
Fear-inducing Content	Excessive fear or anxiety about things they should not be afraid of affects sleep patterns or their ability to cope with fear and anger when viewing is restricted.
Addictive Content	Difficulty coping with boredom or stress without digital devices and a tendency to avoid or withdraw (avoidance or withdrawal behaviors).

Venting behavior at age five, children tend to be more expressive in venting their feelings. They begin to have a basic understanding of feelings such as anger, sadness, or frustration, but they are still learning to manage these feelings. This causes them to often vent their emotions in more expressive ways, such as crying or getting angry when upset or disappointed. Six-year-olds are starting to be more in control of their emotions but often vent their feelings when frustrated or angry.

Table 3. Transcription of the results of interviews with teachers

Ages	Excerpt of the Responses
4-year-olds	<p>“Some children sometimes express their emotions, but they do not fully understand how to manage their feelings and often express their dissatisfaction by shouting or getting angry without fully realizing the impact. When he is disappointed, he usually immediately screams or gets angry. Sometimes he throws toys or whines loudly. If I scold him, he says, “No! I am not wrong!” while continuing to cry or get angry.” (Teacher 1)</p> <p>“Sometimes I ask, “Why are you angry?” He just replies, “I do not like it,” but can’t explain further. I think he doesn’t know what to do when he’s upset. Children often deny it. For example, if their toy is broken, even though they were the ones who broke it, they say, “It was my little brother who broke it!” or “It was not me!” Sometimes they even pretend not to know. I’m worried that my child won’t learn responsibility. But I also understand that maybe they are still confused about how to express their feelings or admit their mistakes.” (Teacher 2)</p>
5-year-olds	<p>“Some children express their feelings by screaming, crying, or throwing tantrums when they feel frustrated or angry.” (Teacher 3)</p> <p>“Sometimes I ask, “Why are you angry?” He just replies, “I do not like it,” but can’t explain further. I think he doesn’t know what to do when he’s upset.” (Teacher 4)</p> <p>“Children still like to blame others in unpleasant situations. Some children still like to deny to avoid guilt or discomfort.” (Teacher 5)</p>
6-year-olds	<p>“Some children still express it very strongly, such as by screaming, crying loudly, or having tantrums. They can be very expressive, especially during challenging situations, such as being unable to complete a task or fighting over a toy.” (Teacher 6)</p> <p>“Some children tend to blame others or other things to avoid guilt. Denial still occurs, but less frequently than blaming behavior. However, in certain situations, they may deny, especially if they are afraid of being scolded or embarrassed.” (Teacher 7)</p> <p>“Some children rarely deny, although in certain situations they can still avoid responsibility.” (Teacher 8)</p>

Children begin to develop a more structured way of managing their emotions but still express their feelings directly in certain situations. They may get angry or offended more easily in stressful situations. At four years old, children tend to still not fully understand and manage their emotions. When they feel disappointed or upset, they often let their emotions out through shouting or crying, but they do not know how to calm themselves down or express their feelings more constructively. They are more likely to experience uncontrolled emotional outbursts.

Young children are generally not yet able to manage emotions independently. When experiencing frustration due to defeat in games or restrictions on smartphone use, they tend to show emotional coping strategies such as crying, anger, or tantrums. This is reinforced by research from Subrahmanyam, which states that children use emotional expression more often than problem-solving strategies [42]. Furthermore, according to Saracho, healthy social interactions can reduce the risk of adverse impacts of digital media use [43].

Blaming. The results of interviews and observations show that coping blaming often appears when children experience failure, conflict with friends, or pressure from environments such as family and school. Children then seek escape through the use of smartphones. Sometimes, children also blame themselves when they make mistakes, are disappointed, or do not achieve what they set out to do, such as completing assignments. Alternatively, blame others when they lose a game, get involved in an argument, fear punishment, or when their wishes are unmet. Coping by blaming is divided into two: 1) Self-blame, where the child blames themselves for adverse events that happen to them, even though it is not entirely their fault. This is often associated with low self-esteem and risk of emotional disorders such as depression, and 2) Other-blame: The child rejects responsibility and blames outsiders. This pattern can hinder the development of a sense of responsibility and empathy [33], [44]. Previous research shows that smartphone sensor data correlates to the users' mental conditions [45].

Children blame coping because they feel ashamed or afraid of accepting the consequences of their mistakes. By blaming others, they try to protect themselves from guilt or punishment. Children aged four years are at the stage of pre-conventional morality. Moral judgment is based on the immediate consequences of actions. Children are punishment and compliance-oriented. Children obey in order not to be punished [46]. In addition, children are in the process of learning about responsibility and do not fully understand that every action has consequences, so they tend to blame external factors when facing problems. Furthermore, children learn through observation. If they often see adults around them blaming others for mistakes, they may consider such behavior normal and imitate it.

Violent games often contain elements of competition, conflict, and winner-loser. Children who are accustomed to playing in this context may develop a tendency to blame others when they fail, both in the game and in real life, mimic the pattern of in-game characters who often blame opponents or other parties in conflicts, and shift responsibility by blaming external conditions, similar to the gameplay where the player is always the infallible "hero."

By age six, children begin to better understand the consequences of their actions. They begin to realize that their actions can cause harm or inconvenience to themselves or others. To avoid guilt, they may start blaming others or external conditions. For example, they could say, "It was her fault" or "It was because of the bad weather." They begin to understand social rules at this stage but often have difficulty accepting responsibility.

Five-year-olds have started to recognize the difference between right and wrong, but they are still learning to take responsibility. They often blame others because

they have not fully developed empathy or the ability to accept consequences. In case of conflict or mistakes, they may say, “It wasn’t me” or “He started it.” Four-year-olds are still very egocentric and do not fully understand their role in the conflict or the impact of their behavior on others. They tend to use denial or other defense mechanisms to avoid guilt. However, they sometimes blame others, although this is often due to their confusion about the situation rather than a deep understanding of responsibility.

Six-year-olds show more structured and conscious blaming as they begin to understand the consequences of their actions. Five-year-olds tend to be more tempted to blame others even though they are starting to learn responsibility. Four-year-olds more often use denial or confusion in dealing with the consequences of their actions, and blaming others only occurs in certain situations.

Denial. In many violent games, players are rarely confronted with the real consequences of their actions. This can lead to an unwillingness to admit mistakes due to the familiarity of the “response without consequences,” insensitivity to the negative consequences of aggressive behavior, leading to denial that their actions are problematic, and denial as a defense mechanism when reprimanded by parents or teachers regarding their behavior.

The results of interviews and observations showed that children do denial coping, such as refusing to talk, avoiding, or hiding. The causes can be imitation, fear of being scolded/punished, not getting validation for their feelings, and being in an emotional situation. Denial is a form of psychological coping strategy in which a person refuses to acknowledge a painful, threatening, or stressful reality. In children, denial is a response that can arise when they cannot yet cope with or understand complex emotions and situations rationally. Forms of denial in children include denial of the traumatic reality, denying responsibility or role in an event, diverting the conversation from the painful topic, and behaving as if the problem does not exist [23], [44].

At four years old, children have not yet fully developed the cognitive ability to understand that their actions can have a negative impact. They are more likely to ignore reality or deny doing anything wrong. For example, if they break things or cause damage, they may say, “I didn’t do it,” despite clear evidence. As for four-year-olds, although children begin to understand the concept of right and wrong, they can still use denial to avoid guilt or discomfort. They begin to learn to accept responsibility for their actions, but in certain situations, they may deny what they did if negative feelings such as shame or fear arise.

Furthermore, six-year-olds tend to be more able to accept reality and use denial less often than younger children. They begin to understand the concept of responsibility and the consequences of their actions. However, they may still use denial in certain highly emotional or challenging situations, such as when they feel scared or very stressed.

Table 4. Smartphone content and children’s maladaptive coping

Content Type	Maladaptive Coping that Appears in the Child
Overstimulating content	Venting, denial, blaming
Violent Games	Venting, denial, blaming
Anger/Tantrum-themed Videos	Venting, denial, blaming
Fear-inducing Content	Venting, denial, blaming
Addictive content	Venting, denial, blaming

3.2 Children's interest level in smartphone content

Table 5. Transcription of children's interest level in smartphone content

Ages	Excerpt of the Responses
4-year-olds	<p>“He likes colorful, fast-moving, and loud children's videos the most. He usually watches Cocomelon, Baby Shark, or other really lively animations. If he watches something like that, he can stay for a long time.” (Children 1)</p> <p>“I once played a superhero movie, but he would either close his eyes or ask, “Why is he evil, Mom?” So, it seems like he can't understand that kind of conflict.” (Children 2)</p> <p>“When I open TikTok, sometimes he is interested in seeing the fast and funny visual effects. But more often he chooses videos with repetitive songs and fast movements.” (Children 3)</p> <p>“I see that the children are more difficult to keep quiet. He wants everything fast; he is impatient. When I try to chat, he sometimes doesn't focus, his mind is still on the song or the character in the video.” (Children 4)</p>
5-year-olds	<p>“He really likes watching prank videos and cartoons with lots of action. For example, characters chasing each other, or being naughty with each other, or funny but a bit rude. Sometimes he also likes playing games that require fast taps to level up.” (Children 5)</p> <p>“He can watch the same video up to 4–5 times. When playing games, it's the same; he keeps playing to get points or level up. Sometimes I have to remind him to stop. If the time to watch is limited, he sometimes gets angry. Sometimes he immediately throws his cellphone or shouts, “I still want to play!” But if coaxed nicely, sometimes he can obey, depending on his mood.” (Children 6)</p> <p>“As for girls, they prefer watching TikToks of children unboxing toys, dressing up, or playing games with influencers. They also often talk about wanting to have the same items as in the videos.” (Children 7)</p>
6-year-olds	<p>“He really likes videos about cute monsters or ghosts, but in cartoon form, not really scary ones. Sometimes he even laughs to himself when he sees something like that. But if it's too dark or the effects are too exciting, he can suddenly say he's scared too.” (Children 8)</p> <p>“My son likes to watch children pretending to be doctors, babies, or sometimes videos that contain birth simulations. Sometimes I'm surprised, because I don't think it's suitable for his age.” (Children 9)</p> <p>“He can get angry or argue more easily if he's playing and then disturbed. Sometimes when he's scared because of something he's watching, he doesn't immediately say he's scared, instead he pretends to be brave or says, “I am not scared,” even though his expression looks tense.” (Children 10)</p> <p>“For fast-paced content full of loud sounds like when he was little, now he's actually starting to get bored. He used to really like things with lots of colors and loud songs, but now he prefers things with stories. For example, animations with complete stories, or adventure games.” (Children 11)</p>

4-year-old child. Children aged four years tend to like overstimulating content (striking visuals, loud audio, and fast rhythm). Unable to filter excessive stimulation, strong emotional reactions (tantrums, mild aggression) appear when access is restricted. Violent or conflicting content is still foreign or confusing. Early tendency to media addiction due to being captivated by content with high repetition and speed.

Four-year-old children are the most interested in overstimulating content. Children primarily focus on visually striking and symbolic displays at this stage (early preoperational stage) [37]. They are highly drawn to bright colors, loud sounds, and fast motion and lack the self-regulation skills to filter overwhelming stimuli.

Four-year-old children are in the early symbolic thinking stage [48], so they are not yet interested in exploring dominance, conflict, or combat concepts. Games with explicit visual violence are usually confusing or uncomfortable. Four-year-old

children are less interested in violent content but can still be affected by the emotions or visual effects displayed. Five-year-old children are more interested in mildly violent content, such as animations with action-packed fights or clashes. While six-year-old children can begin to understand violence in the context of a story, they are still interested in action games or movies.

Addictive content is a type of show or app that triggers addiction because it is repetitive, fast, full of instant rewards, and easy to consume for a long time. Addictive content in the form of YouTube Kids videos such as Cocomelon, where repetitive songs, fast animations, no long pauses, and familiar themes constantly attract children's attention. Simple mobile games with short levels, quick rewards, visual repetition, and interactive characters are also addictive. Shorts/TikTok allow children to get used to fast scrolling, short video duration, and visual effects that often keep children watching non-stop.

5-year-old child. Five-year-old children showed a growing interest in content such as games or videos that involve physical violence, fighting, or verbal aggression; bullying portrayed in cartoons (e.g., characters teasing or playing extreme pranks on each other); and prank videos, particularly among boys. Some boys also prefer addictive content. With improved motor control and attention, they tend to repeatedly watch or play content that provides instant rewards [49]. Addictive content such as games or applications uses tapping mechanisms that encourage continuous, nonstop play—like point or level systems—which are more popular among boys. Meanwhile, girls prefer online games featuring influencers with flashy or extravagant lifestyles (stimulating consumerist desires), commonly found in TikTok videos. This often leads to self-comparison and feelings of inadequacy, along with emotional instability manifesting as anger-based coping, manipulation, or social withdrawal [50], [51]. Children still enjoy overstimulating content at age five and begin demonstrating symbolic thinking and improved focus. Their tolerance for overstimulation slightly increases, but it may negatively impact emotional regulation and attention development [52].

6-year-old child. Six-year-old children were more attracted to fear-inducing content and showed curiosity toward scary themes (e.g., monsters or humorous ghosts). Often, they laugh rather than show fear, especially when the theme is imaginative or unrealistic [53]. Both boys and girls are drawn to this type of content. Additionally, children at this age are also exposed to exaggerated role-play content, such as pretending to be doctors, mothers, or babies, and even depictions of childbirth—frequently found on YouTube Kids. These videos often portray scenarios that confuse children's understanding of the real world and social values.

Six-year-old children more interested in overstimulating content tend to decline. Children enter the late preoperational to early concrete operational stage, developing an understanding of cause and effect in stories and preferring narrative over visual/audio effects. The younger the child, the more likely they are to enjoy overstimulating content due to limited cognitive development and attention control. Preschoolers are easily distracted and unable to filter excessive visual/audio input. Therefore, the American Academy of Pediatrics [54] recommends that parents limit screen time and prioritize educational and interactive content over overstimulating material.

Violent videos and games are of most interest to six-year-olds, especially boys. Children begin to develop an interest in competition and dominance [55]. Children are also exploring social roles and trying out “power,” although they do not yet fully understand the moral consequences of virtual violence [56]. Five-year-old children are already interested [42], but the influence of siblings, friends, or shows often

influences interest. Five-year-olds are still in the high fantasy phase [57], so games featuring combat can be considered “playful.”

Overall, the interview results showed that young children (four to six years old) like content with strong emotional expression, especially if it is funny or dramatic. However, this attraction is not necessarily positive, as overexposure to tantrum content may affect children’s imitation behavior and emotion regulation. Children are often scared but curious, so they want to keep watching. Other content includes “funny scary” animated series such as creepy puppet sketches, cartoon zombies, ghost stories, etc. There are also creepy prank videos, usually featuring adults pretending to be ghosts. These shows make children confused between fiction and reality.

Five-year-old children are at the peak of interest, as they are independent enough to use the device but not yet mature enough to recognize limits. Four-year-olds like bright visual content and repetitive songs but are more passive and require parental assistance. Six-year-old children are starting to be more selective about content, although still interested in addictive stuff, they tend to seek out more story-driven content. Six-year-olds are starting to show more preference and control, although they can still get caught up if unsupervised. Maladaptive coping behavior in children can be triggered by digital content that is not developmentally appropriate. Each age has its characteristics, as can be seen in Table 6.

Table 6. Characteristics of maladaptive coping behavior in children triggered by digital content

Age	Content Preferences	Possible Maladaptive Coping
4 years	Extreme visuals/audio, fast, loud	Tantrums, impatience, loud crying
5 years	Action, pranks, flashy lifestyle	Blaming, manipulative, consumerist frustration
6 years	Light horror, mystery, suspense	Denial, hidden fears, avoidance

Recent studies show that the use of interactive mobile applications can have a significant positive impact on early childhood learning. When applications are designed based on pedagogical principles and tailored to children’s developmental stages, they can encourage increased interest in learning, critical thinking skills, and a deeper understanding of concepts. Mobile-based educational apps designed appropriately have also been proven to enrich learning experiences and enhance cognitive engagement in preschool children [19]. Furthermore, emphasize that a mobile learning approach that utilizes game-based learning, high interactivity, and concrete visualization can create a more relevant and meaningful learning environment for children [15]. Children tend to respond more positively to learning materials presented in the form of narratives, animations, and interactive activities compared to passive content such as regular videos. Additional features such as instant feedback, the use of attractive colors, and voice guidance also contribute to maintaining children’s focus. Applications that are open-ended and provide opportunities for free exploration are known to be more effective than those that focus solely on repetition or drills.

The role of parental mediation in the use of smartphones by young children plays a key role in determining the positive and negative impacts of digital media. Research conducted on families in Greece revealed that active mediation—such as accompanying children while they use apps, discussing content, and setting device usage rules—is closely associated with increased educational benefits and reduced potential risks of addiction [58]. This is also in line with research results showing that smartphone addiction, achievement motivation, and the intensity of reading

academic textbooks directly affect academic achievement [59]. Conversely, a lack of parental involvement or the application of passive mediation may expose children to inappropriate content and prolong uncontrolled screen time. In this context, the role of parents is not limited to being technical regulators, but must actively engage as partners in digital play and learning with their children.

For digital education for early childhood to be effective, its design must adhere to developmentally appropriate practices, be equipped with adequate interactive structures, and support direct parental involvement. High-quality educational apps have characteristics such as user-friendly interfaces, clear and easy-to-understand narratives, activities that encourage exploration, and the integration of moral and social values [15]. Apps are also recommended to provide a parental dashboard feature that allows parents to monitor their child's development and adjust content according to the child's age and interests. Additionally, visual and audio elements in the app should be designed to support the child's sensory-motor engagement optimally.

The current digital technology transformation requires adjustments in parenting and learning patterns, especially for young children. Digital parenting emphasizes the active role of parents in guiding and supervising technology use, while also serving as role models for healthy digital media use [60]. Mobile learning also presents significant opportunities to support children's social-emotional development. Interactive content designed appropriately can strengthen skills such as empathy, self-control, and cooperation, which are key pillars in social-emotional development [61]. To optimize these positive impacts, insights from studies on digital parenting and mobile learning should be used as a foundation for designing mobile learning interventions or child-friendly and culturally appropriate digital well-being programs. Child-friendly digital well-being programs are also expected to support a balance between online and offline activities, ensuring children continue to experience real-world social interactions.

App developers must adhere to user-centered design principles, tailoring interface design, content, and interactions to children's cognitive and socio-emotional capabilities [61]. They should also include parental control features, localization based on local culture, and content that supports positive character development [62]. Furthermore, educators play a crucial role in selecting, recommending, and integrating mobile apps into educational programs. They need to be equipped with training to understand the potential risks and benefits of digital technology, as well as the skills to accompany children in the interactive technology-based learning process [63].

In addition, policymakers are expected to formulate digital content guidelines that prioritize safety, usefulness, and cultural appropriateness. This includes regulations on advertising, child data protection, and age-inappropriate content restrictions [60]. Policies can also support collaboration between app developers, educators, and parents through a national policy framework on children's digital literacy. Synergy between wise digital parenting, interactive mobile learning, and attention to cultural context will help create a digital ecosystem that supports children's social-emotional development. Cross-sector collaboration among app developers, educators, and policymakers is key to ensuring that technology truly becomes a friend to children, not a threat. In Denmark the increasing datafication of school life and the inherent commodification of digital learning challenge established welfare state ideals surrounding public schooling, raise challenges for schools and teachers alike, and create new inequalities amongst students [64].

Computational thinking and coding skills are part of the essential 21st-century competencies that should ideally be introduced as early as preschool age [15]. This introduction should be done through an approach that is appropriate for the child's

developmental stage and utilizes child-friendly educational technology. Mobile applications developed based on pedagogical principles—such as game-based learning, open-ended approaches, and interactive feedback—show great potential in introducing basic CT and coding concepts in a fun and meaningful way for young children. Studies involving the use of apps like ScratchJr in structured learning have shown a statistically significant improvement in children’s understanding of CT concepts, reinforcing evidence that technology-based interventions can be effectively applied in the preschool education context.

From a cultural and behavioral preference perspective, it shows that exposure to screen media is associated with analytical thinking patterns in Indonesian children [65]. Children who frequently use digital media demonstrate more systematic information processing, although this is not always consistent with their social or emotional development. Meanwhile, emphasize the urgency of implementing digital parenting practices in Indonesia, with parents playing the primary role in controlling digital media use [66]. Recommended strategies include limiting usage time, selecting educational content, and encouraging non-digital activities as alternatives. In many cases, smartphones are the dominant device in the home, and without adequate supervision, children risk experiencing disruptions in motor and emotional development.

The implications of these findings indicate the need to integrate digital literacy into the school environment, both for teachers and parents. This approach should be adapted to local cultural values, especially in families with high-tech access. Raising awareness of the importance of controlling screen time and selecting educational content should be part of digital education programs. Given that smartphone use in the home environment often exceeds the limits recommended by global guidelines, educational institutions can design practical activities such as simulations of healthy digital use, group discussions with parents, and the compilation of a list of suitable local educational applications. Additionally, consistency between school and home policies is essential. Based on international studies emphasizing a holistic approach, schools should enforce a ban on gadget use during class hours and establish active partnerships with parents to ensure that policies at home do not conflict with those implemented at school.

4 CONCLUSION

The results showed that there is smartphone content that affects maladaptive coping strategies in children aged 4–6 years, such as in the form of overstimulating content, violent games, anger/tantrum videos, fear-inducing content, and addictive content. The form of children’s maladaptive coping as an impact of using smartphones was blaming, denial, and venting. Parents and teachers, in minimizing the negative impact of smartphones, could use related to children’s coping choices, namely by supervising and choosing content wisely, implementing screen time limits, having open discussions after watching content, being role models of positive coping strategies, giving good advice and reprimands when children do negative coping, and training children in adaptive coping strategies. Teachers and parents need to provide emotion regulation learning. Therefore, children can grow up with healthy and adaptive coping skills despite being in the digital age.

The alignment between interactive mobile learning strategies and app design is crucial to ensure that early childhood learning experiences optimally

support cognitive, social, and emotional development in line with their developmental stage. Without proper alignment, mobile applications risk becoming merely passive media, whereas young children require interactive activities that facilitate exploration and experiential learning. This alignment also helps educators and parents to use technology appropriately as a supportive tool, not as a substitute for the essential direct interaction children need. Additionally, the principle of user-centered design requires harmonization between learning strategies and app features, ensuring that the content presented is relevant, easily accessible, and consistently engaging for children.

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