

Status of Living with Parents, Smartphone Addiction, and Problematic Eating Behavior in Adolescents

Hurriyyatun Kabbaro^{1*)}, Nayang Wulan¹, Hamiyati¹

¹Family Welfare Education, Faculty of Engineering, Universitas Negeri Jakarta, Jl. Rawa Mangun Muka, Rawamangun, Pulo Gadung District, Special Capital Region of Jakarta, 13220, Indonesia

*) Corresponding author: hurriyyatun.kabbaro@unj.ac.id

Abstract

Excessive intensity of smartphone use can disrupt eating behavior in adolescents. This study aims to analyze the relationship between smartphone addiction and problematic eating behavior. This research involved 230 junior high school students in Jakarta. The research design uses a cross-sectional study. Data were analyzed using Pearson's correlation and Independent Sample T-Test. The results of the Chi-Square test show that the Asymp. Sig. (2-sided) for the smartphone addiction category with a problematic eating behavior category is 0.000 ($p < 0.05$). The correlation test result shows a relationship between the smartphone addiction category and the duration of smartphone use in the morning, afternoon and evening. The Chi-Square Test shows a relationship between the categories of problematic eating behavior and the duration of smartphone use in the morning and afternoon. The Independent Sample T-Test result shows a significant difference in the daily-life disturbance and positive anticipation dimensions between respondents who live with their complete parents (TOL) and those who do not live with their complete parents (TTOL). The result shows a significant positive relationship between smartphone addiction and problematic eating behavior ($r = 0.711$; $p = 0.000$). Adolescents need to raise awareness to use smartphones as needed. In addition, adolescents are advised to adopt healthy eating habits to optimize their growth.

Keywords: adolescents, problematic eating behaviour, smartphone addiction, status of living with parents

Abstrak

Intensitas penggunaan smartphone yang berlebihan dapat mengganggu perilaku makan pada remaja. Penelitian ini bertujuan menganalisis hubungan kecanduan *smartphone* dengan perilaku makan bermasalah remaja. Responden pada penelitian adalah siswa Sekolah Menengah Pertama sebanyak 230 remaja di Jakarta. Desain penelitian menggunakan *cross sectional study*. Data dianalisis menggunakan korelasi *Pearson* dan *Independent Sample T-Test*. Hasil Uji Chi-Square menunjukkan bahwa nilai Asymp. Sig. (2-sided) untuk kategori kecanduan *smartphone* dengan kategori perilaku makan bermasalah sebesar 0,000 ($p < 0,05$). Hasil uji hubungan menunjukkan terdapat hubungan antara kategori kecanduan *smartphone* dengan durasi penggunaan *smartphone* di pagi, siang, dan malam hari. Hasil Uji Chi-Square menunjukkan terdapat hubungan antara kategori perilaku makan bermasalah dengan durasi penggunaan *smartphone* di pagi dan siang hari. Hasil *Independent Sample T-Test* menunjukkan bahwa terdapat perbedaan nyata dan signifikan pada dimensi *daily-life disturbance* dan *positive anticipation* pada variabel kecanduan *smartphone* antara responden yang tinggal bersama orang tua lengkap (TOL) dengan responden yang tidak tinggal bersama orang tua lengkap (TTOL). Hasil penelitian menunjukkan bahwa terdapat hubungan positif yang signifikan antara kecanduan *smartphone* dengan perilaku makan bermasalah ($r = 0,711$; $p = 0,000$). Remaja perlu meningkatkan kesadaran untuk menggunakan *smartphone* sesuai kebutuhan. Selain itu, remaja disarankan untuk menerapkan perilaku makan yang sehat untuk mengoptimalkan pertumbuhannya.

Kata kunci: kecanduan *smartphone*, perilaku makan bermasalah, remaja, status tinggal bersama orang tua

Introduction

Alleviating stunting is still a priority for Indonesia. Based on the stunting cycle, stunted youth have a contribution to grow into malnourished parents and have the potential to give birth to stunted babies. Adolescent stunting is significantly related to eating frequency (Kebede & Ayele, 2021). The behavior of adolescents who like to explore also influences consumption preferences. Eating behavior *is* a condition that describes a person's behavior regarding eating manners, eating frequency, eating patterns, eating preferences, and food selection (Rahman et al., 2016). Jasińska et al. (2021) explain that good eating practices, such as sensible and consistent meal planning and frequent consumption, contribute to overall health and fitness, whereas poor eating habits throughout a person's formative years are a major risk factor for overweight, obesity, and cardiovascular illnesses. A diet is said to be good if it contains food as a source of energy, sources of building materials, and regulatory substances because all of these nutrients are needed by the body to maintain the body's metabolic system in its role as a producer of energy, for growth and maintenance of the body as well as brain development and work productivity, and need to be consumed in sufficient quantity according to needs (Amaliyah et al., 2021). Unhealthy eating patterns can have a destructive impact on adolescents. Poor or unhealthy eating behaviors can lead to problematic eating behaviors. Problematic eating behaviors are eating behaviors that can be detrimental in later life. For example, picky eating is associated with being underweight and overeating, which risks overweight/obesity (Dubois et al., 2007). Overweight and obese adolescents are risk factors for chronic disease and are associated with an increased risk of obesity in adulthood by 50%-80% (Buanasita & Hatijah, 2022). Nurdiani et al. (2023) found that external and restrained eating behaviors were significantly related to Body Mass Index.

The Theory of Planned Behavior (TPB) explains that a person's behavior is influenced by intention, which is influenced by three factors: attitude toward behavior, subjective norms, and behavioral control (Putri, 2018). According to Ajzen (1991), attitude is an expression of responding positively or negatively to an event, object, or person. One of the factors that cause adolescents to experience poor eating behavior is an unhealthy lifestyle, including excessive use of smartphones. Adolescents who pay attention to smartphones will be encouraged to use smartphones more intensively. Furthermore, the use of smartphones with a longer duration encourages adolescents to change other activity patterns, including eating activities. This is what encourages problematic eating behavior in adolescents.

Along with the development of the digital era, the level of smartphone use among adolescents is increasing (Claesdotter-Knutsson et al., 2023). Adolescents are the group most at risk of experiencing smartphone addiction because adolescents have poor control and use smartphones to manage their emotions and social status (Kim et al., 2017). Kwon et al. (2013) explained the term Smartphone Addiction as a form of dependency on smartphone use that makes it difficult for someone to break free from this habit. A study on university students in Korea shows that students who rely heavily on smartphones usually skip breakfast more often, have irregular eating patterns, and make poor food choices (e.g., eating processed foods, overeating, and skipping meals).

In contrast, college students who reduced the time spent on smartphone use were found to eat regularly and on time with healthy food choices (Lim et al., 2016). The results of Jamni's research (2020) revealed that the use of gadgets in adolescents is still very high and is followed by a need for appropriate eating patterns. In line with the results of the

study by Kurniawan and Farapti (2021), excessive use of smartphones is a high risk of having irregular eating patterns because they lose their appetite, often skip dinner, and choose to consume snacks that tend to have high energy which will undoubtedly have an impact on increasing the prevalence of obesity in adolescents. The findings of Domoff et al. (2020) showed that addictive cell phone use in adolescents could increase the risk of obesogenic or high-calorie eating behaviors, disordered eating, overeating, food addiction, and a higher body fat percentage. Living status with parents can determine smartphone use and eating behavior in adolescents. Parents have control to remind and provide limits for any behavior of adolescents. Adolescents who do not live with complete parents have the potential to have low parental control. It encourages excessive smartphone usage behavior.

Based on this explanation, this study aims to (1) identify smartphone addiction and problematic eating behavior based on living status with parents, (2) identify smartphone addiction and problematic eating behavior based on the duration of smartphone use, (3) analyze differences between smartphone addiction and problem eating behavior between adolescents who live with complete parents and adolescents who do not live with complete parents, and (4) analyze the relationship between smartphone addiction and problematic eating behavior in adolescents.

Methods

Participant

The study used a quantitative method and a cross-sectional design at a public junior high school in Central Jakarta. Data was collected in July 2023 using a Google form guided by researchers in class. Respondents were 7th and 8th-grade students of 230 students. Sampling was selected randomly using a simple random sampling technique.

Measurement

This research measures two main variables: Smartphone Addiction and Problematic Eating Behavior. Smartphone addiction is a condition where a person's behavior is difficult to give up, and challenging to stop using a smartphone so that it has an impact on daily activities. The instrument used to measure smartphone addiction is the Smartphone Addiction Scale (Kwon et al., 2013). Smartphone addiction was measured through 34 questions divided into six dimensions: daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance. Problematic eating behavior is a form of deviant behavior carried out by individuals in response to food and the time and pattern of eating, which can potentially reduce their health. Researchers developed the problem behavior instrument, adapted to this research's concept and measurement objectives by referring to the dimensions of eating behavior in The Dutch Eating Behavior Questionnaire (Strien et al., 1986). Problematic eating behavior was measured through 28 questions divided into three dimensions: restrained eating, emotional eating, and external eating. The answer choices for both instruments use a Likert scale, namely (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree. The validation stage is carried out by carrying out validation tests by experts. Then, the instrument is tested for validation and reliability through a small test. Data is collected through an extensive test after the instrument is declared valid and reliable. Validity and reliability testing was repeated after the research data was collected. The results of the validity test using Pearson Product Moment Correlation showed that 34 questions on the

smartphone addiction instrument and 28 questions on the problematic eating behavior instrument were declared valid.

Meanwhile, the results of the Reliability Test for the smartphone addiction instrument showed a Cronbach's Alpha value of 0.923. The results of the Reliability Test for the problematic eating behavior instrument showed a Cronbach's Alpha value of 0.937. The Cronbach's Alpha value obtained shows that the level of reliability of the two instruments is very high. Measurements are categorized based on the status of living with parents, consisting of respondents who live with complete parents (TOL) and those who do not live with complete parents (TTOL). The respondents who do not live with their complete parents (TTOL) consist of adolescents who live with their father, their mother, and their siblings (grandmother/ grandfather/ uncle/ aunt/ relative). The duration of smartphone use was also studied to see how long respondents used smartphones in the morning, afternoon, and evening.

Analysis

Research using descriptive analysis and inference. Descriptive analysis includes calculating the frequency, average, standard deviation, cross-tabulation, and Chi-Square Test. Descriptive data analysis was carried out by indicative process and data categorization. The total scores of indexed smartphone addiction and problematic eating behaviors were grouped by calculating class intervals with three categories. Based on class interval calculations, the cut-off used in each category interval is <33.3% for the low category, 33.3-66.6% for the medium category, and >66.6% for the high category (Puspitawati & Herawati, 2013). The inferential analysis includes the Normality Test, Homogeneity Test, Independent Sample T-test, and Pearson Correlation Test—data analysis using the SPSS application.

Findings

Family and Child Characteristics

This research involved 230 junior high school students in Jakarta. The research results showed that the respondents in this study consisted of 57.0 percent female students and 43.0 percent male students. 53.5 percent of respondents were grade 7 students, while 46.5 percent were grade 8 students. The results of descriptive analysis based on living status with parents showed that most respondents lived with both parents (78.3%). Meanwhile, the percentage of respondents with other living status was 3.0 percent living with their father, 9.1 percent living with their mother, and 9.6 percent living with their siblings. The results of descriptive test data based on parents' employment status showed that 40.0 percent of respondents had both father and mother working, 47.4 percent of respondents had parents where only the father worked, and 8.7 percent of respondents had parents where only the mother worked. In comparison, another 3.9 percent of respondents had fathers and mothers who did not work.

The research results showed that 9.1 percent of respondents were only children. As many as 34.3 percent of respondents had one sibling, 30.0 percent had two siblings, 14.8 percent had three siblings, and 11.7 percent had more than four siblings. The research results based on birth order showed that 39.6 percent of respondents were first children, 30.0 percent were second children, and 19.1 percent were third children. Meanwhile, the remainder were the fourth (6.5%), fifth (2.6%), sixth (1.7%), and eighth (0.5%) children in their family.

Duration of Smartphone Use

The duration of smartphone use is categorized into three times: morning, afternoon, and evening. The duration of smartphone use in the morning starts at 05.00 to 12.00. The results showed that respondents who lived with complete parents (TOL-5.6%) had a lower percentage than respondents who did not live with complete parents (TTOL-8.0%) when using smartphones for more than 6 hours in the morning. Based on smartphone use for more than 6 hours in the morning for respondents with complete status of living with their parents (TTOL), respondents who live with their mother only (14.3%) have a higher percentage than respondents who live with their father only (0.0%) and respondents who live with relatives (4.5%).

Table 1. Distribution of respondents based on status of living with parent and duration of smartphone use

Duration of smartphone use	Status of living with the parent								Total	
	TOL				TTOL					
	Living with parent		Living with father		Living with mother		Living with an extended family member		n	%
	n	%	n	%	n	%	n	%		
In morning (5 – 12 am)										
<2 hour	91	50.5	6	85.7	10	47.6	9	41.0	116	50.4
2-4 hour	63	35.0	1	14.3	5	23.8	11	50.0	80	34.8
4-6 hour	16	8.9	0	0.0	3	14.3	1	4.5	20	8.7
>6 hour	10	5.6	0	0.0	3	14.3	1	4.5	14	6.1
Total	180	100	7	100	21	100	22	100	230	100
In afternoon (12 am – 6 pm)										
<2 hour	53	29.4	4	57.1	7	33.3	5	22.7	69	30.0
2-4 hour	92	51.1	2	28.6	8	38.1	8	36.4	110	47.8
4-6 hour	35	19.5	1	14.3	6	28.6	9	40.9	51	22.2
Total	180	100	7	100	21	100	22	100	230	100
At night (6 pm – 5 am)										
<2 hour	48	26.7	2	28.5	3	14.3	5	22.7	58	25.2
2-4 hour	70	38.9	3	42.9	7	33.3	8	36.4	88	38.3
4-6 hour	33	18.3	1	14.3	3	14.3	2	9.1	39	17.0
6-8 hour	14	7.8	1	14.3	6	28.5	6	27.3	27	11.7
8-10 hour	7	3.9	0	0.0	1	4.8	0	0.0	8	3.5
>10 hour	8	4.4	0	0.0	1	4.8	1	4.5	10	4.3
Total	180	100	7	100	21	100	22	100	230	100

Note: Respondents who live with complete parents (TOL) and those who do not live with complete parents (TTOL)

The duration of smartphone use during the day is calculated from 12.00 to 18.00. The results showed that respondents who lived with their complete parents (TOL-19.5%) had a lower percentage than those who did not live with their complete parents (TTOL-32.0%) when using smartphones 4-6 hours in the afternoon. Based on smartphone use 4-6 hours during the day for respondents with the status of not living with their complete parents (TTOL), respondents who live with siblings (40.9%) have a higher percentage than respondents who live with their father only (14.3%) and respondents who live with their mother only (28.6%).

The duration of smartphone use at night is calculated from 18.00 to 05.00 in the morning. The results showed that four out of one hundred respondents who lived with complete parents (TOL-4.4%) and respondents who did not live with complete parents

(TTOL-4.0%) spent more than 10 hours at night using a smartphone. As many as 7.8% of respondents who live with complete parents (TOL) and 26.0% who do not live with complete parents (TTOL) spend 6-8 hours at night using smartphones. Based on smartphone use 2-4 hours at night for respondents with the status of not living with complete parents (TTOL), respondents who live with their father only (42.9%) have a higher percentage than respondents who live with their mother only (33.3%) and respondents who live with relatives (36.4%).

Problematic Eating Behaviour

Problematic eating behavior is measured in three dimensions: restrained eating, emotional eating, and external eating. Table 2 presents the distribution of respondents' problematic eating behavior achievement categories based on their living status with their parents. The results showed that respondents with siblings (13.6%) had a more significant percentage of problematic eating behavior in the high category than those with other parents.

The research showed that 75.0 percent of respondents with complete parents (TOL) and 66.0 percent who did not live with complete parents (TTOL) had problematic eating behaviour scores in the medium category. The research results showed that two out of ten respondents who lived with complete parents (TOL) had problematic eating behavior scores in the low category. Meanwhile, 26.0 percent of respondents who did not live with complete parents (TTOL) had problematic eating behavior scores in the low category. Based on the status of not living with complete parents (TTOL), respondents who live with siblings (36.4%) have the highest percentage of problematic eating behavior in the low category compared to the status of living with other parents. Table 2 shows that the average problematic eating behavior score for respondents with complete parents (TOL) is higher than for respondents without complete parents (TTOL). Independent Sample T-Test results show that there is no significant difference in the average achievement of problematic eating behavior between respondents who live with complete parents (TOL) and respondents who do not live with complete parents (TTOL) ($t=0.225$; $p=0.822$; $p<0.05$).

Restrained eating

The first dimension measured in the problematic eating behavior variable is the restrained eating dimension. The restrained eating dimension is measured through behavioral indicators of reducing and delaying eating carried out by a person. The research results showed that as many as one in twenty respondents who lived with complete parents (TOL) and two out of twenty respondents who did not live with complete parents (TTOL) had restrained eating achievements in the high category. More than half of respondents who live with complete parents (TOL-57.2%) and respondents who do not live with complete parents (TTOL-58.0%) have restrained eating achievements in the medium category. Meanwhile, the percentage of restrained eating achieved in the low category by respondents who live with complete parents (TOL-37.2%) is greater than that achieved by respondents who do not live with complete parents (TTOL-32.0%). The result shows that the average achievement of restrained eating for respondents with complete parents (TOL) is lower than for respondents who do not live with complete parents (TTOL). The results of the Independent Sample T-Test show that there is no significant difference in the average achievement of restrained eating between

respondents who live with complete parents (TOL) and respondents who do not live with complete parents (TTOL) ($t=-0.927$; $p=0.355$; $p<0.05$).

Emotional eating

The second dimension measured in the problematic eating behavior variable is the emotional eating dimension. The emotional eating dimension is measured through indicators of eating behaviour carried out by someone based on excessive emotional conditions. Table 2 presents the distribution of respondents' emotional eating dimension achievement categories based on their living status with their parents. The results of the research show that as many as one in twenty respondents who live with complete parents (TOL) and two out of twenty respondents who do not live with complete parents (TTOL) have emotional eating achievements in the high category. More than half of respondents who live with complete parents (TOL-70.6%) and respondents who do not live with complete parents (TTOL-58.0%) have emotional eating achievements in the medium category. Meanwhile, the percentage of emotional eating achieved in the low category by respondents who live with complete parents (TOL-24.4%) is smaller than that achieved by respondents who do not live with complete parents (TTOL-32.0%). The result shows that the average achievement of emotional eating for respondents with complete parents (TOL) is lower than for respondents who do not live with complete parents (TTOL). The results of the Independent Sample T-Test show that there is no significant difference in the average achievement of emotional eating between respondents who live with complete parents (TOL) and respondents who do not live with complete parents (TTOL) ($t=-0.197$; $p=0.844$; $p<0.05$).

External eating

The third dimension measured in the problematic eating behavior variable is the external eating dimension. The external eating dimension is measured through indicators of excessive eating behaviour carried out by a person due to encouragement from external factors. Table 2 shows the distribution of respondents' external eating dimension achievement categories based on their living status with their parents. The research results showed that as many as 17.8 percent of respondents who lived with complete parents (TOL) and 24.0 percent of respondents who did not live with complete parents (TTOL) had external eating achievements in the high category. More than half of respondents who live with complete parents (TOL-72.2%) and respondents who do not live with complete parents (TTOL-64.0%) have external eating achievements in the medium category. Meanwhile, the percentage of external eating achievements in the low category owned by respondents who live with complete parents (TOL-10.0%) is smaller than that achieved by respondents who do not live with complete parents (TTOL-12.0%). The result shows that the average external eating achievement for respondents who live with complete parents (TOL) is higher than for respondents who do not live with complete parents (TTOL). The results of the Independent Sample T-Test show that there is no significant difference in average external eating achievements between respondents who live with complete parents (TOL) and respondents who do not live with complete parents (TTOL) ($t=0.462$; $p=0.462$; $p<0.05$).

Table 2. Distribution of respondents based on living status with parents and problematic eating behavior variables

Category of problematic eating behaviour	Status of living with parent								Total	
	TOL		TTOL							
	Living with parent	Living with father	Living with mother	Living with extended family member	n	%	n	%	n	%
Category of of problematic eating behaviour variable										
Low (<33.3)	39	21.7	0	0.0	5	23.8	8	36.4	52	22.6
Moderate (33.3-66.6)	135	75.0	7	100.0	15	71.4	11	50.0	168	73.1
High (>66.6)	6	3.3	0	0.0	1	4.8	3	13.6	10	4.3
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	60.1+12.3		62.9+5.6		60.1+13.3		60.2+13.2		60.2+11.9	
	60.1+12.3				60.5+12.3					
t-value; Sig. (2-tailed)			-0.225; 0.822							
Category of restrained eating dimension										
Low (<33.3)	67	37.2	0	0.0	6	28.6	10	45.5	83	36.1
Moderate (33.3-66.6)	103	57.2	7	100.0	13	61.9	9	40.9	132	57.4
High (>66.6)	10	5.6	0	0.0	2	9.5	3	13.6	15	6.5
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	15,3+4,1		17.1+0.7		15.9+4.9		15.5+4.5		15.4+4.2	
	15,3+4,1				15.9+4.3					
t-value; Sig. (2-tailed)			-0.927; 0.355							
Category of emotional eating dimension										
Low (<33.3)	44	24.4	0	0.0	7	33.3	9	40.9	60	26.1
Moderate (33.3-66.6)	127	70.6	7	100.0	12	57.2	10	45.5	156	67.8
High (>66.6)	9	5.0	0	0.0	2	9.5	3	13.6	14	6.1
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	22.1+5.4		23.7+2.4		22.5+6.2		21.7+6.9		22.2+5.6	
	22.1+5.4				22.3+6.1					
t-value; Sig. (2-tailed)			-0.197; 0.844							
Category of external eating dimension										
Low (<33.3)	18	10.0	0	0.0	2	9.5	4	18.2	24	10.4
Moderate (33.3-66.6)	130	72.2	6	85.7	14	66.7	12	54.5	162	70.4
High (>66.6)	32	17.8	1	14.3	5	23.8	6	27.3	44	19.2
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	22.7+4.9		22.0+3.5		21.8+4.9		22.9+5.3		22.6+4.9	
	22.7+4.9				22.3+4.9					
t-value; Sig. (2-tailed)			0.462; 0.645							

Note: ** significant p<0.05; Respondents who live with complete parents (TOL) and those who do not live with complete parents (TTOL)

Smartphone Addiction

Smartphone addiction is measured on six dimensions, namely the dimensions of daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance. Table 3 shows the distribution of smartphone addiction achievement categories based on living status with parents. The results showed that the percentage of smartphone addiction in the low category was greater among respondents who lived with complete parents (TOL-10.6%) than respondents who did not

live with complete parents (TTOL-6.0%). Eight out of ten respondents who live with their complete parents (TOL-81.1%) and nine out of ten respondents who do not live with their complete parents (TTOL-92.0%) are included in the group with smartphone addiction in the moderate category. As many as 8.3% of respondents who live with complete parents (TOL) and 2.0 percent of respondents who do not live with complete parents (TTOL) have smartphone addiction levels in the high category.

Table 3 shows that the average achievement of smartphone addiction for respondents who live with complete parents (TOL) is lower than for respondents who do not live with complete parents (TTOL). Independent Sample T-Test results show that there is no significant difference in the average achievement of smartphone addiction between respondents who live with complete parents (TOL) and respondents who do not live with complete parents (TTOL) ($t=-1.273$; $p=0.204$; $p<0.05$).

Table 3. Distribution of respondents based on living status with parents and smartphone addiction variable

Category of smartphone addiction	Status of living with parent								Total	
	TOL		TTOL		TTOL		Living with extended family member			
	n	%	n	%	n	%	n	%	n	%
Category of smartphone addiction variable										
Low (<33.3)	19	10.6	0	0.0	2	9.5	1	4.5	22	9.6
Moderate (33.3-66.6)	146	81.1	7	100.0	19	90.5	20	90.9	192	83.5
High (>66.6)	15	8.3	0	0.0	0	0.0	1	4.5	16	7.0
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	81.7+14.1		85.1+11.5		84.2+11.1		84.4+11.6		82.3+13.5	
t-value; Sig. (2-tailed)					-1.273; 0.204					
Category of daily-life disturbance dimension										
Low (<33.3)	40	22.2	1	14.3	2	9.5	2	9.1	45	19.6
Moderate (33.3-66.6)	131	72.8	6	85.7	16	76.2	18	81.8	171	74.3
High (>66.6)	9	5.0	0	0.0	3	14.3	2	9.1	14	6.1
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	11.0+2.4		11.1+1.9		12.1+1.9		11.9+1.7		11.2+2.3	
t-value; Sig. (2-tailed)					-2.242; 0.026**					
Category of positive anticipation dimension										
Low (<33.3)	12	6.7	1	14.3	0	0.0	1	4.5	14	6.1
Moderate (33.3-66.6)	137	76.1	4	57.1	17	81.0	13	59.1	171	74.3
High (>66.6)	31	17.2	2	28.6	4	19.0	8	36.4	45	19.6
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	20.0+4.0		21.6+3.5		21.0+3.5		21.8+3.5		20.4+3.9	
t-value; Sig. (2-tailed)					-2.193; 0.029**					

Continue from Table 3

Category of smartphone addiction	Status of living with parent									
	TOL					TTOL				
	Living with parent		Living with father		Living with mother		Living with extended family member		Total	
	n	%	n	%	n	%	n	%	n	%
Category of withdrawal dimension										
Low (<33.3)	35	19.4	2	28.6	4	19.0	4	18.2	45	19.6
Moderate (33.3-66.6)	128	71.1	3	42.8	14	66.7	16	72.7	161	70.0
High (>66.6)	17	9.5	2	28.6	3	14.3	2	9.1	24	10.4
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	13.3+3.1		14.6+3.4		13.6+3.8		14.1+2.5		13.5+3.1	
t-value; Sig. (2-tailed)					-1.173; 0.242					
Category of cyberspace-oriented relationship dimension										
Low (<33.3)	29	16.1	1	14.3	4	19.1	9	40.9	43	18.7
Moderate (33.3-66.6)	130	72.2	5	71.4	15	71.4	9	40.9	159	69.1
High (>66.6)	21	11.7	1	14.3	2	9.5	4	18.2	28	12.2
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	16.5+3.8		17.3+3.3		16.1+3.9		15.5+4.1		16.4+3.8	
t-value; Sig. (2-tailed)					0.719; 0.473					
Category of overuse dimension										
Low (<33.3)	21	11.7	0	0.0	1	4.8	2	9.1	24	10.4
Moderate (33.3-66.6)	125	69.4	6	85.7	15	71.4	14	63.6	160	69.6
High (>66.6)	34	18.9	1	14.3	5	23.8	6	27.3	46	20.0
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	9.7+2.1		10.4+1.3		10.2+1.7		9.9+2.1		9.8+2.1	
t-value; Sig. (2-tailed)					-1.400; 0.163					
Category of tolerant dimension										
Low (<33.3)	8	4.4	0	0.0	1	4.8	1	4.5	10	4.3
Moderate (33.3-66.6)	85	47.2	5	71.4	9	42.8	9	40.9	108	47.0
High (>66.6)	87	48.4	2	28.6	11	52.4	12	54.6	112	48.7
Total	180	100.0	7	100.0	21	100.0	22	100.0	230	100.0
Mean ± SD	11.1+2.1		10.1+1.5		11.1+2.4		11.2+1.9		11.1+2.1	
t-value; Sig. (2-tailed)					0.234; 0.815					

Note: ** significant p<0.05; Respondents who live with complete parents (TOL) and those who do not live with complete parents (TTOL)

The first dimension measured in the smartphone addiction variable is the daily-life disturbance dimension. The research results showed that 5.0 percent of respondents with complete parents (TOL) achieved the daily-life disturbance dimension in the high category. Based on the status of not living with complete parents (TTOL), only respondents who lived with relatives (14.3%) achieved the daily-life disturbance dimension in the high category. Table 3 shows that the average achievement of the daily-life disturbance dimension for respondents who live with complete parents (TOL) is lower than for respondents who do not live with complete parents (TTOL). The results of the Independent Sample T-Test show that the difference test coefficient value is -2.242 with a value of Sig. (2-tailed) was 0.026 (p<0.05). It means there is a significant difference in the average achievement of the daily-life disturbance dimension between respondents

who live with complete parents (TOL) and respondents who do not live with complete parents (TTOL).

The second dimension measured in the smartphone addiction variable is the positive anticipation dimension. The research results showed that 17.2 percent of respondents who lived with complete parents (TOL) achieved the positive anticipation dimension in the high category. Based on the achievement of the positive anticipation dimension in the high category for respondents whose status is not living with complete parents (TTOL), respondents who live with siblings (36.4%) have a higher percentage than respondents who live with their father only (28.6%) and respondents who lived with their mother only (19.0%). The result shows that the average achievement of the positive anticipation dimension for respondents with complete parents (TOL) is lower than for respondents who do not live with complete parents (TTOL). The results of the Independent Sample T-Test show that the difference test coefficient value is -2.193 with a value of Sig. (2-tailed) was 0.029 ($p < 0.05$). It means there is a significant difference in the average achievement of the positive anticipation dimension between respondents who live with complete parents (TOL) and respondents who do not live with complete parents (TTOL).

The third dimension measured in the smartphone addiction variable is the withdrawal dimension. The research showed that 9.5 percent of respondents with complete parents (TOL) achieved the withdrawal dimension in the high category. Based on the achievement of the withdrawal dimension in the high category for respondents whose status is not living with complete parents (TTOL), respondents who live with siblings (36.4%) have a lower percentage than respondents who live with their father only (28.6%) and respondents who live with their mother only (14.3%). Table 3 shows that the average achievement of the withdrawal dimension for respondents who live with complete parents (TOL) is lower than for respondents who do not live with complete parents (TTOL). The results of the Independent Sample T-Test show that there is no significant difference in the average achievement of the positive anticipation dimension between respondents who live with their complete parents (TOL) and respondents who do not live with their complete parents (TTOL) ($t = -1.173$; $p = 0.242$; $p < 0.05$).

The fourth dimension measured in the smartphone addiction variable is the cyberspace-oriented relationship dimension. The research results showed that 11.7% of respondents with complete parents (TOL) achieved the cyberspace-oriented relationship dimension in the high category. Based on the achievement of the cyberspace-oriented relationship dimension in the high category for respondents with complete status of living with their parents (TTOL), respondents who live with siblings (18.2%) have a higher percentage than respondents who live with their father only (14.3%) and respondents who live with their mother only (9.5%). Table 3 shows that the average achievement of the cyberspace-oriented relationship dimension for respondents who live with complete parents (TOL) is higher than for respondents who do not live with complete parents (TTOL). The results of the Independent Sample T-Test show that there is no significant difference in the average achievement of the cyberspace-oriented relationship dimension between respondents who live with their complete parents (TOL) and respondents who do not live with their complete parents (TTOL) ($t = 0.719$; $p = 0.473$; $p < 0.05$).

The fifth dimension measured in the smartphone addiction variable is the overuse dimension. The result of research showed that 18.9% of respondents with complete parents (TOL) achieved the overuse dimension in the high category. Based on the achievement of the overuse dimension in the high category for respondents with complete status of living with their parents (TTOL), respondents who live with siblings (27.3%)

have a higher percentage than respondents who live with their father only (14.3%) and respondents who live with their mother only (23.8%). The result shows that the average achievement of the overuse dimension for respondents who live with complete parents (TOL) is lower than for respondents who do not live with complete parents (TTOL). The results of the Independent Sample T-Test show that there is no significant difference in the average achievement of the overuse dimension between respondents who live with complete parents (TOL) and respondents who do not live with complete parents (TTOL) ($t=-1.400$; $p=0.163$; $p<0.05$).

The sixth dimension measured in the smartphone addiction variable is the tolerant dimension. The research results showed that 48.4% of respondents with complete parents (TOL) achieved the tolerant dimension in the high category. Based on the achievement of the tolerant dimension in the high category for respondents whose status is not living with complete parents (TTOL), respondents who live with siblings (54.6%) have a higher percentage than respondents who live with their father alone (28.6%) and respondents who live with their mother only (52.4%). Table 3 shows that the average achievement of the tolerant dimension for respondents who live with complete parents (TOL) is higher than for respondents who do not live with complete parents (TTOL). Independent Sample T-Test results show that there is no significant difference in the average achievement of the tolerant dimension between respondents who live with complete parents (TOL) and respondents who do not live with complete parents (TTOL) ($t=0.234$; $p=0.815$; $p<0.05$).

Chi-Square Test of Smartphone Addiction Categories and Problematic Eating Behavior with Duration of Smartphone Use

The research results in Table 4 show that the Asymp. Sig. (2-sided) for the smartphone addiction variable category with duration of smartphone use in the morning of 0.039 ($p<0.05$), in the afternoon of 0.000 ($p<0.05$), and the evening of 0.000 ($p<0.05$). This means that there is a relationship between the category of smartphone addiction variable and the duration of smartphone use in the morning, afternoon and evening. The relationship test results show that the value of Asymp. Sig. (2-sided) for the daily-life disturbance dimension category with duration of smartphone use in the morning of 0.079 ($p<0.05$). It means there is no relationship between the daily-life disturbance dimension category and the duration of smartphone use in the morning. Meanwhile, the research results show a relationship between the daily-life disturbance dimension category and the duration of smartphone use during the day and at night. The Chi-Square Test results show that the Asymp. Sig. (2-sided) for the positive anticipation dimension category with duration of smartphone use in the morning was 0.143 ($p<0.05$). It means there is no relationship between the positive anticipation dimension category and the duration of smartphone use in the morning. Meanwhile, the research results show a relationship between the positive anticipation dimension category and the duration of smartphone use during the day and at night.

The research results in Table 4 show that the Asymp. Sig. (2-sided) for the cyberspace-oriented relationship dimension category with duration of smartphone use in the morning of 0.032 and the afternoon and evening of 0.000 ($p<0.05$). It means there is a relationship between the withdrawal dimension categories and the duration of smartphone use in the morning, afternoon and evening. The Chi-Square Test results show that the Asymp. Sig. (2-sided) for the positive anticipation dimension category with duration of smartphone use in the morning of 0.002 ($p<0.05$). It means there is a relationship between the cyberspace-oriented relationship dimension category and the

duration of smartphone use in the morning. Meanwhile, the research results show no relationship between the cyberspace-oriented relationship dimension category and the duration of smartphone use during the day and at night.

The relationship test results show that the value of Asymp. Sig. (2-sided) for the overuse dimension category with duration of smartphone use in the morning of 0.005, in the afternoon of 0.000, and the evening of 0.001 ($p < 0.05$). It means there is a relationship between the overuse dimension category and the duration of smartphone use in the morning, afternoon and evening. The Chi-Square Test results show that the Asymp. Sig. (2-sided) for the tolerant dimension category with duration of smartphone use in the morning of 0.192 ($p < 0.05$). It means there is no relationship between the tolerant dimension category and the duration of smartphone use in the morning. Meanwhile, the research results show a relationship between the tolerant dimension category and the duration of smartphone use during the day and at night

Table 4. Test coefficient for the relationship between smartphone addiction and problematic eating behavior based on duration of smartphone use

Category of dimension/ variable	Value of Pearson Correlation - Chi-Square					
	Morning duration		Afternoon duration		Night duration	
	Value	Asymp. Sig.(2-sided)	Value	Asymp. Sig.(2-sided)	Value	Asymp. Sig.(2-sided)
Variable of smartphone addiction	13.252	0.039**	21.531	0.000**	59.524	0.000**
daily-life disturbance	11.308	0.079	10.011	0.040**	25.499	0.004**
positive anticipation	9.590	0.143	27.455	0.000**	52.855	0.000**
withdrawal	13.814	0.032**	21.224	0.000**	59.964	0.000**
cyberspace-oriented relationship	20.270	0.002**	7.952	0.093	14.194	0.164
overuse	18.765	0.005**	28.489	0.000**	30.384	0.001**
tolerant	8.694	0.192	17.559	0.002**	22.105	0.015**
Variable of problematic eating behaviour	15.050	0.020**	15.206	0.004**	10.091	0.433
restrained eating	9.347	0.155	8.419	0.077	40.912	0.000**
emotional eating	19.209	0.004**	7.270	0.122	12.207	0.271
external eating	21.216	0.002**	40.695	0.000**	19.853	0.031**

Note: ** significant $p < 0.05$

The results showed that the relationship between the problematic eating behaviour variable category and the duration of smartphone use shows the Asymp. Sig. (2-sided) for the duration in the morning was 0.020 ($p < 0.05$), and in the afternoon it was 0.004 ($p < 0.05$). It means there is a relationship between the problematic eating behaviour variable and the duration of smartphone use in the morning, afternoon and evening. Meanwhile, the research results show no relationship between problematic eating behavior variables and the duration of smartphone use at night. The research results in Table 4 show that the Asymp. Sig. (2-sided) for the restrained eating dimension category with duration of smartphone use in the morning of 0.155 ($p < 0.05$) and the afternoon of 0.077 ($p < 0.05$). It means there is no relationship between the restrained eating dimension categories and the duration of smartphone use in the morning and afternoon. Meanwhile, the research results show a relationship between the categories of restrained eating dimensions and the duration of smartphone use at night.

The relationship test results show that the value of Asymp. Sig. (2-sided) for the emotional eating dimension category with duration of smartphone use in the morning of 0.004 ($p < 0.05$). It means a relationship exists between the categories of emotional eating dimensions and the duration of smartphone use in the morning. Meanwhile, the research results show no relationship between the categories of emotional eating dimensions and the duration of smartphone use during the day and night. The research results in Table 4 show that the Asymp. Sig. (2-sided) for the external eating dimension category with duration of smartphone use in the morning of 0.002 ($p < 0.05$), in the afternoon of 0.000 ($p < 0.05$), and the evening of 0.031 ($p < 0.05$). It means there is a relationship between the external eating dimension category and the duration of smartphone use in the morning, afternoon and evening.

Chi-Square Test of Smartphone Addiction Categories with Eating Behavior Categories

The research result showed that 2.1 percent of respondents with smartphone addiction levels in the high category also had problem eating behavior levels in the high category. As many as 67.8 percent of respondents with smartphone addiction levels in the moderate category had problematic eating behaviour levels in the medium category. Meanwhile, only 0.8 percent of respondents with a smartphone addiction score in the low category and 4.3 percent of respondents with a smartphone addiction score in the high category had problematic eating behavior in the medium category. The research results showed that only 8.7 percent of respondents who had smartphone addiction levels in the low category also had problem eating behavior levels in the low category. The Chi-Square Test results show that the Asymp. Sig. (2-sided) for the smartphone addiction category with the problematic eating behavior category of 0.000 ($p < 0.05$). It means there is a relationship between smartphone addiction and problematic eating behavior.

Relationship between Smartphone Addiction Variables and Problematic Eating Behavior Variables

The results of the Pearson Product Moment Correlation Test show that the Sig. (2-tailed) for each relationship tested is 0.000 ($p < 0.05$). It means there is a significant relationship between each dimension and variable in the smartphone addiction variable and problematic eating behaviour. The higher the level of smartphone addiction of the respondent, the higher the problematic eating behavior of the respondent.

Table 5. The result of correlation test between the smartphone addiction and the problematic eating behavior

	XD1	XD2	XD3	XD4	XD5	XD6	X	YD1	YD2	YD3	Y
XD1	1	0.450**	0.483**	0.444**	0.530**	0.395**	0.687**	0.447**	0.437**	0.283**	0.477**
XD2		1	0.643**	0.564**	0.596**	0.328**	0.823**	0.441**	0.354**	0.441**	0.501**
XD3			1	0.569**	0.637**	0.401**	0.827**	0.585**	0.449**	0.463**	0.605**
XD4				1	0.575**	0.407**	0.810**	0.566**	0.495**	0.513**	0.640**
XD5					1	0.449**	0.803**	0.534**	0.391**	0.530**	0.588**
XD6						1	0.600**	0.307**	0.379**	0.383**	0.442**
X							1	0.634**	0.544**	0.573**	0.711**

Continue from Table 5

XD1	XD2	XD3	XD4	XD5	XD6	X	YD1	YD2	YD3	Y	XD1
YD1								1	0.663**	0.356**	0.805**
YD2									1	0.447**	0.882**
YD3										1	0.745**
Y											1

Note: **significant $p < 0.05$; XD1: daily-life disturbance; XD2: positive anticipation; XD3: withdrawal; XD4: cyberspace-oriented relationship; XD5: overuse; XD6: tolerant; X: Variable of smartphone addiction; YD1: restrained eating; YD2: emotional eating; YD3: external eating; Y: Variable of problematic eating behavior

Discussion

The Theory of Planned Behavior (TPB) developed by Ajzen is a theory used to predict a person's behavior more specifically (Ramdhani, 2011). Based on The Theory of Planned Behavior (TPB), intention is the main factor influencing individual behavior (Hidayat, 2010). Problematic eating behavior in adolescents is motivated by the intention to use a smartphone for longer. This can be caused by interesting activities and content on smartphones, as well as curiosity and satisfaction. The pleasure obtained through this smartphone is one of the reasons why teenagers are willing to spend their time playing on smartphones (Priyanugraha et al., 2022). This is in line with the results of Lestari and Sulian's (2020) research, namely, low self-control in adolescents can cause them to be unable to limit themselves to things related to pleasure, which can cause smartphone addiction.

The Indonesian Pediatrician Association (IDAI) recommends that middle school-age children (12 – 18 years) have screen time of no more than 2 hours a day (IDAI, 2020). Meanwhile, more than three-fourths of adolescents were found to have unhealthy eating habits (Omera Naseer et al., 2018). The research results show that the duration of smartphone use is relatively high in adolescents. Research by Manzoor et al. (2020) found that excessive smartphone use causes children to have poor eating behavior. Poor eating behavior pushes adolescents into problematic eating behavior. Strien et al. (1986) explained the concept of problematic eating behavior, which is divided into three dimensions, namely restrained eating, emotional eating, and external eating. Research by Nurdiani et al. (2023) found that external eating behavior and restraint eating were significantly related to Body Mass Index (BMI).

Joshi et al. (2021) found a significant association between the duration of mobile phone use and the quantity of food consumed. Wijaya (2019) explains that external eating behavior, which is classified as a high category, is caused by eating behavior due to external stimuli such as food appearance, trendy food types, and promos from restaurants and cafes. There was a relationship between eating restraint eating behavior and the incidence of overnutrition (Noerfitri & Aulia, 2021). Adolescents are not fully aware when eating while using a smartphone, so the chances of overeating are high. This is reinforced by the results of Benbaibeche et al. (2023), who showed an effect of emotional and external eating on BMI.

The research results show that adolescents who do not live with complete parents have a higher average of problematic eating behavior than those with complete parents. Adolescents who do not live with complete parents have a higher average smartphone addiction than those with complete parents. This is in line with the results of research by Nurfitriyani et al. (2019), namely, that adolescent eating behavior is influenced by eating

parenting. Eating parenting is further explained by how the mother conducts adolescent feeding practices. Metbulut et al. (2018) explain there are differences between the feeding practices of mothers and grandmothers. Research by Eriyanti et al. (2019) revealed that children whom grandmothers or grandfathers look after tend to be more spoiled, difficult to tell, and stubborn. Budiarti et al. (2022) explain that proper parenting style could reduce smartphone addiction cases, so parents need to apply effective parenting.

The research results show that adolescents who do not live with complete parents have a higher percentage of smartphone addiction variables than those with complete parents. The finding aligns with the research conducted by Kwon (2013), which shows that adolescents who do not live with their parents have high smartphone addiction scores. Parents have a role in controlling adolescent behavior. Adolescents who do not live with their parents are under control, so they use smartphones excessively, primarily for entertainment activities such as accessing social media and playing online games. Meanwhile, the research of Fatima et al. (2020) revealed the influence of emotional parenting through self-control on online gaming behavior.

The research results show that smartphone addiction is related to the duration of smartphone use. Haruna et al. (2022) revealed that the duration of device use is a factor that influences smartphone addiction. There are so many choices of apps on today's smartphones, such as social media and games, that can provide entertainment for adolescents and make them feel comfortable using their smartphones for a long time. Gümüş et al. (2023) found that adolescents' social media addiction scale positively correlated with daily internet and social media usage duration. This leads to adolescents being addicted to smartphones. Smartphone addiction also has the potential to cause increased appetite or changes in eating patterns and anemia (Prianugraha et al., 2022).

Meanwhile, overeating can lead to obesity. Obesity is closely related to eating habits (Reviani & Riany, 2022). This increase in calorie intake and excessive appetite can be caused by short sleep duration at night (Afriani et al., 2019).

The research results show that problematic eating behavior is related to the duration of smartphone use. Wijaya's research (2019) revealed a significant positive correlation between the intensity of smartphone use and a person's eating behavior. Kim et al. (2021) found that most respondents used smartphones for more than two hours daily. The research results show that smartphone addiction is related to problematic eating behavior. The finding aligns with the results of research by Kurniawan and Farapti (2021), which shows a relationship between internet addiction and nutritional status. Domoff et al. (2020) research showed that addictive cell phone use in adolescents could increase the risk of obesogenic or high-calorie eating behaviors, disordered eating, overeating, food addiction, and a higher body fat percentage. The use of smartphones among adolescents needs to be a concern. The finding aligns with the results of research conducted by Lim (2016), which shows that children who use smartphones are more likely to adopt a changed diet. Fristanti and Ruhana (2021) said that this increase in food consumption is due to exposure to social media in smartphone applications and makes it easy for someone to be attracted, including by food uploaded on social media. Children tend to skip meals and eat unhealthy foods. Controls related to smartphone use need to be encouraged to minimize the impacts that can be caused.

The limitation of this study is that it does not identify the activities carried out in using smartphones. In this digital era, smartphones can be necessary, even for adolescents. However, excessive use that disrupts diet is not good for health. This can

disrupt the growth and quality of adolescents. Adolescents need to balance smartphone use with physical and social activities to improve their well-being.

Conclusion and Recommendation

Conclusion

Based on the research that has been done, it can be concluded that respondents who live with their parents have a lower percentage than respondents who do not live with their parents who use smartphones for the most extended duration in the morning and afternoon. The relationship test results showed a relationship between the smartphone addiction category and the duration of smartphone use in the morning, afternoon, and evening. There is a relationship between the category of problematic eating behavior and the duration of smartphone use in the morning and afternoon. The results of the Independent Sample T-Test show real and significant differences in the daily-life disturbance and positive anticipation dimensions in the smartphone addiction variable between respondents who live with their parents and those who do not live with their parents. The results showed a significant positive relationship between smartphone addiction and problematic eating behavior ($r=0.711$; $p=0.000$). The more smartphone addiction increases, the more problematic eating behavior increases.

Recommendation

Based on the research results obtained, researchers recommend conducting an influence test and assessing smartphone addiction and problematic eating behavior based on the nutritional status of adolescents. It is done to support a more comprehensive stunting eradication policy.

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