

Social Media Addiction, Self-Compassion, and Psychological Well-Being: A Structural Equation Model

ABSTRACT

Objective: Research indicates that social media addiction is associated with several psychological consequences, for example, depression. Distressed individuals tend to devote more time to social media, which leads to impairment of daily life. Interestingly, individuals feeling more compassionate toward them tend to devote less time to social media and feel less psychologically distressed. This research aimed to examine the association between social media addiction and self-compassion and whether it can be further explained through the association of psychological distress.

Methods: A sample of 255 Greek adults received a personal invitation sent to various social media platforms. Invitations included a link, which redirected participants to the information sheet and the study questionnaires, namely the Bergen Social Media Addiction Scale, the Self-Compassion Scale, and the Depression, Anxiety, Stress Scale. Participation was voluntary and no benefit/reward was granted.

Results: As predicted, social media addiction was found to negatively correlate with self-compassion and positively with distress. We used structural equation modeling to examine associations between variables, with psychological distress acting as a mediator. Examination of estimated parameters in the model revealed statistically significant correlations, except for the positive dimensions of the Self-Compassion Scale, which were found to be insignificantly associated.

Conclusion: Individuals with higher levels of self-compassion tend to report less social media addictive behaviors and distress. The extensive use of social media is related to negative feelings and emotions. Self-compassion is a potential protective factor, while distress is a potential risk factor for social media addiction. Intervention programs dealing with social media addiction should consider the role of self-compassion.

Keywords: Social media addiction, self-compassion, depression, anxiety, stress, factor analysis

Introduction

The use of the social media (SM) has increased considerably in the recent years; more than 1 billion individuals worldwide use one or more of these services on a regular basis.¹ Social media applications are virtual communities where users can create their personal profile and make it publicly available, interact with real-life friends, and meet new people, based on shared interests. Despite the benefits of SM to everyday life (e.g., social interaction, marketing enhancement, and information processing), problematic use of SM, referred as SM addiction, has also been documented.² According to Andreassen and Pallesen,³ SM addiction is defined as a psychological dependence on SM use and portrays strong and uncontrollable intrinsic motivation, which leads individuals to devote significant amount of time and effort to SM. This disposition impairs important areas of their daily life, like social activities, academic and/or professional commitments, interpersonal relationships, and psychological health. Although SM addiction has not yet been endorsed as a clinical disorder, the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), has included internet gaming



Eirini Marina Mitropoulou 

Marianna Karagianni 

Christoforos Thomadakis 

Department of Psychology, University of Crete
Faculty of Social Sciences, Crete, Greece

Corresponding author:
Eirini Marina Mitropoulou
✉ e.mitropoulou@uoc.gr

Received: May 26, 2022
Accepted: September 26, 2022
Publication Date: October 31, 2022

Cite this article as: Mitropoulou EM, Karagianni M, Thomadakis C. Social media addiction, self-compassion, and psychological well-being: A structural equation model. *Alpha Psychiatry*. 2022;23(6):298-304.



disorder as an emerging issue for further research.⁴ Social media addiction has been linked to behaviors akin to other similar addictive disorders, due to the excessive and additive use of SM apps.² To our knowledge, SM addiction remains an unexplored public health issue among Greek adults.

Social Media Addiction as a Significant Psychological Health Issue Worldwide

Social media addiction among adolescents and adults is reported with variations in several countries. Robust epidemiological studies, using nationally representative large-scale samples, reported variations in the prevalence rates of SM intense use in the general population. For example, prevalence rate around 4.5% has been reported among 5961 Hungarians.⁵ In Germany, 4.1% of males and 3.6% of female adolescents have been demonstrating SM addiction.⁶ De Cock et al⁷ reported that 2.9% of the Belgium population is classified as SM addicted. To a similar extent, 11.9% of the 23 532 Norwegian population, aged 18-88 years old, were found to report SM addiction.³ Moreover, studies that used non-probability sampling techniques have reported even higher prevalence rates of SM addiction among specific age groups. For example, the prevalence rates among 2198 Dutch adolescents aged 10-17 years old are approximately 7%.⁸ These rates increase by 18% among young Facebook (n=667) and YouTube (n=1056) Malaysian users, under the age of 25⁹ and by 29.5% among 1110 students aged 18-25 years old, attending a major university in Singapore.¹⁰

Social media addiction has been found to be associated with a range of negative health outcomes among adolescents. In their systematic review, Seabrook et al¹¹ found a significant association between the quality of SM interaction and mental health. Particularly, individuals who exhibit excessive use of SM tend also to exhibit symptoms of depression, display problematic interaction patterns, feel more vulnerable to peer victimization, and express feelings of disengagement from daily life. All these behaviors are considered a potential risk factor for suicidal desire. Research has also associated SM addiction with disturbances in sleep behaviors, which lead to bedtime and rising time postponements,¹² increased feelings of social distancing, loneliness and anxiety,¹³ deterioration of well-being, and social interaction overload, namely the individual's engagement in social exchange beyond his/her communicative and cooperative capabilities.¹⁴ Identifying factors associated with SM app interaction is highly warranted as guideline for the design of interventions to reduce SM addiction among adolescents and adults.

MAIN POINTS

- *Self-compassionate individuals exhibit social media addictive behaviors to a lesser degree than non-self-compassionate individuals.*
- *Only the negative facets of self-compassion (i.e., self-judgment, isolation, and over-identification) actually influence social media addiction, as opposed to the positive ones (i.e., mindfulness, self-kindness, and common humanity), which exhibited nonsignificant relations.*
- *Psychological distress, namely depression, anxiety, and stress, is significantly associated with social media addiction.*
- *Psychological distress is a significant risk factor (mediator) for exhibiting social media addiction.*

Self-compassion and Social Media Addiction

The concept of self-compassion has drawn interest, due to its strong link to psychological well-being.⁶ Self-compassion pertains to the understanding, acknowledgment, and transformation of personal suffering through self-kindness, self-acceptance, and mindfulness. The concept of self-compassion is identified by 3 interactive components, all having 2 opposite facets. The first facet includes the dimensions of self-judgment and self-kindness, which refer to one's ability to be caring and understanding toward the self rather than being harsh and self-critical under negative circumstances. Self-compassionate individuals embrace difficult situations, while self-judgmental individuals become easily upset with themselves. The second facet pertains to common humanity and isolation. Individuals exhibiting feelings of isolation tend to be more prone to social distancing and to personal failure inefficiency. The third facet includes the dimensions of mindfulness and over-identification, which pertain to the awareness and acceptance of one's painful and stressful experiences in a balanced way. Individuals exhibiting mindfulness pay attention to the present moment and accept their thoughts, feelings, and senses.¹⁵

Self-compassion is reported to enhance emotional well-being,¹⁶ reduce feelings of shame-proneness,¹⁷ increase motivation toward personal growth, mitigate health-related problematic behaviors, such as smoking,¹⁵ and reduce feelings of depression and anxiety.^{18,19} Self-compassion is also reported to have a regulative causal effect on negative feelings and behaviors; individuals, who embrace life and avoid maladaptive beliefs or negative cognitions are less prone to psychological distressful feelings and behaviors.²⁰

Self-compassion is also associated with SM app usage.²⁰ Individuals exhibiting higher levels of self-compassion spend less time on social networking, log in to various SM platforms less frequently, report fewer symptoms of intensity, and generally are more positively inclined to online networking interactions. Research has examined the moderating effect of self-compassion on SM addiction, mostly focusing on the effect it pertains to negative body image perceptions,²¹ perfectionistic self-presentations,²² or specific distressful symptoms, such as depression.²⁰ Social media app users, who exhibit higher levels of self-compassion, tend to report less symptoms of depression than those with lower levels of self-compassion, thus confirming the mediating effect of the latter on SM addiction and psychological distress.

Psychological Distress and Social Media Addiction

The literature reports that social networking has an effect on psychological distress of the users and can become additive.^{22,23} Psychological distress is identified by 3 components, namely depression, anxiety, and stress.²⁴ Depression is associated with feelings of hopelessness, self-deprecation, anhedonia, and lack of interest. Anxiety pertains to the autonomic arousal, and the subjective experience of anxious affect and stress is the persistent feeling of tension and/or the excessive worrying in general life situations. Psychological distress is considered an important risk factor to SM addiction. Preliminary research has associated higher levels of depression, anxiety, and stress with Facebook and Instagram excessive use^{18,25}; SM-addicted users exhibit withdrawal, poor planning abilities, tolerance to SM app use, preoccupation, impairment of control, and excessive online time.

Psychological distress is reported to have an indirect causal effect on negative feelings and behaviors¹⁸; individuals, who feel abandoned,

hopeless, and dissatisfied by their lives are more prone to excessive SM exposure.

Research Objective Overview

The present study extends previous research^{18,20} by exploring the relation between SM addiction and self-compassion to a non-clinical sample of Greek adults. Moreover, we examine whether psychological distress (including all 3 facets, namely depression, anxiety, and stress) moderates the relationship between SM addiction and self-compassion. We therefore hypothesize the following:

- Social media addiction will be negatively related to self-compassion.
- Psychological distress will be positively related to SM addiction and negatively related to self-compassion.
- Psychological distress will moderate the relationship between SM addiction and self-compassion, with stronger association being found by individuals that exhibit lower levels of self-compassion.

Additionally, our research further aims to gather information about the SM habits of Greek adults with regard to SM app usage, which may be considered as directives for healthy SM daily use and assist the design of effective intervention programs for SM addictive behaviors in the future.

Methods

Participants

Two hundred fifty-five ($n = 255$) participants were recruited via snowball sampling procedure. The research was conducted in Greece, and data collection took place between April and May of 2022. Individuals needed to fulfill the study's inclusion criteria prior to participation. The inclusion criteria were the following: participants should be over 18 years old and should have an active profile account on at least 1 SM app (e.g., Facebook, Instagram, Viber, and Pinterest). Individuals who were under 18 years old and/or did not have an active SM account on any SM platform were excluded from participation. Research participants reported a mean age of 27 years ($SD = 8.93$), ranging between 18 and 60 years; 176 (69%) were females and approximately half of the participants were university students. Missing values were found only in certain demographics (namely age, education, and occupational status). These missing values do not exceed the 2% of the research sample and are not used in any stage of analysis conducted in this study.

Procedures

Participants responded to a personal invitation posted on various SM platforms (e.g., Facebook, Twitter, and Instagram), asking them to participate in a study about the impact of SM use, self-compassion, and psychological well-being. Participants were recruited on a volunteer basis through several, different SM online posts, referring to the survey link, posted by the researchers. Participants were also enhanced to invite their friends (sharing similar characteristics) to take part in the research, by sharing the online survey link via their SM profile. The link directed all individuals to the information sheet, which contained research information, along with the first author's contact details. Prior to participation, individuals provided informed consent for participation; after consent, participants were redirected to the research questionnaires. The survey took approximately 10

minutes for completion. Participation was voluntary, and no benefits or rewards were offered for participating. Participants were also asked to provide demographic information (gender, age, education, and occupation status) and habits of SM use and specifically in which SM they have an active account/profile. Ethical approval was granted by the Ethics Committee of the University of Crete (protocol no. 117/2022).

Materials

Bergen Social Media Addiction Scale

The Bergen Social Media Addiction Scale (BSMAS) contains 6 self-report items reflecting core addiction elements (i.e., salience, mood modification, tolerance, withdrawal, conflict, and relapse).³ Each item is answered with regard to SM experience within a time frame of 12 months and is answered on a 5-point Likert scale ranging from 1 (very rarely) to 5 (very often). A score of ≥ 3 is an indication of SM tendency to addiction. Sample item is "How often during the last year have you used SM so much that it has a negative impact on your job/studies?" The original BSMAS is provided in English, and hence adaptation to Greek was required; adaptation was based on the committee translation process.²⁶ Three bilingual experts translated the original measure into Greek, with the translations subsequently reevaluated by 1 additional expert, who acted as a verifier. Internal consistency of scale was $\omega = 0.83$. Confirmatory factor analysis showed excellent fit to the data [$\chi^2(9, n = 255) = 20.0$, comparative fit index (CFI) = 0.98, Tucker-Lewis index (TLI) = 0.96, root mean square error of approximation (RMSEA) = 0.07, standardized root mean residual (SRMR) = 0.03]. The adapted measure is provided in Appendix 1.

The Self-Compassion Scale

The Self-Compassion Scale (SCS) assesses a person's feelings of compassion for oneself during times of distress and disappointment.²⁷ The SCS consists of 26 items and utilizes a 5-point Likert-type scale, with responses ranging from 1 (almost never) to 5 (almost always). Sample items include "I'm tolerant of my own flaws and inadequacies" (i.e., self-kindness) and "When something upsets me, I try to keep my emotions in balance" (i.e., mindfulness). The items included in each subscale, along with reported internal consistency indices, are as follows: self-kindness (5 items; $\alpha = 0.70$), self-judgment (5 items; $\alpha = 0.77$), common humanity (4 items; $\alpha = 0.72$), isolation (4 items; $\alpha = 0.71$), mindfulness (4 items; $\alpha = 0.72$), and over-identification (4 items; $\alpha = 0.76$). The SCS has been adopted to Greek by Mantzios et al.²⁸ and its reported internal consistency reliability was $\alpha = 0.87$.

The Depression Anxiety and Stress Scale

The Depression Anxiety and Stress Scale-21 (DASS-21) contains 3 self-report scales designed to measure how frequently individuals experience symptoms of depression, anxiety, and stress during the last week.²⁴ The DASS-21 consists of 21 items, with each subscale having 7 items; responses use a 4-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time). Sample items include "I tended to over-reach to situations" (stress) and "I felt that life was meaningless" (depression). The DASS-21 has been adopted to Greek by Lyrakos et al.²⁹ and the scale's overall internal consistency reliability was Cronbach's $\alpha = 0.79$.

Analyses

Data analysis was conducted using Jamovi Statistical Computer Software version 2.2 (The Jamovi project; Sydney, Australia).

Descriptive statistics and non-zero correlations among all variables were examined. Data normality was evaluated with the Shapiro–Wilk normality test; significance values $>.05$ indicate normally distributed data.³⁰ Confirmatory factor analysis was initially conducted to examine the adequacy of the measurement for all constructs under investigation. Structural equation modeling was then performed to examine the fit of the hypothesized structural model.³¹ To examine the mediation effect of psychological distress on self-compassion and SM addiction, a bootstrap procedure was used to test the indirect effect³² using a bias-corrected confidence interval of 2000 resamples. To evaluate the proposed model, the method of the diagonal weighted least squares estimator was used, which is considered to outperform other relevant estimators (e.g., maximum likelihood estimator) and is considered fairly accurate with small size samples, non-normality, and few model parameters.³³

To assess model adequacy, several goodness-of-fit indices have been assessed and reported in combination, such as the χ^2 fit index, the CFI, the TLI, the RMSEA, and the SRMR.³⁴ A nonsignificant *P*-value indicates good fit for the χ^2 fit index.³⁴ However, chi-square is sensitive to sample size (with smaller samples indicating statistically significant outputs); thus, the calculation of the chi-square index to the respective degrees of freedom (χ^2/df) is preferred, with a ratio of ≤ 2 indicating good fit. In addition, CFI and TLI range between 0 and 1, with values >0.90 indicating adequate fit. A value below 0.05 in RMSEA and SRMR indicates an excellent fit, with values ranging from 0.05 to 0.08 indicating a reasonable fit.^{33,35}

Results

In terms of SM use, 12 (4.7%) participants reported that they spend ≥ 5 hours on SM apps online per day and 186 (73.1%) use more than 5 different SM platforms daily (see Table 1). The most frequently reported SM platforms are the Facebook/Messenger and the Instagram (98.0% and 88.2% respectively), followed by the Viber (78.0%), the YouTube (67.5%), and the Pinterest (36.9%). Frequencies and percentages of age, educational level, occupational status, and the number of SM platforms use are presented in Table 1. Due to the snowball sampling procedure used for data collection, participants are unequally distributed in accordance to their age group and their educational level.

Focusing further on the SM addiction among Greek adults, the assessed mean level of the BSMAS in our sample was estimated and perceived as relatively low ($M=10.2$, $SD=4.21$, range: 6-25). Although the Greek version of the BSMAS has not yet been examined for having critical cutoff scores on SM addiction, we employed the critical cutoff scores suggested by Andreassen et al¹² These cutoff scores were reached by a relatively low percentage of the Greek sample (polythetic scoring: 2%; monothetic scoring: 16.1%), which indicates low levels of SM addiction.

Table 2 presents the correlations between all variables included in the study. Results revealed a negative correlation between SM addiction and self-compassion. Findings also revealed a positive association between psychological distress and SM addiction and a negative relation between psychological distress and self-compassion, thus confirming our first and second research hypothesis.

Table 1. Frequency Table for Demographic and Social Media Habits

Variables	N (%)
Age (years)	
18-20	27 (10.6)
21-23	109 (42.7)
24-27	46 (18.1)
28-35	23 (9.1)
36-49	38 (14.8)
≥ 50	9 (3.5)
Missing values	3 (1.2)
Education	
Primary	6 (2.4)
Secondary	130 (50.9)
University	118 (46.3)
Missing values	1 (0.4)
Occupational status	
University student	136 (53.3)
Employed	73 (28.6)
Unemployed	23 (9.0)
Freelancer	17 (6.7)
Other (e.g., senior)	3 (1.2)
Missing values	3 (1.2)
Number of SM platform used daily	
1-2	8 (3.1)
3-4	61 (23.9)
5-6	107 (42.0)
≥ 7	79 (31.0)

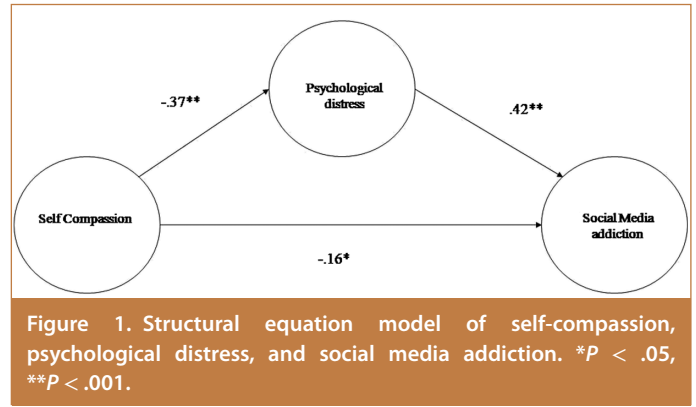
The full structural equation model was put to the test, to examine the mediation effect of psychological distress between self-compassion and SM addiction. The model revealed a good fit to our data [$\chi^2 (87) = 177$, $P < .001$, CFI = 0.95, TLI = 0.94, SRMR = 0.08, RMSEA = 0.06 (CI 0.05-0.08)], yet the standardized factor loadings for the SCS variables were found to be statistically nonsignificant. Inspection of the subscales' correlations revealed insignificant criterion correlations only for the positive dimensions of the self-compassion variable. Specifically, the subscales of mindfulness, common humanity, and self-kindness exhibited very low or insignificant correlations to psychological distress and SM addiction (Table 2). The standardized path coefficients of the structural model are presented in Figure 1.

According to Neff,²⁷ the SCS examines 3 basic and interactive components, which pertains 2 opposite dimensions. Results revealed criterion correlations in the expected direction only for those dimensions/subscales that followed a negatively skewed response format (self-judgment, isolation, and over-identification). In addition, insignificant correlations were found for the positively skewed response subscales, namely the self-kindness, the common humanity, and the mindfulness subscale. Therefore, it was decided to test a modified structural equation model, including only the negatively keyed SCS facets. This modified measurement model yielded a significantly better fit to our data [$\chi^2 (51) = 35.1$, $P < .001$, CFI = 1.00, TLI = 0.98, SRMR = 0.05, RMSEA = 0.00 (CI 0.00-0.03)] than the original SEM.

Table 2. Correlations Between Variables Included in the Study

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. BSMAS	10.2	4.21	-										
2. Depression	6.75	8.86	.38***	-									
3. Anxiety	2.21	3.65	.18**	.76***	-								
4. Stress	4.19	4.76	.40***	.78***	.70***	-							
5. DASS-21	13.1	15.9	.37***	.96***	.86***	.89***	-						
6. SCS	78.1	15.4	-.22***	-.32***	-.31***	-.33***	-.35***	-					
7. Mindfulness	14.0	3.09	-.12	-.06	-.13*	-.10	-.09	.60***	-				
8. Self-judgment	14.0	4.16	-.21**	-.32***	-.23***	-.31***	-.32***	.76***	.12	-			
9. Isolation	13.3	3.72	-.24***	-.34***	-.30***	-.28***	-.34***	.71***	.14*	.68***	-		
10. Over-identification	11.0	3.75	-.26***	-.34***	-.29***	-.35***	-.36***	.77***	.22***	-.73***	.63***	-	
11. Self-kindness	13.1	3.60	-.05	-.22***	-.26***	-.19**	-.24***	.77***	.66***	.40***	.36***	.37***	-
12. Common humanity	12.7	3.67	-.05	-.03	-.07	-.14*	-.07	.58***	.52***	.14*	.10	.19**	.53***

n=255; BSMAS, Bergen Social Media Addiction Scale; DASS-21, Depression Anxiety and Stress Scale; SCS, Self-Compassion Scale. *p < .05, **p < .01, ***p < .001.



The tested mediational model predicted SM addiction. Table 3 presents the factor loadings of the modified structural equation model; standardized factor loadings ranged from 0.46 to 0.94 and were all statistically significant at $P < .001$. Self-compassion was found to have a significant direct effect on SM addiction and a significant indirect effect through psychological distress (see Figure 1). In sum, psychological distress is found to negatively correlate with self-compassion and positively relate to SM addiction and is perceived as a mediator among those concepts.

Discussion

The present study investigated the link between SM addiction, self-compassion, and psychological distress, using data from Greek adults. As proposed, higher levels of self-compassion were associated with lower levels of SM app usage. These findings give prominence to the first hypothesis, since self-compassion strengthens individuals from expressing SM addiction and/or mental health problems.^{18,36} Individuals who demonstrate higher levels of self-compassion tend to spend less time on SM apps and overall feel healthier.

Furthermore, our research findings indicated that psychological distress appeared to have an effect on SM addiction; individuals feeling

Table 3. Unstandardized and Standardized Loadings for the Measurement Model (Including only the 3 Negative Subscales)

Parameter Estimates	Unstandardized Loadings (SE)	Standardized Loadings
Social media → item 1	1.00	0.66
Social media → item 2	1.35 (0.18)	0.76
Social media → item 3	1.47 (0.25)	0.72
Social media → item 4	1.19 (0.14)	0.63
Social media → item 5	.62 (0.13)	0.46
Social media → item 6	1.55 (0.22)	0.74
Psychological distress → depression	1.00	0.94
Psychological distress → anxiety	.30 (0.04)	0.68
Psychological distress → stress	.54 (0.05)	0.94
Self-compassion → self-judgment	1.00	0.82
Self-compassion → isolation	.86 (0.08)	0.79
Self-compassion → over-identification	.95 (0.07)	0.86

highly distressed also tend to report higher levels of SM app addiction. This positive inclination to SM addiction was significant for all 3 negative psychological states, namely depression, anxiety, and stress. The findings from our study are similar to those reported from previous researches^{2,18}; prolonged exposure to SM platforms is associated with certain negative psychological consequences. Nonetheless, our findings expand our understanding on SM addiction, since results are not focused on a specific SM platform, or on a single SM user profile. Participants of this study were asked to report general tendencies toward all SM indiscriminately; therefore, inferences can be made from a general perspective.

Exploration of the mediation effect between the full spectrum of self-compassion, SM addiction, and psychological distress failed to explain how self-compassion enables a positive relation. Interestingly, examination of certain facets of self-compassion revealed that the concept's negative counterparts, namely self-judgment, isolation, and over-identification, exhibit strong associations between SM addiction and psychological distress; in conjunction with previous findings,¹⁸ only these negative facets are moderated by psychological distress.

With regard to our additional objective, current findings allow only statements about tendencies of Greek population toward SM addiction. Although the adopted BSMAS has not yet been examined for having critical cutoff scores on SM intensity, the critical cutoff scores suggested by Andreassen et al¹² were used. These cutoff scores were reached by a relatively low percentage of the Greek sample, indicating low levels of SM addiction. Intervention programs, promoting psychological well-being and coping with SM addiction, need to focus on the control, the acceptance, and the regulation of the self.¹⁵ Our research findings shed light on the unexplored behavioral patterns regarding the use of SM and self-compassion, by emphasizing on the negative dimensions of self-compassion. The emphasis on the negative facets may be highly beneficial for establishing new intervention programs. For example, individuals who get easily upset with themselves during difficult life situations (or generally get easily stressed) tend to reveal symptoms of SM addiction more frequently. Conversely, individuals who understand how to fairly and honestly judge the time they spent on SM may be more aware of their potential problematic behavior and more stimulated to overcome such negative behaviors by themselves. Likewise, when individuals exhibit feelings of isolation to a greater extent, they feel more prone to get socially distanced and lessen the time they spend on SM, or effectively manage social interaction overload.¹⁴ On the contrary, individuals who feel more acceptive of their thoughts and feelings are prone to excessive SM behavioral patterns and increase their possibility for expressing SM addiction.

The results from the present study should be interpreted in light of certain limitations. Firstly, only self-reported measures were used. Consequently social desirability is an issue that needs to be further addressed; results may have underestimated the prevalence of SM addiction among Greek adults. Secondly, the data used are not representative of the Greek population; males are underrepresented, and age, occupation status, and gender are presented unequally. It should also be noted that a large number of individuals use SM apps outside the range of the age or the occupational status included in our study. Thirdly, participants in this study have been recruited

from self-selected processes, through snowball sampling procedures. Therefore, inferences on individuals' SM additive behaviors may not be representative of the broader Greek population. Finally, research design did not account for information regarding problematic smartphone usage.³⁷ Smartphone and SM addiction are highly overlapping, since smartphones are predominantly used for social networking purposes. This lack of distinction between the smartphone and the SM addiction confounds our findings and affects the generalizability of our results.

Overall, the findings add to the existing literature by examining the relation and the mediation effect between self-compassion, SM addiction, and psychological distress. Results showed that psychological distress is a potential risk factor, while self-compassion is a potential protective factor for SM addiction. The mediating role of self-compassion is not easily endorsed, and more complex patterns of interventions toward the confinement of SM addiction need to be further established. Strengthening self-compassion and psychological well-being are potentially important components to be considered in social network addiction interventions targeting adults.

Ethics Committee Approval: Ethical committee approval was received from the Ethics Committee of the University of Crete (Approval No: 117/2022).

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – E.M.; Design – E.M., M.K.; Supervision – E.M.; Funding – E.M., M.K., C.T.; Materials – E.M.; Data Collection and/or Processing – E.M.; Analysis and/or Interpretation – E.M., C.T.; Literature Review – E.M.; Writing Manuscript – E.M., C.T.; Critical Review – E.M., M.K.

Declaration of Interests: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study has received no financial support.

References

1. Kuss DJ, Griffiths MD. Social networking sites and addiction: ten lessons learned. *Int J Environ Res Public Health*. 2017;14(3):311-329. [\[CrossRef\]](#)
2. Kuss DJ, Pontes HM. *Internet Addiction*. Göttingen, Germany: Hogrefe Publishing Corporation; 2019. [\[CrossRef\]](#)
3. Andreassen CS, Pallesen S, Griffiths MD. The relationship between addictive use of social media, narcissism and self-esteem: findings from a large national survey. *Addict Behav*. 2017;64:287-293. [\[CrossRef\]](#)
4. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: Author; 2000. [\[CrossRef\]](#)
5. Bányai F, Zsila Á, Király O, et al. Problematic social media use: results from a large-scale nationally representative adolescent sample. *PLoS One*. 2017;12(1):e0169839. [\[CrossRef\]](#)
6. Müller KW, Dreier M, Beutel ME, Duven E, Giral S, Wölfling K. A hidden type of internet addiction? Intense and addictive use of social networking sites in adolescents. *Comput Hum Behav*. 2016;55:172-177. [\[CrossRef\]](#)
7. De Cock RD, Vangeel J, Klein A, Minotte P, Rosas O, Meerkerk GJ. Compulsive use of social networking sites in Belgium: prevalence, profile and the role of attitude toward work and school. *Cyberpsychol Behav Soc Netw*. 2014;17(3):166-171. [\[CrossRef\]](#)
8. Van den Eijnden RJJM, Lemmens JS, Valkenburg PM. The social media disorder scale. *Comput Hum Behav*. 2016;61:478-487. [\[CrossRef\]](#)

9. Moghavvemi S, Sulaiman AB, Jaafar NIB, Kasem N. Facebook and YouTube addiction: the usage pattern of Malaysian students. Paper presented at: International Conference on Research and Innovation in Information Systems (JCRIS). Langkawi Island, Malaysia. Available at: <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&number=8002516>.
10. Tang CSK, Koh YYW. Online social networking addiction among college students in Singapore: comorbidity with behavioral addiction and affective disorder. *Asian J Psychiatry*. 2017;25:175-178. [\[CrossRef\]](#)
11. Seabrook EM, Kern ML, Rickard NS. Social networking sites, depression and anxiety: a systematic review. *JMIR Ment Health*. 2016;3(4):e50. [\[CrossRef\]](#)
12. Andreassen CS, Torsheim T, Brunborg GS, Pallesen S. Development of a Facebook addiction scale. *Psychol Rep*. 2012;110(2):501-517. [\[CrossRef\]](#)
13. Cuadrado E, Rojas R, Taberner C. Development and validation of the social network addiction scale (SNAddS-6S). *Eur J Invest Health Psychol Educ*. 2020;10(3):763-778. [\[CrossRef\]](#)
14. Choi SB, Lim MS. Effects of social and technology overload on psychological well-being in young South Korean Adults: the mediatory role of social network service addiction. *Comput Hum Behav*. 2016;61:245-254. [\[CrossRef\]](#)
15. Germer CK, Neff KD. Cultivating self-compassion in trauma survivors. In: Follete VM, Briere J, Rozelle D, Hopper JW, Rome DI, eds. *Mindfulness-Oriented Interventions for Trauma: Integrating Contemplative Practices*. New York, NY: The Guilford Press; 2015:43-58.
16. Bluth K, Blanton PW. Mindfulness and self-compassion: exploring pathways to adolescent emotional well-being. *J Child Fam Stud*. 2014;23(7):1298-1309. [\[CrossRef\]](#)
17. Cădea DM, Szentágotai-Táatar A. The impact of self-compassion on shame-proneness in social anxiety. *Mindfulness*. 2018;9(6):1816-1824. [\[CrossRef\]](#)
18. Keyte R, Mullis L, Egan H, Hussain M, Cook A, Mantzios M. Self-compassion and Instagram use is explained by the relation to anxiety, depression and stress. *J Technol Behav Sci*. 2021;6(2):436-441. [\[CrossRef\]](#)
19. Liu Q-Q, Yang X-J, Hu Y-T, Zhang C-Y. Peer victimization, self-compassion, gender and adolescent mobile phone addiction: unique and interactive effects. *Child Youth Serv Rev*. 2020;118. [\[CrossRef\]](#)
20. Phillips WJ, Wisniewski AT. Self-compassion moderates the predictive effects of social media use profiles on depression and anxiety. *Computers in Human Behavior Reports*. 2021;4. [\[CrossRef\]](#)
21. Wang Y, Wang X, Yang J, Zeng P, Lei L. Body talk on social networking sites, body surveillance, and body shame among young adults: the roles of self-compassion and gender. *Sex Roles*. 2020;82(11-12):731-742. [\[CrossRef\]](#)
22. Keutler M, McHugh L. Self-compassion buffers the effect of perfectionistic self-presentation on social media on wellbeing. *J Contextual Behav Sci*. 2022;23:53-58. [\[CrossRef\]](#)
23. Marino C, Gini G, Vieno A, Spada MM. The associations between problematic Facebook use, psychological distress and well-being among adolescents and young adults: a systematic review and meta-analysis. *J Affect Disord*. 2018;226:274-281. [\[CrossRef\]](#)
24. Lovibond PF, Lovibond SH. The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behav Res Ther*. 1995;33(3):335-343. [\[CrossRef\]](#)
25. Brailovskaia J, Rohmann E, Bierhoff HW, Schillack H, Margraf J. The relationship between daily stress, social support and Facebook addiction disorder. *Psychiatry Res*. 2019;276:167-174. [\[CrossRef\]](#)
26. Harkness J, Schoua-Glusberg A. Questionnaires in translation. In: Harkness J., ed., *Cross-Cultural Survey Equivalence*. Mannheim: Zentrum für Umfragen, Methoden und Analysen; 1998:87-126. Available at: <https://nbnresolving.org/urn:nbn:de:0168-ssoar-49733-1>.
27. Neff KD. The development and validation of a scale to measure self-compassion. *Self Identity*. 2003;2(3):223-250. [\[CrossRef\]](#)
28. Mantzios M, Wilson JC, Giannou K. Psychometric properties of the Greek versions of the Self-Compassion and Mindful Attention and Awareness Scales. *Mindfulness*. 2015;6(1):123-132. [\[CrossRef\]](#)
29. Lyrakos GN, Arvaniti C, Smyrnioti M, Kostopanagioutou G. Translation and validation study of the depression anxiety stress scale in the Greek general population and in a psychiatric patient's sample. *Eur Psychiatry*. 2011;26(S2):1731-1731. [\[CrossRef\]](#)
30. Razali NM, Wah YB. Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests. *J Stat Model Anal*. 2011;2:21-33.
31. MacCallum RC, Austin JT. Applications of structural equation modeling in psychological research. *Annu Rev Psychol*. 2000;51:201-226. [\[CrossRef\]](#)
32. Shrout PE, Bolger N. Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Psychol Methods*. 2002;7(4):422-445. [\[CrossRef\]](#)
33. DiStefano C. Examining fit with structural equation models. In: Schweizer K, DiStefano C, eds. *Principles and Methods of Test Construction: Standards and Recent Advances*. Göttingen, Germany: Hogrefe; 2016:166-196.
34. Kline RB. *Principles and Practice of Structural Equation Modeling*. 2nd ed. New York: Guilford Press; 2005.
35. Hu L-T, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct Equ Model*. 1999;6(1):1-55. [\[CrossRef\]](#)
36. Andreassen CS, Pallesen S. Social network site addiction: an overview. *Curr Pharm Des*. 2014;20(25):4053-4061. [\[CrossRef\]](#)
37. Marino C, Canale N, Melodia F, Spada MM, Vieno A. The overlap between problematic Smartphone use and problematic social media use: a systematic review. *Curr Addict Rep*. 2021;8(4):469-480. [\[CrossRef\]](#)

Appendix 1

Bergen Social Media Addiction Scale Greek version

Παρακάτω ακολουθούν ορισμένες ερωτήσεις σχετικά με τη σχέση σας με τα μέσα κοινωνικής δικτύωσης και τι κάνετε με αυτά (όπως είναι για παράδειγμα το Facebook, το Instagram, κ.α.). Για κάθε ερώτηση επιλέξτε την απάντηση που σας περιγράφει καλύτερα.

Κατά τη διάρκεια του περασμένου χρόνου πόσο συχνά...	Πολύ σπάνια	Σπάνια	Μερικές φορές	Συχνά	Πολύ συχνά
1. Αφιέρωσες χρόνο να σκέφτεσαι τους ιστότοπους κοινωνικής δικτύωσης ή σχεδίασες τη χρήση των μέσων κοινωνικής δικτύωσης;	1	2	3	4	5
2. Ένωσες την ανάγκη να χρησιμοποιείς ιστότοπους κοινωνικής δικτύωσης ολοένα και περισσότερο;	1	2	3	4	5
3. Χρησιμοποίησες ιστότοπους κοινωνικής δικτύωσης για να ξεχάσεις τα προσωπικά σου προβλήματα;	1	2	3	4	5
4. Προσπάθησες να μειώσεις τη χρήση των ιστότοπων κοινωνικής δικτύωσης χωρίς επιτυχία;	1	2	3	4	5
5. Ένωσες νευρική ή ανησυχία επειδή σου απαγόρευσαν να χρησιμοποιείς ιστότοπους κοινωνικής δικτύωσης;	1	2	3	4	5
6. Χρησιμοποίησες ιστότοπους κοινωνικής δικτύωσης τόσο πολύ που τελικά είχε αρνητική επίπτωση στην εργασία/στις σπουδές σου;	1	2	3	4	5