

# Mobile and Digital Device Use and Its Impact on Adolescent Behaviour Development

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**Abstract**— This research investigates the impact of mobile and digital device usage on the behavioural development of adolescents, with a focus on their social, emotional, academic, home, and health adjustments. The study compares adolescent adjustment between two groups: students who frequently use mobile and digital devices and those who do not. Results indicate significant differences in home, emotional, and social adjustment, with adolescents who frequently use digital devices exhibiting poorer adjustment in these areas. Statistical analysis, including independent samples t-tests and Mann-Whitney tests, confirms that mobile device usage is strongly associated with emotional and social difficulties, whereas academic and health adjustments appear unaffected by device usage. These findings highlight the need for targeted interventions that address the emotional and social challenges faced by adolescents in the digital age, particularly focusing on mitigating the negative effects of excessive digital device use on personal and social development.

**Index Terms**— Mobile, Mobile Device Usage, Digital Devices, Adolescent Behavioural Development, Social Adjustment, Health Adjustment, Home Adjustment, Digital Age, Emotional Difficulties, Technology and Behaviour, Screen Time, Psychological Adjustment.

## I. INTRODUCTION

Why do children behave the way they do? Are their actions shaped by their age, family environment, or individual temperament? These are the key questions that developmental psychologists aim to answer as they work to understand, explain, and predict behavior patterns across the lifespan. Adolescence, the period between late childhood and early adulthood, is marked by physical development, hormonal changes, and more complex social dynamics and behavioral shifts (Lerner & Steinberg, 2004).

Adolescence plays a crucial role in the formation of social identity and in understanding one's place within the larger social framework (Coleman & Hendry, 1990). Research and personal accounts reveal that during puberty and adolescence, children become increasingly self-conscious and concerned about how others view them (Steinberg, 2005). The adolescent psychosocial environment differs significantly from that of childhood and adulthood, with key changes in relationships with peers, family, and society. Adolescents begin to exercise greater control over their emotions, choices, and actions, gradually becoming less reliant on parental authority. At the same time, the school setting becomes an important socializing force, where adolescents develop a stronger awareness of peer perspectives, teacher expectations, and societal norms (Berzonsky & Adams, 2003).

### 1.1. Behavioural development

Behavioural development aims to improve the well-being of individuals within a society, helping them reach their full potential. The overall prosperity of a society depends on the health and success of its people. Behavioural development involves investing in people, removing obstacles, and ensuring everyone can pursue their goals with confidence and dignity. It challenges the notion that individuals in poverty

are destined to stay poor, focusing instead on empowering them to become self-reliant.

Everyone deserves the opportunity to grow, develop skills, and make meaningful contributions to their families and communities. When individuals are healthy, well-educated, and possess the skills needed for employment, they are better equipped to meet their basic needs and thrive. This success not only benefits them but also has a positive impact on their families and society as a whole. Early education is a key factor in future success, as investing in children's learning early on significantly boosts their long-term prospects. A strong, affordable childcare system is also vital for societal advancement. When parents can trust that their children are well cared for, they can be more productive at work. When employees perform well, businesses succeed, which in turn strengthens the local economy. Investing in quality childcare today yields long-term economic benefits for society (Economic and Social Inclusion Corporation, 2008).

### 1.2. Impact of Mobile and digital devices on Behavioural development

The impact of mobile and digital devices on behavioral development is a growing area of concern and interest. As technology becomes increasingly integrated into daily life, it influences how individuals, particularly children and adolescents, develop socially, emotionally, and cognitively. Here are some keyways in which mobile and digital devices affect behavioral development:

1. **Social Interaction:** Mobile and digital devices have transformed how individuals communicate and interact with others. While they provide new ways to stay connected, they can also reduce face-to-face interactions, potentially impacting the development of social skills. Excessive use of social media and messaging apps may lead to social isolation, reduced empathy, or difficulties in

interpreting non-verbal cues, which are crucial for healthy social development. However, they can also offer opportunities for global connections and support networks, fostering communication skills across diverse groups.

2. **Attention and Focus:** Digital devices, especially smartphones, can lead to decreased attention spans due to constant notifications, multitasking, and the rapid pace of information consumption. This can hinder the ability to concentrate on tasks for extended periods, which is crucial for academic success and cognitive development. Studies suggest that excessive screen time can impact the brain's ability to regulate attention and inhibit impulsivity, leading to difficulties in maintaining focus on important tasks.
3. **Emotional Regulation:** The use of mobile devices and social media can affect emotional regulation, particularly in children and teenagers. The instant gratification provided by notifications, likes, or comments may lead to difficulty in managing expectations and emotional responses. Furthermore, exposure to cyberbullying or online harassment can cause significant emotional distress, negatively impacting self-esteem and mental health. On the flip side, digital tools can also support emotional expression and provide resources for coping with stress or mental health issues.
4. **Cognitive Development:** Mobile devices offer access to a vast amount of information, which can stimulate learning and cognitive development. Educational apps and games can enhance problem-solving skills, creativity, and memory. However, excessive use of passive content, such as social media or entertainment apps, can hinder critical thinking and intellectual curiosity. The key lies in balancing screen time with other activities that promote cognitive development, such as reading, physical play, and face-to-face interactions.
5. **Sleep Disruptions:** The use of mobile devices, particularly before bedtime, has been linked to disruptions in sleep patterns. The blue light emitted by screens interferes with the production of melatonin, the hormone responsible for regulating sleep. Poor sleep can affect mood, cognitive function, and overall behavioral health, leading to irritability, reduced emotional regulation, and difficulties in learning and memory retention.
6. **Behavioral Addictions:** The addictive nature of certain mobile apps, such as gaming or social media, can lead to compulsive use, impacting an individual's behavior. This addiction can disrupt daily routines, interfere with responsibilities, and cause anxiety or stress when not able to access the device. Such behaviors can alter social dynamics, as individuals may prioritize online interactions over real-world relationships.

The advent of mobile and digital devices has revolutionized the way individuals interact, communicate, and adjust socially. As children and adolescents increasingly

incorporate mobile phones, tablets, and other digital devices into their daily lives, there is growing concern regarding their impact on social adjustment. Social adjustment, which refers to an individual's ability to adapt and function within social contexts, is a crucial aspect of behavioral development during childhood and adolescence. This literature review aims to synthesize the research on the influence of mobile and digital devices on social adjustment, with a particular focus on social interactions, social skills, and emotional well-being.

A significant body of research indicates that mobile and digital devices impact the frequency and quality of face-to-face interactions. Kuss and Griffiths (2017) highlight that digital communication platforms, such as social media, texting, and online gaming, have altered traditional modes of socializing. While these technologies offer opportunities for remote connections, they can lead to a reduction in direct interpersonal interactions. As a result, children and adolescents may face challenges in developing critical social skills, such as reading non-verbal cues, engaging in active listening, and understanding emotional expressions (Uhls et al., 2017). The over-reliance on digital communication may result in social withdrawal, as young people may struggle to engage in real-world interactions effectively, potentially leading to poor social adjustment.

Turkle (2015) argues that the constant use of mobile devices and social media creates a "culture of distraction," where individuals, particularly teenagers, become less adept at having meaningful, in-person conversations. This may hinder the development of strong social bonds and emotional connections, which are essential for healthy social adjustment.

On the other hand, digital devices can foster new forms of social connections and support networks. Valkenburg and Peter (2011) found that social media platforms, such as Facebook and Instagram, can offer a sense of belonging, helping adolescents to form and maintain peer relationships. These digital platforms provide spaces for identity exploration and self-expression, which are essential components of social adjustment during adolescence. Best, Manktelow, and Taylor (2014) further suggest that digital devices facilitate connections that may not be possible through traditional face-to-face interactions, particularly for individuals in marginalized or geographically isolated communities.

However, the impact of mobile devices on peer relationships is not always positive. Przybylski and Weinstein (2013) conducted studies showing that excessive screen time, especially on social media, could contribute to negative outcomes such as social comparison, jealousy, and cyberbullying. These negative experiences can damage self-esteem and hinder the development of positive peer relationships, thus affecting social adjustment.

The ability to regulate emotions and develop effective social skills is crucial for successful social adjustment. Digital devices can both enhance and impair these developmental processes. On the one hand, Anderson and Dill (2000) found

that some digital games and interactive apps encourage problem-solving and teamwork, which may help children build social skills in a virtual environment. For example, collaborative gaming can teach adolescents to cooperate with others and manage conflicts, which are essential for social adjustment.

Conversely, Rosen, Lim, Carrier, and Cheever (2011) suggest that excessive screen time can impede emotional regulation, particularly in children who rely heavily on their devices for social interaction. Mobile devices, with their constant notifications and alerts, can disrupt emotional self-control by promoting instant gratification and reducing attention spans. Adolescents may struggle with emotional regulation when exposed to social media pressures, such as seeking validation through likes and comments, which can result in heightened anxiety or depression, impacting their social adjustment.

The transition from face-to-face to digital communication also shifts the social norms and behaviors that individuals learn and practice. Subrahmanyam and Smahel (2011) emphasize that digital platforms offer opportunities for individuals to experiment with different identities and personas, which can influence their social development. While this can be beneficial for some individuals in terms of self-exploration, it can lead to challenges in social adjustment if the online personas differ significantly from the individual's real-life identity. This discrepancy can cause confusion and stress, especially for adolescents struggling with self-identity during a critical developmental period.

**Objective:** To study the effects of mobile and digital devices use on behavioural development of adolescents in terms of home, health, academic, emotional and social adjustment.

**Hypothesis:** There will be no significant difference between the behavioural development of students using mobile and digital devices constantly with those who were not using it in terms of home, health, academic, emotional and social adjustment.

## II. METHODS

### Participants and study design

A cross-sectional study was carried out across five schools in Nagpur city to examine adolescents' use of digital devices and its impact on their social adjustment. A descriptive survey was employed to gather data on the extent of digital device usage among adolescents and its effect on their social behavior. The study sample consisted of 445 adolescents aged 13-19 years, selected through stratified random sampling. A two-group design was utilized to compare social adjustment between adolescents who frequently use mobile and digital devices and those who do not.

### Questionnaire / Screening Test

A self-designed survey questionnaire was utilized to evaluate adolescents' use of mobile and digital devices. Along

with demographic information such as grade, age, and gender, the questionnaire included 17 questions addressing various aspects of digital device use. These questions covered the frequency of daily device usage, the amount of time spent on mobile phones, the purposes for using these devices, the types of digital devices used, and parents' preferences regarding mobile phone and TV usage in the child's daily routine.

### Adolescent Adjustment Inventory

The Adolescent Adjustment Inventory (AAI), developed by D.V. Venu Gopal, A. Ashok, and K. Madhu, is a psychological tool specifically designed to assess the adjustment levels of adolescents in different areas of their lives. The inventory focuses on how well adolescents adapt to various life challenges, including personal, familial, social, and educational adjustments. It consists of 186 -Yes/No type of items designed to assess the adjustment problems of adolescents. The inventory focuses on five key dimensions of adolescent life, each representing a crucial area where adjustment issues can arise. Here's an interpretation of the five dimensions of adjustment measured by the AAI:

**1. Home Adjustment:** This dimension evaluates how well an adolescent is adjusting to their home environment, including family relationships, family dynamics, and overall living conditions.

#### Key Areas Assessed:

- Authoritarian Parenting.
- Parent child relations.
- Home Environment.
- Parental Emotional Stability.
- Marital Discord.

Poor home adjustment may indicate issues such as family conflict, lack of emotional support, or inadequate communication, all of which can contribute to stress and behavioral problems. Good home adjustment, on the other hand, suggests strong family relationships and a supportive home environment.

**2. Health Adjustment:** This dimension focuses on the adolescent's physical health and how well they are adjusting to their health-related needs.

#### Key Areas Assessed:

- Vague Problems/Preoccupied with disease.
- Visual Problems.
- ENT problems.
- Digestive Problems.
- Risk Behaviours.

Poor health adjustment could be linked to physical health problems, unhealthy behaviors, or low self-esteem related to body image. Good health adjustment reflects the adolescent's ability to maintain a healthy lifestyle and cope with physical health challenges effectively.

**3. Academic Adjustment:** This dimension measures how well an adolescent is adjusting to their academic life, including their relationship with school, learning, and academic performance.



**Key Areas Assessed:**

- Learning skills.
- Examination Tension.
- Involvement in the class.
- Attitude/Motivation.
- Relations with teachers.
- Home conditions

Poor academic adjustment may indicate difficulties in learning, lack of motivation, or negative attitudes toward school. It could also reflect academic struggles, such as low grades or conflict with teachers and peers. A high level of academic adjustment suggests that the adolescent is engaged in their studies and coping well with academic challenges.

**4. Emotional Adjustment:** This dimension evaluates the adolescent's emotional well-being and their ability to cope with emotional challenges.

**Key Areas Assessed:**

- Sensitive
- Apprehensive.
- Worries.
- Depressive feelings.
- Sleep Disturbances.

Adolescents with poor emotional adjustment may struggle with mood disorders, anxiety, or stress and may have difficulty managing their emotions. Good emotional adjustment is characterized by emotional resilience, a positive self-image, and effective coping strategies for handling stress and emotional challenges.

**5. Social Adjustment:** This dimension measures how well the adolescent is adjusting to social situations, including peer relationships, social skills, and overall social engagement.

**Key Areas Assessed:**

- Social Inhibitions.
- Peer relations.
- Disruptive Behaviour.

Poor social adjustment may reflect issues such as social isolation, difficulty making friends, low social skills, or struggles with peer pressure. On the other hand, good social adjustment reflects positive peer relationships, a strong sense of belonging, and the ability to navigate social situations effectively.

**Scoring:**

In the **Yes/No** format of the **Adolescent Adjustment Inventory (AAI)**, each response is scored as **1** for "Yes" and **0** for "No". After scoring all items for each dimension, the total score for each dimension is calculated.

**III. STATISTICAL ANALYSIS**

Descriptive statistics, including the mean and standard deviation, were calculated. The students were categorized into two groups based on their responses to the self-developed questionnaire regarding the number of hours spent using mobile and digital devices. Group I included students with higher exposure to digital devices (indicating lower screen time scores), while Group II consisted of students with limited exposure to digital devices (indicating higher screen time scores). To assess normal distribution and homogeneity of variance, the Shapiro-Wilk test and Levene's test were applied, respectively. Both tests showed that these assumptions were not met. As a result, the Mann-Whitney U test was used to compare sleep quality between the two groups. Data analysis was performed using Jamovi version 2.4.

**IV. RESULTS**

A detailed analysis, hypothesis testing, and the corresponding conclusion related to behavioural development are presented below:

**4.1 Hypotheses:**

**Ho:** There will be no significant difference between adolescent adjustment between students constantly use mobile and digital devices and those who do not.

**H1:** There will be significant difference between adolescent adjustment between students constantly use mobile and digital devices and those who do not.

To assess whether there is significant difference between the two groups, the following statistical tools has been applied.

**Table 2(a): Independent Samples T-Test**

Types of Adjustment	Group	N	Mean	Standard Deviation	t-value
<b>HOME ADJUSTMENT</b>	<b>Group I</b>	<b>233</b>	15.79	3.06	-9.87
	<b>Group II</b>	<b>212</b>	19.11	4.03	
<b>HEALTH ADJUSTMENT</b>	<b>Group I</b>	<b>233</b>	8.30	1.29	-1.44
	<b>Group II</b>	<b>212</b>	8.47	1.21	
<b>ACADEMIC ADJUSTMENT</b>	<b>Group I</b>	<b>233</b>	28.65	3.96	1.02
	<b>Group II</b>	<b>212</b>	28.26	4.08	
<b>EMOTIONAL ADJUSTMENT</b>	<b>Group I</b>	<b>233</b>	32.49	3.00	4.49
	<b>Group II</b>	<b>212</b>	31.22	2.97	
<b>SOCIAL ADJUSTMENT</b>	<b>Group I</b>	<b>233</b>	13.18	2.13	8.51
	<b>Group II</b>	<b>212</b>	11.54	1.93	

**Table 2(b) Mann Whitney Test Parameters**

Types of Adolescent Adjustment	Adolescent adjustment	Statistic	df	P -value	Mean Difference	SE Difference	Null Hypothesis
<b>HOME ADJUSTMENT</b>	<b>Student's t</b>	-9.87	443	< .001	-3.328	0.337	<b>Rejected</b>
	<b>Mann-Whitney test U</b>	13856		< .001	-3.00		
<b>HEALTH ADJUSTMENT</b>	<b>Students t test</b>	-1.44	443	0.150	-0.171	0.119	<b>Accepted</b>
	<b>Maan- Whitney test U</b>	22796		0.141	-2.64e-5		
<b>ACADEMIC ADJUSTMENT</b>	<b>Students t test</b>	1.02	443	0.308	0.389	0.381	<b>Accepted</b>
	<b>Maan- Whitney test U</b>	23529		0.383	1.55e-5		
<b>EMOTIONAL ADJUSTMENT</b>	<b>Students t test</b>	4.49	443	< .001	1.272	0.284	<b>Rejected</b>
	<b>Maan- Whitney test U</b>	18132		< .001	1.00		
<b>SOCIAL ADJUSTMENT</b>	<b>Students t test</b>	8.51	443	< .001	1.647	0.194	<b>Rejected</b>
	<b>Maan- Whitney test U</b>	14423		< .001	2.00		

There are significant differences between the two groups (those who constantly use mobile and digital devices and those who do not) in terms of home adjustment, emotional adjustment, and social adjustment, as indicated by the p-values being less than 0.05. Therefore, H1 is accepted for these adjustment types. However, there are no significant differences in health adjustment and academic adjustment, as the p-values for these categories are greater than 0.05, which leads to the acceptance of Ho.

The use of mobile and digital devices appears to significantly affect adolescents' home, emotional, and social adjustments. These areas are influenced by digital device usage, suggesting that constant use may be linked to challenges in personal, emotional, and social domains for students. However, health and academic adjustments do not show a significant relationship with mobile device usage, indicating that other factors may be at play in these areas. This analysis highlights the importance of understanding how digital device usage affects various aspects of adolescent adjustment, particularly in personal and social domains, and suggests potential areas for intervention or further study.

## V. 5.DISCUSSION

The results of this study provide valuable insights into the impact of mobile and digital device usage on adolescent adjustment. The analysis examined five distinct areas of adjustment: home, health, academic, emotional, and social. By comparing adolescents who frequently use mobile and digital devices with those who do not, significant differences were found in home adjustment, emotional adjustment, and social adjustment. However, no significant differences were observed in health and academic adjustments. These findings support the hypothesis that digital device usage plays a significant role in shaping adolescents' social and personal development.

The findings of this study align with and build upon several

key insights from previous research on the impact of mobile and digital device usage on adolescent adjustment. Specifically, this study's results regarding the significant differences in home, emotional, and social adjustment among adolescents who frequently use digital devices support earlier studies that have highlighted the potential negative consequences of excessive screen time.

The negative impact of digital device use on home adjustment found in this study is consistent with past research that suggests that excessive screen time can lead to disruptions in family dynamics. Studies such as Kuss and Griffiths (2017) and Turkle (2015) have shown that adolescents who spend more time on digital devices often experience reduced face-to-face interactions with family members, which may hinder the development of strong family bonds. The lower home adjustment scores observed in this study for adolescents who use digital devices more frequently are in line with these findings, indicating that screen time can potentially replace important family interactions and responsibilities.

The significant difference in emotional adjustment between the two groups found in this study is also supported by earlier research indicating that excessive mobile device use, especially social media, can negatively affect emotional well-being. Rosen et al. (2011) and Twenge et al. (2017) have noted that frequent use of digital devices, particularly social media, is linked to increased feelings of anxiety, depression, and loneliness among adolescents. The poorer emotional adjustment observed in adolescents with frequent device use in this study aligns with these findings, suggesting that constant exposure to digital platforms can contribute to emotional distress and affect adolescents' ability to regulate emotions effectively.

The impact of mobile and digital devices on social adjustment is also consistent with the broader literature. Uhls et al. (2017) and Valkenburg and Peter (2011) have

demonstrated that over-reliance on digital devices for social interactions may hinder the development of crucial social skills, such as face-to-face communication, empathy, and understanding of social cues. The lower social adjustment scores found for adolescents who frequently use mobile devices in this study reflect the challenges these adolescents may face in forming meaningful, in-person social connections. The decline in social adjustment, as observed in this study, parallels the findings of Subrahmanyam and Smahel (2011), who noted that excessive screen time can lead to social isolation and difficulties in real-world socialization.

#### **Health and Academic Adjustment**

Interestingly, the study did not find significant differences in health and academic adjustment, which contrasts with some past findings but also suggests complexity in the relationship between digital device use and these domains. While previous research such as Przybylski and Weinstein (2013) suggests that screen time may impact sleep patterns and physical health, this study found no significant relationship between device use and health adjustment. This could be due to other mitigating factors, such as adolescents' ability to manage their physical activity and health independently or the influence of family routines and support systems.

Similarly, the lack of significant differences in academic adjustment contradicts some studies, like Lepp et al. (2014), which have found that high screen time can negatively affect academic performance due to distractions. However, it is possible that academic success in this study's participants was influenced by other factors such as effective study habits, parental involvement, or the use of digital devices for academic purposes, such as research and online learning, which may mitigate the negative effects of digital device use.

The findings of this study reinforce much of the existing literature regarding the impact of digital device usage on adolescent adjustment, particularly in the domains of emotional and social well-being. The study's results emphasize the need for a balanced approach to technology use, especially in promoting healthy social interactions and emotional regulation among adolescents. While the study did not find significant effects on health and academic adjustment, it highlights the complexity of the relationship between digital device use and adolescent development, pointing to the need for further research to explore these domains in greater depth.

#### **VI. IMPLICATIONS AND FURTHER RESEARCH**

This study highlights the significant role that mobile and digital devices play in adolescents' home, emotional, and social adjustment. The findings suggest that excessive digital device usage may be linked to challenges in personal relationships, emotional well-being, and social functioning. Given the increasing reliance on digital technology, it is crucial for parents, educators, and mental health professionals to develop strategies to mitigate the negative effects of

excessive screen time. These strategies could include promoting healthy device use habits, encouraging face-to-face interactions, and providing emotional support for adolescents navigating the pressures of online environments. Moreover, while health and academic adjustment did not show significant differences, it remains essential to investigate these domains further. Future research could examine the potential long-term effects of digital device usage on academic performance and physical health, considering factors such as sleep patterns, exercise habits, and online learning environments. Additionally, longitudinal studies could provide more insight into how the relationship between digital device use and adolescent adjustment evolves over time.

#### **VII. 7.CONCLUSION**

This study explored the impact of mobile and digital device usage on adolescent adjustment across various domains, including home, health, academic, emotional, and social adjustment. The results revealed significant differences in home, emotional, and social adjustment between adolescents who frequently use mobile and digital devices and those who do not. Specifically, excessive device usage was linked to challenges in home dynamics, emotional regulation, and social interactions, suggesting that constant exposure to digital technology may hinder adolescents' ability to adjust effectively in these areas. However, no significant differences were found in health and academic adjustment, indicating that these areas may be influenced by factors other than digital device usage, such as individual behaviors, family support, and personal habits.

The findings highlight the importance of understanding the potential effects of digital device usage on adolescent development, particularly in terms of personal and social adjustment. As digital devices continue to be a dominant part of adolescents' lives, it is crucial to find a balance between technology use and offline activities that promote healthy emotional and social growth. Future research should further investigate the long-term effects of digital device usage and explore strategies to support adolescents in managing their screen time for optimal development.

The impact of mobile and digital devices on social adjustment is multifaceted. While these technologies offer opportunities for connectivity and socialization, they also present challenges in terms of social skill development, emotional regulation, and peer relationships. Research consistently shows that excessive screen time, especially in the absence of face-to-face interactions, can hinder the development of essential social competencies, potentially leading to social isolation, anxiety, and poor adjustment. However, when used appropriately, digital devices can also serve as valuable tools for enhancing social connections, fostering self-expression, and facilitating communication in ways that contribute positively to social adjustment. Future research should continue to explore the complex relationship

between digital device use and social adjustment, considering both the potential risks and benefits for individuals at various stages of development.

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