



The Role of Friendship Quality in Smartphone Addiction and Mental Health among Adolescents

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ABSTRACT

The rapid integration of smartphones into adolescents' daily lives has raised concerns regarding their mental health and social relationships. The present study examined the role of friendship quality in smartphone addiction and mental health among adolescents. A correlational research design was used, and data were collected from a sample of 300 adolescents (52% girls, 48% boys) aged 13–18 years ($M = 15.48$, $SD = 1.24$) recruited from schools and colleges in Faisalabad, Pakistan. Participants completed the Friendship Quality Scale, Smartphone Addiction Scale—Short Version, and DSM-5 Self-Rated Cross-Cutting Symptom Measure. Results revealed significant positive associations among friendship quality, smartphone addiction ($r=.45^{**}$), and mental health ($r=.55^{**}$) problems. Regression analysis indicated that friendship quality and gender significantly predicted mental health outcomes, accounting for 23% of the variance. Additionally, significant gender differences were observed, with girls reporting higher levels of smartphone addiction, poorer mental health, and greater sensitivity to friendship quality compared to boys. The findings suggest that friendship quality plays a critical role in adolescents' mental health and is closely linked to problematic smartphone use. Strengthening healthy peer relationships may serve as a protective factor against mental health difficulties and smartphone addiction during adolescence.

Introduction

Friendships provide essential emotional and practical support and are associated with better emotional and physical health. Although the presence of friendships is linked to improved mental health (Bukowski et al., 2010), the quality of these friendships is particularly important. This study focuses on adolescents aged 13–18 years, a developmental period marked by active formation and evaluation of friendships. The current study aims to examine the role of friendship

quality in adolescents' mental health and to investigate the mediating role of smartphone addiction in this relationship.

Friendship quality refers to individuals' perceptions of both positive and negative aspects of their friendships, including closeness, trust, support, conflict, and dominance (Berndt, 2002). Friendships provide emotional support and a sense of belonging across the lifespan; however, adolescence (13–18 years) is a particularly sensitive period in which peer relationships gain central importance (Nelson et al., 2016). During this stage, increased independence from parents and greater involvement with peers make friendships a dominant social context (Laursen & Collins, 2012; Steinberg & Morris, 2001). Consequently, the quality of friendships plays a crucial role in adolescents' social, emotional, and psychological development (Hartup & Stevens, 1999).

Mental health is defined as a dynamic state of internal equilibrium that enables individuals to use their abilities in harmony with societal values, encompassing cognitive and social skills, emotional awareness and regulation, empathy, coping with adverse events, and a balanced mind–body relationship (Galderisi et al., 2015). Adolescence, a period of significant psychological, biological, and social change, presents new responsibilities, relationships, and challenges (Christie & Viner, 2005). This stage is further complicated in contemporary contexts by personal and educational pressures, with many mental health difficulties emerging for the first time (Burns et al., 2009; Patel et al., 2007). Despite its importance, adolescents often have limited understanding of mental health and how to maintain it (Dogra et al., 2012), and mental health problems particularly among girls may predict poorer long-term functioning in domains such as psychological well-being, academic motivation, and occupational success (Costello et al., 2011; Viner et al., 2012; NG-Knight & Schoon, 2017).

Smartphone addiction is defined as excessive smartphone use that negatively affects daily life due to an inability to control this behavior (Park & Lee, 2012). Since the introduction of smartphones in 2007, their use has rapidly increased worldwide, with adolescents being particularly vulnerable (Sharma & Grant, 2011; Ofcom, 2016). Problematic smartphone use among teenagers has been reported as high as 10–31% in various countries, including Pakistan (Lopez-Fernandez et al., 2014; Khalily et al., 2020). While smartphones provide technological benefits, excessive use is linked to psychosocial difficulties, such as depression, social anxiety, impulsivity, and sleep disturbances (Enez et al., 2016; Rosen et al., 2014; Wang et al., 2018). Early adolescence, a period when peer influence increases and friendships become more central than parental relationships, also coincides with higher vulnerability to smartphone addiction and mental health difficulties (Ding et al., 2017).

Objectives of the Study

- To find out the role of friendship quality and smartphone addiction in adolescents' mental health.
- To determine how friendship quality and smartphone addiction predict mental health among adolescents.
- To determine how friendship quality, smartphone addiction, and mental health differ across gender among adolescents.

Hypotheses

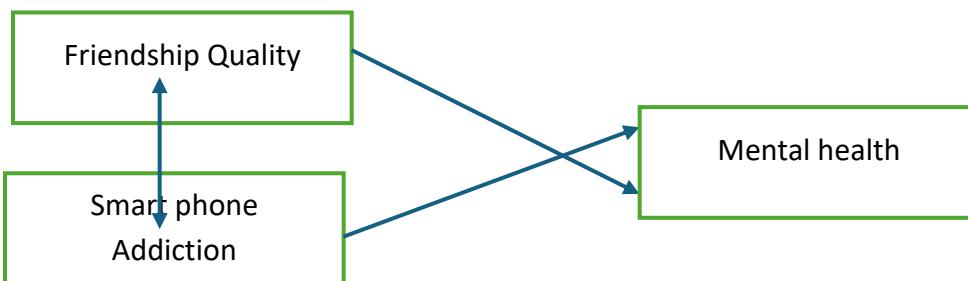
- There is a positive correlation between friendship quality, smart phone addiction and mental health among adolescents.
- Friendship quality and smartphone addiction are significant predictor of mental health among adolescents.

- There are significant gender differences in friendship quality, smartphone addiction, and mental health among adolescents

Conceptualized Model

Figure 1

Hypothesized Model of the Current Study



The hypothesized model demonstrated that friendship quality and smart phone addiction directly impact the mental health of adolescents.

Material and Methods

Sample

A total sample of ($N = 300$) adolescents with equal distribution of 150 boys and 150 girls was recruited from different public and private educational institutions (schools and colleges) of Faisalabad. The age range of participants was 13–18 years. Students of 9th, 10th, 1st year, and 2nd year were included in the study. Students below 9th class and above 2nd year were excluded. Adolescents with any severe mental or physical problems were also not included in the study.

Table 1

Frequency Distribution of Demographic Variables of Study Sample (N = 300)

		Gender		Total f(%)
		Boys f(%)	Girls f(%)	
Class	9 th	37 (47.4)	41 (52.6)	78 (26.0)
	10 th	34 (47.9)	37 (52.1)	71 (23.0)
	1st Year	36 (46.8)	41 (53.2)	77 (25.7)
	2nd Year	36 (48.6)	38 (51.4)	74 (24.7)
	Total	143 (47.7)	157 (52.3)	300 (100)
Institution	Government School	72 (48.3)	77 (51.7)	149 (49.7)
	Punjab College	61 (46.2)	71 (53.8)	132 (44.0)

		Gender		Total <i>f</i> (%)
	KIPS College	10 (52.6)	9 (47.4)	19 (6.3)
	Total	143 (47.7)	157 (52.3)	300 (100)
Residence	Urban	117 (44.7)	145 (55.3)	262 (87.3)
	Rural	26 (68.4)	12 (31.6)	38 (12.7)
	Total	143 (47.7)	157 (52.3)	300 (100)
Number of Siblings	1	8 (47.1)	9 (52.9)	17 (5.7)
	2	39 (45.3)	47 (54.7)	86 (28.7)
	3	40 (48.2)	43 (51.8)	83 (27.7)
	4	20 (52.6)	18 (47.4)	38 (12.7)
	5	21 (44.7)	26 (55.3)	47 (15.7)
	6	12 (54.5)	10 (45.5)	22 (7.3)
	7	2 (50.0)	2 (50.0)	4 (1.3)
	8	1 (33.3)	2 (66.7)	3 (1.0)
	Total	143 (47.7)	157 (52.3)	300 (100)
Family System	Nuclear	121 (47.3)	135 (52.7)	256 (85.3)
	Joint	22 (50.0)	22 (50.0)	44 (14.7)
	Total	143 (47.7)	157 (52.3)	300 (100)
Internet Facility	Yes	70 (44.6)	87 (55.4)	157 (52.3)
	No	73 (51.0)	70 (49.0)	143 (47.7)
	Total	143 (47.7)	157 (52.3)	300 (100)
Personal Smartphone	Yes	106 (48.0)	115 (52.0)	221 (73.7)
	No	37 (46.8)	42 (53.2)	79 (26.3)
	Total	143 (47.7)	157 (52.3)	300 (100)

		Gender		Total <i>f</i> (%)
Smartphone Usage Duration	2 hours	3 (42.9)	4 (57.1)	7 (2.3)
	4 hours	37 (48.7)	39 (51.3)	76 (25.3)
	6 hours	103 (47.5)	114 (52.5)	217 (72.3)
	Total	143 (47.7)	157 (52.3)	300 (100)
Time of Usage	Morning	24 (44.4)	30 (55.6)	54 (18.0)
	Evening	38 (45.2)	46 (54.8)	84 (28.0)
	Night	81 (50.0)	81 (50.0)	162 (54.0)
	Total	143 (47.7)	157 (52.3)	300 (100)
Days of Usage	Weekend	118 (46.8)	134 (53.2)	252 (84.0)
	Weekdays	25 (52.1)	23 (47.9)	48 (16.0)
	Total	143 (47.7)	157 (52.3)	300 (100)

Table 1 showed all the necessary demographics, siblings, family system, internet facility, personal smartphone, smartphone usage, time of usage, and days of usage.

Instruments

Friendship Quality Scale (FQS; Bukowski, Boivin, and Hoza's, 1994)

The friendship quality scale is used as a screening tool to assess the quality of early adolescents' relationships with their best friends according to five conceptually meaningful aspects of the friendship relation including (a) companionship, (b) help, (c) security, (d) closeness, and (e) conflict. The FQS consists of 23 items, the response item is on a 5-point Likert type scale (1= "not true" to 5= "really true"). Cronbach alphas of subscales are acceptable though slightly low (range=.71 to .08).

Smartphone Addiction Scale Short-Version (SAS-SV; Khalily et al., 2019)

The smartphone addiction scale short version (SAS-SV) is used as a screening tool for the assessment and identification of smartphone addiction. The SAS-SV consists of 10 items, the response form is on 6 points Likert-type scale ranging From (1 to 6, with 1 being "strongly disagree" and 6 being "strongly agree"). The inter-item reliability of translated version was good $\alpha=0.81$ and construct validity was adequate ($P < 0.001$).

DSM 5 Self Rated Cross-Cutting Symptom Measure (Sapmaz et al., 2017)

The DSM-5 Level 1 Cross-Cutting Symptom Measure is a self or informant-rated measure to assess the comorbidity of psychiatric symptomatology. It is operationalized at two levels, level 1 consists of 25 items. The response form is on a 5-point Likert type scale ranging from (0= never to 4= almost daily), with high scores indicating a greater frequency of occurrence or greater degree of Severity. Cronbach's alpha level for DSM-5 Level 1 cross-cutting symptom scales adolescent form was 0.893.

Procedure

The purpose of the study was to assess friendship quality, overall mental health, and smartphone addiction among adolescents. Permission was obtained via email from the authors of each scale Friendship quality, Smart phone addiction and DSM V self-report scale for testing mental health prior to data collection. Data collection was approved after requesting permission from various schools and colleges. Prior to the questionnaires being administered, each student was asked to sign an informed consent form and was made aware of their right to withdraw if they encountered any difficulties or issues filling out the questionnaires. Students were then informed about the study and the questionnaires, and they were given the assurance that the information they provided and their answers would be kept private. The questionnaires were completed in a single session. Every student finished three instruments. Statistical Package for the Social Sciences (SPSS) version 22.0 for Windows was used to enter and analyze the data, where a significant difference was shown at ($P < .001$ or $P < .05$).

Results

Table 2: Correlation & Reliability Analysis for Study Variables (N=300)

Variables	<i>k</i>	<i>M</i>	<i>SD</i>	1	2	3	α
Friendship Quality	23	67.96	13.39	1			.81
Smart Phone Addiction	10	32.06	7.91	.45**	1		.63
Mental Health	25	33.56	17.32	.55**	.65**	1	.93

Table 2 showed that Friendship Quality significantly positively correlates with smart phone addiction ($r= .45^{**}$) and mental health ($r=.55^{**}$). Over all the reliability of all the scales used in current study have good reliability alpha.

Table 3: Linear Regression Analysis for Friendship Quality, Smartphone Addiction Predicting Mental Health from among Adolescents (N = 300)

Variables	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	CI LL	UL
Gender	-3.52	1.20	-0.18	-2.93	.000**	-5.88	-1.16
Friendship Quality	0.28	0.81	0.05	0.35	.000**	-1.31	1.87
Mental Health	-0.12	0.69	-0.03	-0.17	.86	-1.48	1.24

Variables	B	SE	β	t	p	CI LL	UL
Smartphone Addiction	0.55	0.91	0.10	0.60	.55	-1.23	2.33
R^2	.23**						
ΔR	.24**						

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

Table 3 reported that Friendship Quality and gender are the significantly predictors of mental health by $r = .23^{**}$ percent variance.

Table 4: Independent Samples t-Test for Gender Differences on Study Scales (N = 300)

Scale	Gender		T	df	p	95% C.I		Cohen's d
	Boys M(SD)	Girls M(SD)				LL	UL	
Friendship Quality	2.90 (0.65)	10.05 (1.50)	-2.20	288	.000***	-0.27	-0.02	.25
Smart phone addiction	31.45 (7.53)	42.73 (8.29)	-1.40	288	.000***	-3.09	0.51	.16
DSM V self-report	38.08 (18.25)	48.56 (14.76)	4.98	293	.000***	5.76	13.28	.58

Table 4 shows an independent samples t-test examined gender differences on study variables. The results indicated that girls are more effected in friendship quality ($M = 10.05$, $SD = 1.50$), smart phone addiction ($M = 42.73$ $SD = 8.29$) and Mental health ($M = 48.56$ $SD = 14.73$) than boys.

Discussion

The present study examined the role of friendship quality and smartphone addiction in adolescents' mental health. The findings revealed significant positive relationships among friendship quality, smartphone addiction, and mental health problems, partially supporting the study hypotheses. These results underscore the complex interplay between peer relationships and technology use during adolescence, a developmental period marked by heightened sensitivity to social interactions and emotional experiences.

Consistent with previous research, friendship quality emerged as a significant correlate of adolescents' mental health. Although friendships are generally considered protective for psychological well-being, the findings suggest that emotionally intense or conflict-laden friendships may contribute to psychological distress. Prior studies have indicated that while supportive friendships promote adjustment, friendships characterized by insecurity, dominance, or conflict are associated with higher levels of anxiety, depression, and emotional dysregulation (Berndt, 2002; Bukowski et al., 2010; Laursen et al., 2007). Adolescents who are highly

emotionally invested in friendships may be more vulnerable to interpersonal stressors, which can negatively affect their mental health.

The positive association between friendship quality and smartphone addiction suggests that adolescents may use smartphones as tools to maintain peer connection, reassurance, and social validation. This finding aligns with existing literature indicating that problematic smartphone use often serves compensatory social functions, particularly for individuals who are highly sensitive to peer approval and social belonging (Kuss et al., 2018; Panova & Carbonell, 2018). Excessive smartphone use may intensify adolescents' exposure to social comparison, peer pressure, and fear of exclusion, which in turn increases psychological distress (Van Deursen et al., 2015).

Furthermore, smartphone addiction was significantly associated with poorer mental health, consistent with prior studies linking excessive smartphone use to depression, anxiety, sleep disturbances, and emotional problems (Demirci et al., 2014; Rosen et al., 2014; Wang et al., 2018). Adolescents who engage in prolonged smartphone use may experience disrupted sleep patterns, reduced face-to-face interactions, and impaired emotional regulation, all of which can negatively affect mental health. These findings support the behavioral addiction framework, which conceptualizes problematic smartphone use as a maladaptive coping strategy rather than merely excessive technology engagement (Goodman, 1990; Kardefelt-Winther, 2015).

Gender differences were also evident in the present study, with girls reporting higher levels of smartphone addiction, friendship involvement, and mental health problems than boys. This finding is consistent with earlier research suggesting that adolescent girls are more emotionally invested in peer relationships and more susceptible to interpersonal stress, which increases vulnerability to internalizing problems (Burns et al., 2009; Costello et al., 2011). Girls may also be more likely to use smartphones for social communication, which can intensify emotional dependency and psychological strain (Fu et al., 2012; Park et al., 2013).

Overall, the findings highlight that while friendships are a central developmental asset during adolescence, the quality and emotional intensity of these relationships, combined with excessive smartphone use, may increase the risk of mental health difficulties. These results emphasize the importance of considering peer dynamics and digital behaviors simultaneously when addressing adolescent mental health concerns.

Limitations

Despite its contributions, the present study has several limitations. First, the cross-sectional design limits causal interpretations of the relationships among friendship quality, smartphone addiction, and mental health. Longitudinal studies are needed to examine developmental changes and directional effects over time. Second, the reliance on self-report measures may have introduced response biases such as social desirability or inaccurate self-perceptions. Third, the sample was drawn from a single city, which may limit the generalizability of findings to adolescents from other regions or cultural contexts. Finally, potential confounding variables such as family relationships, academic stress, and personality traits were not controlled and should be considered in future research.

Implications

The findings of this study have important theoretical and practical implications. From a theoretical perspective, the results emphasize the need to conceptualize friendship quality not only as a protective factor but also as a potential risk factor when characterized by conflict, insecurity, or emotional overdependence. The study also contributes to the growing literature on smartphone addiction by highlighting the role of peer relationships in shaping adolescents' technology use.

Practically, the findings suggest that school-based mental health programs should focus on promoting healthy peer relationships and emotional regulation skills. Counselors, educators, and parents should monitor adolescents' smartphone use and encourage balanced social interactions both online and offline. Gender-sensitive interventions may be particularly beneficial, given the higher vulnerability observed among girls. Preventive programs that foster communication skills, peer conflict resolution, and digital literacy may help reduce smartphone addiction and improve adolescents' mental well-being.

Conclusion

The present study underscores the significant role of friendship quality in adolescents' mental health and smartphone addiction. The findings indicate that emotionally intense or conflict-prone friendships, along with excessive smartphone use, are associated with poorer mental health outcomes, particularly among girls. While friendships remain a central developmental asset during adolescence, their quality and dynamics play a critical role in shaping psychological adjustment. Addressing peer relationship patterns and promoting healthy technology use may be essential for enhancing adolescents' mental health and overall well-being.

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