

## What Do They Do with Their Phones? Teens' Smartphone Use Behavior Post Covid-19 Pandemic

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### Abstract

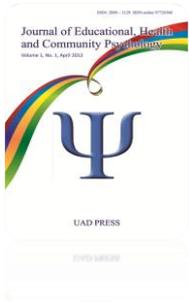
The use of smartphones has significantly increased during the Covid-19 pandemic. Internet access in the family room has impacted teens' smartphone usage behavior and relationships between family members, particularly in family communication. This study aimed to describe teens' behavior while using smartphones and compare the quality of parent-child interpersonal communication based on teens' smartphone usage intensity post-pandemic COVID-19. A total of 515 teens aged 15-19 years participated in this research. The study revealed eight main activities that most teenagers engage in with their smartphones. These activities include recording pictures/audio/video of oneself, managing incoming messages (via messaging apps and email), playing games, accessing social media, listening to music, listening to the radio, editing photos/videos, and using search engines (such as Google) to search for information (browsing). The results also indicated significant differences in openness, empathy, positiveness, and overall family communication quality. Participants who used low-intensity gadgets exhibited the best quality in these dimensions. The implications of this research may help practitioners working with families design necessary interventions for family communication problems.

**Keywords:** Smartphone use behavior, family communication, teenager, mental health

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### Introduction

Smartphones have become an integral part of our daily lives, and they emerged as the best-selling items during the Covid-19 pandemic. This surge in demand can be attributed to widespread social restriction policies that mandated online interactions and work (Pahlawan & Prabowo, 2020; Islamy, 2021; Febriyanti & Yuningsih, 2022). Throughout the pandemic, there has been a notable shift in the



configuration of internet use. Formerly concentrated in offices, campuses, schools, and public places, internet use has now transitioned to homes and residential areas (Kominfo, 2020; Evanne, 2021; Arham & Agustang, 2022).

According to the latest survey findings from APJII, internet penetration in Indonesia continues to grow, reaching 77.02%, with 210,026,769 inhabitants connected to the internet in 2021 out of 272,682,600 people. This represents a significant increase compared to previous years, such as 2018 when the penetration was 64.80%, and subsequent years with internet penetration reaching 73.70% in 2019-2020 (APJII, 2022). Despite the declaration of the end of the pandemic and a return to offline activities, the data indicates that internet use, as well as smartphone use, remains high and has even increased.

Gadgets and the internet have the potential to reshape how families communicate (Carvalho et al., 2015; St. Syahrah et al., 2020; DeVito, 2016). In a qualitative study conducted by Storch and Juarez-Paz (2018) involving 26 families, the role of devices in family communication was explored. The results revealed varying perspectives, with some families believing that devices enhance communication quality, especially for those separated by distance, while others expressed concerns about interference with direct conversation leading to misunderstandings and negative emotional responses. Tadpatrikar et al. (2021) conducted a literature review on the impact of technology use on communication patterns and family functioning, suggesting that technology may negatively affect family communication by causing disconnection, isolation, and increased conflict due to misunderstandings. Despite varying results, the significance of gadget use in family communication quality remains a topic that requires further exploration. While some studies support the negative effects of gadget use on family communication (e.g., Chasanah & Kilis, 2018; Jennifer, 2012), others present contrasting findings (e.g., Lai, 2008; Onyeator & Okpara, 2019; Lopez & Cuarteros, 2020).

According to Devito (2016), indicators of effective interpersonal communication include: (1) Openness or an open attitude, significantly influencing the fostering of effective interpersonal communication; (2) Empathy, which involves understanding and communicating others' emotions with sensitivity; (3) Support, creating an open environment that reduces defensiveness in communication;

(4) Positivity, fostering positive feelings and encouraging active participation; and (5) Equality, recognizing mutual respect, benefits, and valuable contributions.

The quality of interpersonal communication serves as a crucial indicator of family functioning and well-being (Koerner & Mary Anne, 2002; Hall et al., 2020; KavehFarsani et al., 2020; Daines et al., 2021). Positive family communication helps families cope with stress-related problems, contributing to family resilience and effectiveness in facing challenges (Malis & Roloff in Le Poiré & Bailey, 2006; Thariq, 2018; McKinley & Lilly, 2023; Chen et al., 2023). Additionally, family communication quality influences adolescents' behavior, including aspects such as healthy sexual behavior (Hurst et al., 2022), suicidal tendencies (Ati & Windarwati, 2021), and internalizing and externalizing behaviors (Mastrotheodoros et al., 2020). However, a specific examination of communication issues in families with high-intensity device use and teenage children in Indonesia remains necessary. The outcomes of this research can guide targeted preventive and curative interventions related to interpersonal communication in families.

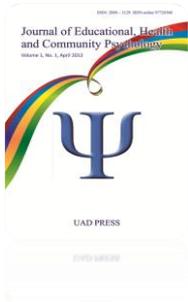
Based on this background, this article aims to address four research questions:

1. What is the description of smartphone use intensity among teenagers?
2. What is the description of teenagers' online behavior while using smartphones?
3. What is the description of the quality of interpersonal communication within families?
4. Are there differences in family communication quality based on smartphone use intensity?

## **Method**

### *Design*

This research employed a descriptive quantitative approach to describe adolescent behaviors with smartphones and the quality of family interpersonal communication based on smartphone use intensity.



### *Participants*

The research was conducted at a Vocational High School in Surabaya using a purposive sampling technique, with the criteria of owning a smartphone and having both parents (mother and father) present. Each subject agreed to participate in the research by signing the informed consent, which reads, "I hereby agree to participate. I consent to the publication or forwarding of the data obtained during the research to another researcher, provided that my name is not disclosed. I make this statement honestly without any coercion from any party." For students under 17 years of age, this consent is obtained from the parent, and it reads, "I hereby agree to allow my child to participate in this research. I consent to the publication or passing on of the data obtained during the research to another researcher, provided that my child's name is not disclosed. I make this statement honestly without any coercion from any party." Based on the above criteria, 515 students willing to participate were obtained. The majority of participants were 18 years old (45%) and 17 years old (31%). The number of male and female students who participated was almost equal, with slightly more female participants (48% male and 51% female). All participants owned a smartphone as their personal property.

### *Measurement*

There are no definite standards for reasonable limits on the duration of screen time for teenagers. However, The American Academy of Pediatrics (AAP) recommends that children over five through adolescence be exposed to less than 2 hours of screen time daily (Council on Communications and Media et al., 2013). Based on this statement, smartphone use intensity is measured using four categories, as described in [Table I](#). Participants then choose one of the scores referring to the listed intensity. However, the category of each score is not included in the questionnaire to prevent the risk of participants faking good.

**Table 1**  
*Category of Smartphone Use Intensity*

<b>Score</b>	<b>Category</b>	<b>Intensity</b>
1	Low	average duration ≤ 1 hour per day
2	Moderate	average duration 1-2 hours per day
3	High	average duration 2-3 hours per day
4	Very High	average duration ≥ 3 hours per day

To answer the second question, researchers asked open-ended questions about the activities the subjects engaged in while using smartphones. The subjects' responses were then grouped, and percentages were calculated to show the most common activities.

To address the third question, researchers employed a modified scale based on the Quality of Family Communication scale from DeVito (2016) as a Likert scale. The scale comprises 30 items rated on a 5-point scale from "Strongly disagree" to "Strongly agree." The internal consistency yielded a good score ( $\alpha = 0.938$ ), with discrimination power ranging from 0.328 to 0.648. Examples of items include "My parents comfort me when I am sad," "My parents did not respond to what I had done," and "Even though my grades were poor, my parents appreciated my efforts."

*Data Analysis*

This study utilized descriptive statistical analysis to depict the quality of family interpersonal communication. The researcher categorized the data using statistical measures from the measurement instruments (hypothetical norm) to describe the quality of family interpersonal communication. Subsequently, the researcher delineated the number of participants falling into low, medium, and high categories. Additionally, this study examined differences in family interpersonal communication quality across various communication aspects and overall communication quality among participants with low, medium, and high smartphone usage intensity.

The normality of the distribution was assessed using the Kolmogorov-Smirnov test, yielding a normal data distribution ( $p = 0.200$ ). Given the normality test results, independent-sample T-tests and One-way ANOVA tests were conducted and analyzed using SPSS for Windows version 25. If the results indicate no significant difference, further testing (Post Hoc Test) is not conducted. Conversely, if the results reveal significant differences, a Post Hoc Test is conducted to ascertain which groups have different means. The Tukey test is employed as the post hoc test.

## Results

*Question 1: What is the description of teenagers' smartphone use intensity?*

To address the initial research question, responses to the Quality of Family Communication questionnaire were classified into predefined categories. [Table 2](#) displays these categories, organized according to smartphone use intensity. The table presents the frequency and percentage of subjects in each category. A majority of participants (73%) reported using smartphones with very high intensity, averaging more than 3 hours per day.

Table 2  
*Subject categories based on smartphone use intensity*

<b>Smartphone Use Intensity</b>	<b>Frequency</b>	<b>Percentage</b>
Low	-	-
Moderate	70	13%
High	65	12%
Very high	380	73%

*Question 2: What is the description of smartphone use by teenagers?*

Based on the categorization of respondents' answers to open-ended questions regarding activities performed on smartphones, eight distinct types of activities were identified. These include: (1) capturing pictures/audio/video of oneself, (2) managing incoming messages (e.g., WhatsApp, email), (3) playing games, (4) accessing social media, (5) listening to music, (6) tuning into the radio, (7) editing photos/videos, and (8) utilizing search engines (such as Google) for information retrieval (browsing).

Table 3  
*Subject activities on smartphones*

Category	Frequency	Percentage
Listening to music	416	81%
Editing Photos/Videos	375	73%
Accessing Social Media	362	70%
Play Online Games	326	63%
Using Browser Tools	289	56%
Record Self Image/Audio/Video	281	55%
Manage Incoming Messages	253	49%
Listening to the radio	124	24%

Table 3 displays the activities performed by the subjects when using smartphones, indicating the frequency and percentage of participants engaged in each activity. The data is presented based on activities with the highest frequency and percentage of users. According to the obtained data, when categorized, the most commonly performed activity by subjects was listening to music (81%), while the least common activity was listening to radio broadcasts.

*Question 3: What is the quality of interpersonal communication in the family?*

To address the third question, descriptive statistics for each dimension of family interpersonal communication quality are presented, followed by the frequencies for each category within each dimension. The arrangement is based on hypothetical norms. Analyzing the descriptive statistics, it is evident that the empathy dimension (Mean=23.37; SD=3.79) exhibits the most notable diversity compared to other dimensions. On the other hand, the support dimension (Mean=11.52; SD=1.8) tends to be more uniform.

The highest frequency within each dimension of family interpersonal communication quality, compared to other categories, is medium. Across the dimensions, equality (36.12%) shows the highest percentage of high categories, while the support dimension (3.11%) exhibits the highest percentage of low categories.

*Question 4: Are there differences in the quality of family communication based on the intensity of smartphone use by teenagers?*

To investigate whether there are significant differences in the average values of the dimensions of family communication quality based on smartphone use intensity, a one-way analysis of variance (one-way ANOVA) was conducted. As shown in [Table 4](#), significant differences in family interpersonal communication quality were observed in the dimensions of Empathy, Support, Positivity, and overall interpersonal communication quality.

**Table 4**  
*Comparison Results Based on the Intensity of Smartphone Use*

		<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>	<b>Conclusion</b>
Openness	Between Groups	15.454	2	7.727	1.407	.246	Not Significant
	Within Groups	2812.111	512	5.492			
	Total	2827.565	514				
Empathy	Between Groups	109.430	2	54.715	3.861	.022	Significant
	Within Groups	7255.630	512	14.171			
	Total	7365.060	514				
Support	Between Groups	16.002	2	8.001	3.020	.050	Significant
	Within Groups	1356.308	512	2.649			
	Total	1372.311	514				
Positive	Between Groups	76.424	2	38.212	4.689	.010	Significant
	Within Groups	4172.597	512	8.150			
	Total	4249.021	514				
Equality	Between Groups	48.015	2	24.007	1.822	.163	Not Significant
	Within Groups	6747.306	512	13.178			
	Total	6795.320	514				
Communication	Between Groups	1060.662	2	530.331	3.304	.038	Significant
	Within Groups	82175.423	512	160.499			
	Total	83236.085	514				

The post hoc test results regarding smartphone use intensity reveal distinct differences in empathy, positivity, and overall communication among groups.

### *Empathy Dimension*

Significant differences were found in the empathy dimension, particularly between moderate and very high intensity (mean difference of 2.27 with  $p = 0.001$ ) and between high and very high intensity (mean difference of 1.12 with  $p = 0.044$ ) smartphone use. No observable distinction in family communication empathy quality emerged between moderate and high-intensity smartphone use. In summary, subjects with moderate and high smartphone use intensity exhibited better family communication quality in the empathy dimension than those with very high intensity.

### *Positivity Dimension*

A significant difference was observed only between subjects using moderate and very high-intensity gadgets (mean difference of 1.43 with  $p = 0.020$ ). No significant differences were noted between moderate and high intensity or high and very high intensity. In conclusion, family communication quality in the positive dimension is superior among subjects with moderate smartphone use intensity compared to high and very high intensity.

### *Quality of Family Communication*

Overall family communication quality showed a significant difference between moderate and very high gadget use intensity (mean difference of 6.21 with  $p = 0.009$ ), with no significant difference between moderate and high intensity. Thus, subjects with moderate and high smartphone use intensity demonstrated better overall family communication quality than those with very high intensity.

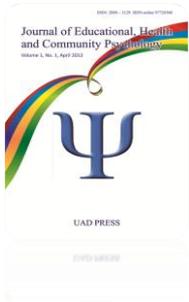
## **Discussion**

This research explores family communication quality in senior high school-age adolescents, offering comprehensive and per-dimensional comparisons based on smartphone use intensity. Significant differences were found in overall family communication and various communication dimensions. Notably, families with high family communication quality exhibited lower device use intensity compared to moderate and high intensity. Device use is widely associated with diverse aspects of family behavior, such as family functioning (Chasanah, 2018), children's prosocial behavior (Laini, 2018), and children's social and language development (Sari, 2020). This study reinforces prior

research on the impact of gadgets on family communication quality, providing specific insights based on communication dimensions.

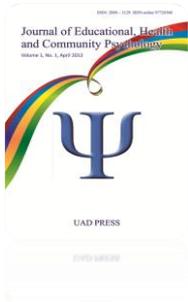
Furthermore, the distinctions in quality are delineated through dimensions such as openness, empathy, and positivity. Openness involves a willingness to share thoughts and feelings among family members, fostering mutual trust that significantly influences the comfort and engagement of family communication (Sillars et al., 2021). Conversely, families with low openness may experience discomfort and diminished involvement with each other. Empathy, a cornerstone of a well-functioning family (Ponton et al., 2020), is crucial for effective communication. It demonstrates an individual's ability to understand and connect with others, influencing their persuasiveness and character (Rustham et al., 2022). Within the family context, empathetic communication signifies a willingness among family members to comprehend each other, fostering acceptance and strengthening familial bonds. Positivity in family communication also has an essential impact on various processes within the family. Positive messages conveyed within the family can impact the family's ability to face difficult times so that they have more potential to become resilient (Kuang et al., 2021; Boumis et al., 2023).

If we look at the descriptive data in Table 2, it appears that 73% of participants use smartphones with very high intensity, namely more than 3 hours per day. Several studies (such as Fadzil et al., 2016; Rahmawati & Latifah, 2019) show that the high intensity of smartphone use by teenagers can be seen from the pattern of devices used in the family. Parents of children who tend to use devices with high intensity expose their children to devices early, especially when they have a tantrum or when the caregiver is busy with other things. Apart from that, they also use devices when gathering with family. Latif et al. (2020) show that when children are allowed to use devices with high intensity, it will reduce the desire of families to gather and interact with each other directly. Also, using devices when the family gathers together has a negative impact, as children prioritize their devices over direct interaction with the family. Ignoring other people when interacting is called phubbing behavior and is significantly related to the quality of communication (Chotpitayasunondh & Douglas, 2018; Lin, 2023).



If we look at the activities they do on their smartphones, we see that teenagers do a lot of recreational activities. When teenagers spend more of their time on social-recreational activities online can potentially make them experience problematic smartphone use (Camerini, 2020) and potentially reduce the quality of their relationships with others (Blais et al., 2008; Atkin et al., 2015; LeBlanc et al., 2017). Cui et al. (2022) show that the forms of activity that children do online will have different impacts on cognitive flexibility as part of children's executive functions. Recreational screen-based sedentary behavior was negatively associated with cognitive flexibility, whereas educational sedentary behavior was positively associated with cognitive flexibility in adolescents. Cognitive flexibility is an important aspect of conversational sensitivity, in that conversationally sensitive listeners seem more likely to be aware of their options for navigating conversations smoothly, and of the possible cues to which they may attend (Chesebro & Martin, 2003). Recreational screen-based sedentary behavior frequently provides teenagers with intense and stimulating sensory experiences, leading to teens spending more time on such behaviors and significantly crowding out time spent on cognitive development-promoting behaviors. The more time spent online, the potential it is to reduce teens' ability to pay attention and sensitivity to cues in communication (Cui et al., 2022).

When viewed from the perspective of interpersonal communication theory, the media used in communication also plays a role in determining the outcome of the communication process. Even though various features have been developed in information technology, online communication cannot replace direct or face-to-face communication. Approximately 65 percent of the social meaning of a situation in a two-person setting is passed on nonverbally. A substantial portion of data in any human communication is inferred from nonverbal signals. With adequate backing of nonverbal signals, online communication can thoroughly perform the work of face-to-face communication (Birdwhistell, 2015). In face-to-face communication, the trade of feelings occurs without one's awareness. These feelings, be they adore, scorn, or outrage, evoke a sense of warmth and "human-ness" conducive to more profound understanding and advancement of connections among the communicating accomplices. Online communication cannot pass on the "warmth" of face-to-face communication. Keeping up great human connections is essential to people's lives; it may be a frame of social capital that can offer assistance or determine people's individual development and well-being. Face-to-face communication requires the effort and engagement of members to succeed and be kept up. The



efforts made by family members show certain degrees of regard and appreciation for the communicating accomplices. Online communication, on the other hand, can be hindered at any minute or conducted with irregular delays. Online users are not required to respond promptly and show their facial or nonverbal expressions online (Lee et al., 2011).

## **Conclusion**

This research shows a picture of teenagers' smartphone behavior, the quality of interpersonal communication in their families, and differences in interpersonal communication based on different intensities of smartphone use. From this research, teenagers use their smartphones a lot for social recreation. Although it still needs to be reviewed further, this research also shows that the intensity of smartphone use is related to the quality of communication within the family. This result needs to be a further concern for parents, who are the closest educators for teenagers, when they want to promote online learning, considering that the digital world is a world that cannot be avoided nowadays. Parents need to educate their children about the healthy use of smartphones by paying attention and providing appropriate arrangements regarding what activities teenagers can do. Parental control applied by parents is significantly related to teenagers' dependence on smartphones (Martins et al., 2020). Steinfeld (2021) suggests that parents can balance using restrictive and active mediation strategies because it can allow teenagers to continue using their smartphones but with lower risks and encourage teenagers to be more able to control their smartphone use. More importantly, parents must also model behavior by demonstrating healthy smartphone usage behavior (Liu et al., 2013).

It's important to note that, in this study, communication quality within the family was assessed based on the teens' perceptions of their communication with parents. While this participant selection minimizes potential social desirability biases often seen in parental subjects, future research should also delve into the quality of communication from the parents' perspective. The study's outcomes are anticipated to offer theoretical implications for the development of family communication theories and practical insights to aid family practitioners in designing intervention programs for communication challenges within families.

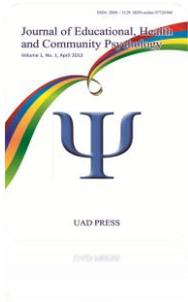
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