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The relationship between self-cohesion and smartphone addiction: the mediating role of rejection sensitivity

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Background: The increasing use of smartphones with attractive applications has yielded concerns over problematic overuse, also called smartphone addiction, thus creating a need to investigate the antecedents and pathways of this addiction.

Objective: The aim of this study was to investigate the relationships between the self-cohesion dimensions of presence and consistency and smartphone addiction, and the potentially mediating role of rejection sensitivity.

Methods: A total sample of 910 respondents (58% females, mean age=34.9, SD=13.6) participated in the study. They completed a questionnaire including demographic characteristics and queries about frequency and duration of smartphone use, as well as the Self-Cohesion Scale, the Short Version of Smartphone Addiction Scale, and the Rejection Sensitivity RS-Adult Questionnaire. Structural equation modeling was used to examine the relationships in question.

Results: The findings indicated that smartphone addiction was positively correlated with rejection sensitivity and negatively correlated with the self-cohesion dimensions of presence and consistency. Further, both presence and consistency were negatively associated with smartphone addiction and rejection sensitivity negatively mediated these relationships.

Conclusion: Self-cohesion and rejection sensitivity appear to be important predictors of smartphone addiction. Efforts to counteract smartphone addiction should, therefore, endeavor to increase smartphone users' self-cohesion and reduce their rejection sensitivity.

KEYWORDS

smartphone addiction, self-cohesion, rejection sensitivity, mediation analysis, Saudi Arabia

1. Introduction

Smartphones have become an important part of our daily lives and the number of smartphone users continues to increase. The number of smartphone users worldwide in 2022 approached double that of 2016, growing from 3.7 billion to 6.6 billion (1). In Saudi Arabia in particular, there were 23.4 million smartphone users, or 71% of the population, in 2017, 33.1

million users, or 92% of the population, in 2022, and the number of users is expected to grow to 36.2 million in 2025 (2).

Smartphones are equipped with haptic screens, access to the internet via Wi-Fi or cellular networks, an enormous variety of applications, cameras, GPS, and more, which makes them suitable for multiple purposes, including not only communication but also entertainment and education (3). Further, it has been postulated that specific smartphone applications can offer effective support for certain health issues, such as alcoholism recovery (4) and diabetes self-management (5, 6). Nonetheless, negative effects on users' physical and mental well-being have been reported due to extensive smartphone overuse. For example, overuse has been associated with anxiety and depression (7), loneliness (8), neck problems (9), interpersonal relationship problems (10), and accidents involving pedestrians and distracted drivers (11, 12). Smartphone overuse to the extent that it impacts one's health and relationships has been referred to as smartphone addiction (13). Lin et al. (14) considered smartphone addiction a form of technological addiction, which Griffiths (15) defined as a non-chemical behavioral addiction involving interaction between human and machine.

Particular personality traits have been proposed among the key predictors of smartphone addiction. For example, the following have been associated with smartphone and internet addiction: low agreeableness and neuroticism (16–18), extraversion and openness to new experiences (18, 19), low conscientiousness and adjustment disorders (17), social interaction anxiety and locus of control issues (20), and narcissistic traits (8). Studies have investigated the relationship between family cohesion and smartphone addiction (10, 21, 22), but there is scarcity of research on self-cohesion and smartphone addiction.

1.1. Self-cohesion and smartphone addiction

The concept of self-cohesion originates from psychoanalyst Kohut (34) theory of the psychology of the self. This theory proposes two aspects of the self, one that is cohesive and another that is fragile (23, 24). Both refer to one's healthy or unhealthy sense of self and self-esteem, and thereby well-being. The development of a cohesive self from infancy to adulthood evolves along three axes: the grandiosity, idealization, and alter ego-connectedness axes (23–25). According to Kohut, the grandiosity axis concerns the ability of individuals to develop assertiveness and healthy ambitions and to maintain a positive sense of self-esteem (26). The idealization axis concerns the ability of individuals to possess and maintain healthy goal-setting (23). The alter ego-connectedness axis refers to the ability of individuals to form intimate relationships and express their feelings with significant others (25). Individuals with healthy development on the grandiosity, idealization, and alter ego-connectedness axes would be confident, would have healthy ambitions, goals, values, and ideals, and would feel a sense of connectedness with others (23, 25, 26).

Gleason (27) and Banai et al. (28) argued that the cohesive self can be considered a healthy form of narcissism, where individuals are able to feel pride in their accomplishments and in themselves. On the other hand, a lack of self-cohesion can manifest as negative narcissistic symptoms, including a sense of grandiosity and entitlement, wherein such individuals seek to compensate for their deficits in self-esteem

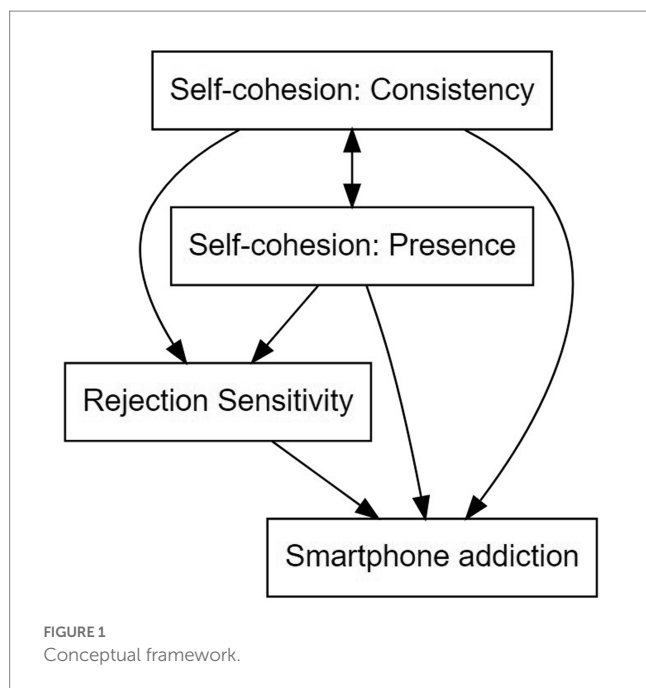
with excessive self-promotion and self-presentation (29). Thus, it has been found that individuals with low self-cohesion tend to upload self-promoting and attractive pictures of themselves and update their social media status more frequently for the purpose of self-presentation (30–33). Gleason (27) further identified two dimensions of self-cohesion, presence and consistency. The presence dimension concerns individuals' need for the presence of other people in order to enjoy a healthy sense of self and self-esteem. "A person with a fragile self may feel as though s/he does not exist unless in the presence of someone else. In other words, others are needed to provide the mirroring or idealizing functions to prevent the complete loss of self" [(27), p. 16]. The consistency dimension concerns individuals' characteristic patterns of thought and behavior with regard to themselves and interactions with others. Low consistency individuals are "looking for others to perform selfobject functions, feel alienated from society, and have not successfully coordinated their self parts" [(27), p. 87]. On the other hand, a high consistency person is "more cohesive, having integrated the self parts, experiences less need for others to function as selfobjects and is therefore more likely to feel connected to the larger society" [(27), p. 87]. A number of studies have established a link between narcissistic traits and excessive smartphone use (34, 35). Nonetheless, despite the strong connection between narcissism and self-cohesion, no study to date has examined the association between self-cohesion and smartphone addiction. The first aim of this study was, therefore, to examine the association between self-cohesion and smartphone addiction. We hypothesized that self-cohesion is negatively related to smartphone addiction.

Hypothesis 1: Self-cohesion will be negatively associated with smartphone addiction.

1.2. The mediating role of rejection sensitivity

It has been postulated that the fear of being rejected is virtually universal (36, 37). However, some individuals are more concerned with the possibility of social rejection, the tendency that Kelly (38) referred to as rejection sensitivity. More concretely, rejection sensitivity (RS) represents one or more of the following: anticipatory anxiety over the possibility of social rejection, a tendency to expect rejection, or strong emotional reactions to actual rejection occurrences (39–41).

Rejection sensitivity has been related to both self-cohesion and smartphone addiction. Banai et al. (28) found that several personality traits of the low self-cohesive individual were positively related to rejection sensitivity. It can be assumed that high self-cohesion will negatively correlate with rejection sensitivity, that is, a person with high self-cohesion, who has a sense of connectedness with others (23, 26), would be less sensitive to rejection. Rejection sensitivity has also been related to smartphone and internet addiction. Sun et al. (42) reported a positive relationship between rejection sensitivity and smartphone addiction (42). A positive relationship was also found between rejection sensitivity and internet addiction by Fontana et al. (43) and Molavi et al. (44). And a study by Farahani et al. (45) showed that individuals with high rejection sensitivity spent more time using social media, in this particular case Facebook, than their counterparts.



Thus, this study's second aim was to investigate the mediating role that rejection sensitivity might play in the relationship between self-cohesion and smartphone addiction, leading to the second hypothesis:

Hypothesis 2: Rejection sensitivity will negatively mediate the relationship between self-cohesion and smartphone addiction.

The conceptual model guiding this study is represented in Figure 1.

2. Methods

2.1. Study design and sample

The study designer contacted the authors of the scales used in the study to obtain permission for their use in the study. Then, for those scales for which a validated Arabic version did not exist, the measures were translated into Arabic.

The study sample was composed of 910 participants, 58% females, with a mean age of 34.9 (SD = 13.6, range = 15–75). This sample was determined by convenience methods. Potential participants were invited via social media. The invitation informed them of the study's aim and that their participation was voluntary and they could terminate their participation at any time. Confidentiality and anonymity were assured. Respondents provided informed consent. The questionnaire was sent to respondents via Facebook, email, and WhatsApp. Respondents were asked to be as honest as possible.

2.2. Measures

The questionnaire sent to participants contained a set of demographic questions, including gender, age, education, marital status, employment status, monthly income, time spent daily on a

smartphone, and physical activity. This was followed by questions about frequency and duration of smartphone use, and the Self-Cohesion Scale (27), the Short Version of Smartphone Addiction Scale (46), and the Rejection Sensitivity RS-Adult Questionnaire (A-RSQ) (47).

2.2.1. Self-cohesion scale

Self-Cohesion was assessed using the Self-Cohesion Scale (27), which was developed based on Kohut (34) theory of the psychology of the self. This scale contains 24 items and is scored on a six-point Likert scale ranging from 1 (strongly agree) to 6 (strongly disagree). Gleason (27) suggested a two-factor model for this scale, so exploratory factor analysis (EFA) was conducted on the scale prior to data analysis. The Bartlett test ($k = 206.6$, $df = 24$, $p < 0.001$) and the Kaiser-Meyer-Olkin test of sphericity ($MSA = 0.89$) indicated that the data were suitable for factor analysis. Nonetheless, the inspection of communalities showed that 14 items had communalities below 0.30 and were removed from the item pool. Those items were numbers 2, 4, 5, 6, 9, 14, 15, 16, 17, 19, 20, 21, 22, and 23. EFA was then conducted on the remaining 10 items (see Appendix). Consistent with Gleason (27), the scree plot indicated two factors that could be extracted, namely presence and consistency, as their respective items indicate. We see, therefore, that the conceptual model governing the study required the inclusion of these two separate dimensions of self-cohesion, as shown in Figure 1. The items in the presence and consistency dimensions had adequate factor loadings ranging between 0.330 and 0.782. In this study, 6 items measured the presence dimension and 4 items measured the consistency dimension. Possible scores range between 6 and 36 for presence and between 4 and 24 for consistency.

2.2.2. Rejection sensitivity RS-adult questionnaire

Rejection sensitivity was assessed using the Rejection Sensitivity RS-Adult Questionnaire (A-RSQ) (47). This measure consists of nine items, each of which is scored on six-point Likert scale, ranging from 1 ("very unconcerned/very unlikely") to 6 ("very concerned/very likely"). The scale consists of two components: concern over rejection and expectancy of acceptance. Respondents are presented nine imaginal situations involving interpersonal relationships, for example, "You approach a close friend to talk after doing or saying something that seriously upset him/her." Respondents then answer two questions about each scenario, such as "How concerned or anxious would you be over whether or not your friend would want to talk with you?" indicating the respondent's rejection concern, and "I would expect that he/she would want to talk with me to try to work things out," indicating expectancy of acceptance. To form a composite score of rejection sensitivity, Berenson et al. (47) recommended multiplying the concern of rejection scores by the reverse of the corresponding expectancy of acceptance scores and then computing the average of the resulting scores. Possible scores range between 1 and 24.

2.2.3. Short version of the smartphone addiction scale

Smartphone addiction was measured using the Short Version of the Smartphone Addiction Scale (46). This scale consists of 10 items, such as "I will not be able to stand not having a smartphone." Respondents grade their reaction to each item on a six-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The

overall scores range from 10 to 60, where higher scores indicate higher levels of smartphone addiction. This scale has proven psychometric properties (46). In this study, we used an Arabic version of the scale that has been validated by Al-Qarni and El Keshky (48).

2.3. Statistical analysis

The data analyses were conducted using RStudio (49), a statistical computing environment. We calculated the socio-demographic characteristics of the sample first. Then, exploratory factor analysis was conducted on the Self-Cohesion Scale (27) in order to verify the two factors suggested by Gleason's original study. The EFA was computed using the "psych" software package (50). Descriptive statistics, Pearson correlations, and Cronbach's alpha coefficients were then computed. The final stage was structural equation modeling using the "lavaan" software package (51). To plot the model, we used the "lavaanPlot" package (52).

2.4. Ethics

All procedures followed were in accordance with the ethical standards of the relevant institutional and national committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000. Approval for conducting this study was obtained from the ethics committee of Institutional Review Board of King Abdulaziz University, Jeddah, Saudi Arabia, and informed consent was obtained from all subjects.

3. Results

The socio-demographic characteristics of the sample and the ANOVA tests are summarized in Table 1. Around 58% of the sample were female. With regard to education, 3.7% had less than high school, 15.4% had attended high school, 25% were college students, 43.2% had a university degree, and 12.7% held a master's or doctoral degree. Around 40.3% were single, 55.5% were married, 3.1% divorced, and 1.1% were widowed. Thirty-six percent were employed full time, 3.5% were employed part time, 10.9% were retired, 28.3% were students, and 21.2% were unemployed. Around 11.2% were earning <3,000 RS per month, 10.4% were earning between 3,000 and 5,000 SR, 8.9% between 5,000 and 7,000 SR, 11.2% between 7,000 and 9,000 SR, 14.4% between 9,000 and 11,000 SR, and 43.9% were earning more than 11,000 SR per month. Only 3% of the sample spent <1 h per day using a smartphone, 20% were spending between 1 and 3 h, 40.2% between 4 and 6 h, 23% between 7 and 9 h, and 13.8% were spending more than 10 h per day using a smartphone. Sixty-five percent were living an active lifestyle and 35% were living a sedentary lifestyle.

In terms of differences based on demographics, there were no gender differences in smartphone addiction scores, but females had higher scores on rejection sensitivity and males had higher scores on presence. In terms of education, those who had a high school education reported the highest scores of smartphone addiction, those with less than high school education had higher scores of rejection sensitivity, and those with a master's or doctoral degree had significantly higher scores on the presence and consistency dimensions

of self-cohesion. Regarding marital status, single respondents had higher scores on rejection sensitivity, married individuals had higher scores on presence, and divorced respondents had higher scores on consistency. Unemployed individuals had higher scores on smartphone addiction, students had higher scores of rejection sensitivity, those working full-time had higher scores on the presence dimension, and retired individuals had higher scores on the presence and consistency dimensions. In terms of income, those earning at least 11,000 SR had significantly higher scores on the presence and consistency dimensions of self-cohesion. As expected, those who were spending more than 10 h per day using a smartphone reported higher scores on smartphone addiction, and they also scored higher on rejection sensitivity. Those who spent between one and 3 h using a smartphone reported higher scores on the presence and consistency dimensions. Finally, respondents living a sedentary lifestyle scored higher on smartphone addiction and those who were active reported higher scores on the presence dimension of self-cohesion.

The descriptive statistics of the study variables, Pearson correlations, and Cronbach's alpha coefficients are displayed in Table 2. The mean score for smartphone addiction was 32.6 (SD=9.22, range=6–60), the average score for rejection sensitivity was 8.67 (SD=3.35, range=1–24), the average score for presence was 25.8 (SD=6.95, range=6–36), and the mean score for consistency was 18.9 (SD=4.46, range=6–24). Smartphone addiction was positively correlated with rejection sensitivity ($r=0.19$, $p<0.001$). On the other hand, smartphone addiction was negatively correlated with presence ($r=-0.29$, $p<0.001$) and consistency ($r=-0.28$, $p<0.001$). As expected, rejection sensitivity was also negatively correlated with both presence ($r=-0.39$, $p<0.001$) and consistency ($r=-0.32$, $p<0.001$). The internal consistency reliability was adequate for smartphone addiction ($\alpha=0.80$), for rejection sensitivity ($\alpha=0.72$), for presence ($\alpha=0.80$), and for consistency ($\alpha=0.78$).

In the structural equation model, the self-cohesion presence component negatively predicted smartphone addiction ($\beta=-0.17$, $p<0.001$), as did self-cohesion consistency ($\beta=-0.15$, $p<0.001$). Rejection sensitivity negatively mediated the relationship between presence and smartphone addiction ($\beta_{\text{ind}}=-0.028$, $p<0.05$). Rejection sensitivity also negatively mediated the relationship between consistency and smartphone addiction ($\beta_{\text{ind}}=-0.022$, $p<0.05$). This model exhibited good model fit ($\chi^2=256.90$, $p<0.001$; RMSEA=0.02; SRMR=0.01; CFI=0.99; TLI=0.98; Figure 2).

4. Discussion

Given the continuing increase in smartphone usage, with appealing applications that may increase the risk of smartphone addiction, there is a need to investigate the antecedents of smartphone addiction and the pathways through which these relationships operate. Accordingly, this study examined the relationship between self-cohesion – in particular, its consistency and presence dimensions – and smartphone addiction, as well as the mediation role of rejection sensitivity. As expected, the results indicated that the presence and consistency dimensions of self-cohesion negatively predicted smartphone addiction and this relationship was negatively mediated by rejection sensitivity. Thus, the results supported *Hypotheses 1* and *2*.

Cohesive individuals possess an integrated and healthy sense of self, which may help to explain their negative association with

TABLE 1 Socio-demographic characteristics and ANOVA tests.

Variable	<i>n</i>	%	SAS	RS	Presence	Consistency
Gender			<i>p</i> = 0.639	<i>p</i> < 0.05	<i>p</i> < 0.001	<i>p</i> = 0.101
Female	528	58	32.7 (9.01)	8.8 (3.57)	25.1 (7.14)	19.1 (4.51)
Male	382	42	32.4 (9.51)	8.3 (3.01)	26.74 (6.57)	18.5 (4.79)
Education			<i>p</i> < 0.05	<i>p</i> < 0.01	<i>p</i> < 0.001	<i>p</i> < 0.001
Less than high school	34	3.7	33.0 (6.76)	10.02 (5.28)	23.3 (7.00)	16.9 (4.05)
High School	140	15.4	34.2 (9.19)	8.3 (3.09)	25.9 (7.25)	18.2 (4.68)
College student	225	25	32.6 (9.72)	9.26 (3.54)	23.2 (6.67)	18.07 (5.15)
University degree	393	43.2	32.5 (9.42)	8.36 (3.07)	26.6 (6.75)	19.3 (4.37)
Master's/doctoral degree	115	12.7	30.5 (7.80)	8.48 (3.28)	28.4 (6.09)	20.3 (3.94)
Marital status			<i>p</i> = 0.590	<i>p</i> < 0.001	<i>p</i> < 0.001	<i>p</i> < 0.001
Single	367	40.3	32.8 (9.62)	9.32 (3.58)	23.2 (6.80)	17.8 (5.09)
Married	505	55.5	32.3 (8.90)	8.18 (3.06)	27.6 (6.49)	19.5 (4.17)
Divorced	28	3.1	34.1 (9.31)	9.21 (4.03)	26.6 (5.76)	20.7 (3.69)
Widower	10	1.1	34.5 (10.45)	7.63 (2.78)	27.2 (8.58)	19.8 (4.31)
Employment status			<i>p</i> < 0.05	<i>p</i> < 0.01	<i>p</i> < 0.001	<i>p</i> < 0.001
Full-time	328	36	31.3 (9.61)	8.28 (2.93)	27.2 (6.39)	19.5 (4.32)
Part-time	32	3.5	32.1 (8.87)	8.70 (3.09)	26.4 (5.31)	19.4 (4.48)
Retired	99	10.9	33.4 (8.45)	8.05 (2.75)	30.2 (4.87)	19.8 (4.11)
Student	258	28.3	33.0 (9.45)	9.32 (3.76)	23.2 (6.87)	17.8 (5.10)
Unemployed	191	21.2	33.6 (8.50)	8.77 (3.63)	24.5 (7.83)	18.5 (4.53)
Income per month, in SR			<i>p</i> = 9.54	<i>p</i> < 0.01	<i>p</i> < 0.001	<i>p</i> < 0.01
<3,000	102	11.2	32.1 (8.50)	9.30 (3.65)	23.3 (7.11)	18.00 (4.98)
3,000 to <5,000	95	10.4	31.7 (9.15)	8.78 (3.27)	24.7 (6.89)	19.4 (4.34)
5,000 to <7,000	81	8.9	33.9 (9.46)	9.46 (3.48)	23.7 (5.86)	17.3 (5.13)
7,000 to <9,000	102	11.2	32.7 (9.04)	9.09 (3.43)	26.4 (6.63)	18.2 (4.78)
9,000 to <11,000	131	14.4	33.2 (9.43)	8.15 (2.87)	26.05 (6.99)	18.9 (4.30)
≥11,000	399	43.9	32.3 (9.35)	8.38 (3.34)	26.9 (6.94)	19.4 (4.48)
Hours per day using smartphone			<i>p</i> < 0.001	<i>p</i> < 0.05	<i>p</i> < 0.001	<i>p</i> < 0.01
<1 h	27	3	28.9 (6.56)	8.33 (2.26)	24.5 (7.28)	19.4 (4.73)
1–3 h	182	20	28.6 (7.62)	8.08 (3.43)	27.5 (6.64)	19.8 (4.10)
4–6 h	365	40.2	31.4 (8.98)	8.57 (3.23)	26.4 (6.96)	18.8 (4.63)
7–9 h	209	23	35.0 (9.10)	9.13 (3.06)	25.03 (6.91)	18.8 (4.54)
≥10 h	126	13.8	38.1 (9.08)	9.15 (4.03)	23.07 (6.37)	17.6 (5.22)
Physical activity			<i>p</i> < 0.001	<i>p</i> = 0.193	<i>p</i> < 0.05	<i>p</i> = 0.669
Active	591	65	31.6 (8.96)	8.56 (3.18)	26.1 (6.74)	18.9 (4.57)
Sedentary	319	35	34.2 (9.46)	8.86 (3.64)	25.1 (7.27)	18.7 (4.76)

SAS, Smartphone Addiction Scale score; RS, rejection sensitivity score on A-RSQ; all scores shown as Mean (SD).

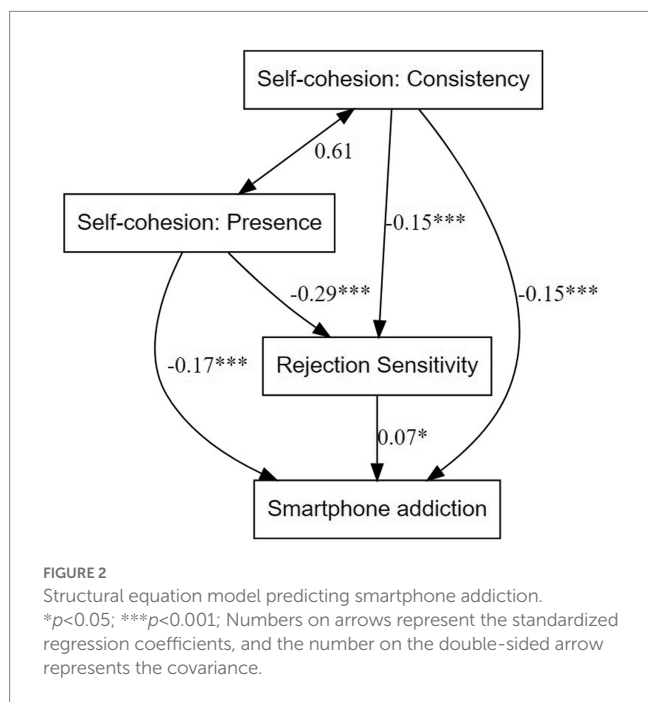
smartphone addiction. Non-cohesive individuals have a fragile sense of self and are ill at ease unless they are the presence of other people (27). The latter are at higher risk of smartphone addiction perhaps because the need for the presence of others is satisfied by their digital “presence.” Further, in order to compensate for their needs, such individuals may exhibit grandiose, self-promotional, and self-presenting behaviors, which have been associated with the risk of smartphone addiction (34, 35, 53, 54). A study by Pearson and Hussain (54) indeed reported a positive relationship between

narcissism and smartphone addiction. Similarly, Ksinan et al. (35) found that grandiosity was related to compulsive smartphone use. A study by Gosling et al. (53) showed that individuals who scored high on narcissism were more likely to spend more time on social media. Andreassen et al. (34) reported in survey of social media users that narcissistic individuals, who need to feed their ego, tended to be addicted to social media. This evidence demonstrates that individuals with low self-cohesion tend to be addicted to smartphones.

TABLE 2 Pearson correlations between the variables and Cronbach’s alpha coefficients.

Variable	Mean (SD)	Smartphone addiction	Rejection sensitivity	Presence	Consistency	Alpha
Smartphone addiction	32.6 (9.22)	1				0.80
Rejection sensitivity	8.67 (3.35)	0.19***	1			0.72
Presence	25.8 (6.95)	-0.29***	-0.39***	1		0.80
Consistency	18.9 (4.64)	-0.28***	-0.32***	0.61***	1	0.78

*** $p < 0.001$.



The findings of this study demonstrated that rejection sensitivity mediates the relationship between self-cohesion and smartphone addiction. This corroborates prior research. Rejection sensitivity has been related to self-cohesion (28) and smartphone addiction (42). Interestingly, the literature has established rejection sensitivity as a mediating variable between a range of other variables and smartphone or internet addiction. For example, rejection sensitivity was found to mediate the relationship between attachment style and smartphone addiction (55). Another study reported that the relationship between online self-disclosure and internet addiction was mediated by rejection sensitivity. And Xin et al. (56) found that rejection sensitivity mediated the relationship between cyber-victimization and internet addiction.

People with high rejection sensitivity may be prone to social media addiction because they create for themselves an environment online in which they interact with others without feeling uncomfortable, as they might be in face-to-face interaction (57). It has also been postulated that people engage in excessive internet or smartphone use as a coping mechanism to regulate emotions following a rejection stress event (44, 58, 59).

This study found no gender differences in smartphone addiction, which corroborates the findings of Andrade et al. (60). Nonetheless, others have reported that females were more likely to be addicted than males (17, 61). We found that females were more likely to

be sensitive to rejection, which is in line with other studies (62). Individuals with lower levels of education had higher smartphone addiction and rejection sensitivity scores, which is in line with the results from Kwon et al. (13). However, Hawes et al. (63) reported higher rejection sensitivity in college students compared to high school students. This study also found differences in smartphone addiction and rejection sensitivity based on marital status and employment status. This has also been reported in previous studies (64–67). We further found that smartphone addiction scores were higher in individuals living a sedentary lifestyle and this was also reported by Manzoor et al. (68). Finally, those who spent more hours using a smartphone had higher scores not only on smartphone addiction, as might be expected, but also on rejection sensitivity. The former finding is in line with previous research that demonstrated that the severity of smartphone addiction is associated with duration and frequency of smartphone use (69, 70).

4.1. Implications of the study

It is not possible to control the increasing rate of smartphone usage in the world. Thus, it would be wise to put effort into ameliorating the antecedent or predictor factors of smartphone addiction. The findings of this study suggest creating programs and training to improve individuals’ self-cohesion and reduce their rejection sensitivity, especially in young people. This is critical for parents, educators, and counselors to reduce the negative consequences of excessive smartphone usage.

4.2. Limitations

Despite the strengths of this study, there are some limitations that should be acknowledged. First, the design of the study was cross-sectional, which does not allow conclusions with regard to causation. Second, the sample was determined using convenience methods. Future research should use random sampling methods. Third, 14 items of the Self-Cohesion Scale were not used in this study because of their low communalities.

5. Conclusion

This study contributes to the literature by having examined and established the association between self-cohesion and smartphone addiction, and by confirming the mediation role of rejection sensitivity. The findings indicate that self-cohesion’s dimensions of

presence and consistency are predictors of smartphone addiction, and rejection sensitivity is a mediator of these relationships. These findings add new insights, as the contribution of self-cohesion to smartphone addiction had not previously been investigated. It appears that increased self-cohesion and decreased rejection sensitivity could be foci for interventions to deal with smartphone addiction. These findings yield practice insights for counselors, educators, parents, and policy makers, who can use these findings to motivate and shape the design of programs to counteract smartphone addiction.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the corresponding author, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by the Ethics Committee of Institutional Review Board of the King Abdulaziz University, Jeddah, Saudi Arabia. The participants provided their written informed consent to participate in this study.

Author contributions

ME contributed to the definition of research objectives, model and hypotheses and funding acquisition. ME and YS participated in data analysis plan, writing—original draft, and approval of the final manuscript. ME, HA, AA, and YS contributed to the provision of materials (i.e., questionnaires), participated in data collection, review and editing. All authors have read and approved the final version of the manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpubh.2023.1166864/full#supplementary-material>

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