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Social Media and Well-Being: Who Is at Risk? The Critical Role of Procrastination

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The widespread use of social media raises concerns about its relationship with mental health. While a negative link between social media addiction (SMA) tendencies –conceptualized here as problematic use– and psychological well-being (PWB) is established, the underlying mechanisms require clarification. This study examined, from a social and health psychology perspective, whether loneliness mediates this relationship and if procrastination moderates the mediation. A non-clinical sample of 603 participants completed the Social Media Addiction Scale, the UCLA Loneliness Scale, the Adult Inventory of Procrastination, and the Psychological Well-Being Scale. Results confirmed that loneliness mediates the negative relationship between SMA and PWB. Crucially, procrastination moderated the first stage of this mediation. The positive link between SMA and loneliness was significant at low and moderate levels of procrastination but nonsignificant at high levels. Consequently, the indirect negative association of SMA and PWB through loneliness was observed only in individuals with low and moderate procrastination. For high procrastinators, this pathway was not evident. Well-being appears compromised by a broader pattern of self-regulatory failure, making the specific role of social media less distinct for them. This study underscores the importance of considering individual differences in procrastination when designing interventions to mitigate the negative psychological consequences of social media use.

Keywords: health psychology, loneliness, procrastination, psychological well-being, social media addiction, social psychology

The rapid and pervasive advancement of digital technology has fundamentally integrated the internet into the structural fabric of daily life, reshaping communication, work, and leisure. This integration is quantitatively reflected in soaring global usage rates, with specific national data illustrating the trend; for instance, among individuals aged 16-74 in Türkiye, internet penetration reached 87.1% in 2023 and 88.8% in 2024 (Turkish Statistical Institute, 2024). While this connectivity offers unparalleled opportunities, it also cultivates a ground for maladaptive behavioral patterns, with problematic and addictive internet use emerging as a significant psychosocial concern in the digital age (Andreassen, 2015; Pontes, 2017). Conceptualized within a non-clinical framework of behavioral addictions, problematic internet use encompasses a loss of control, tolerance, and withdrawal symptoms, often centering on specific online activities (Griffiths, 2005; Kuss et al., 2014). A core behavioral manifestation is the repeated failure to control one's online time, spending considerably more time engaged than initially intended, which signals a fundamental deficit in self-regulation (Young, 1998).

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Within this digital landscape, social networking platforms have evolved from simple communication tools to complex, algorithm-driven environments engineered to capture and sustain user attention. Their architectural design, which leverages variable reward schedules and potent social validation metrics (e.g., likes, shares), can effectively hijack the brain's reward system, thereby fostering compulsive engagement patterns (Alter, 2017; Montag et al., 2019). This phenomenon has given rise to the specific construct of social media addiction (SMA) or problematic social media use, defined as a maladaptive cognitive, affective, and behavioral preoccupation with social media that is associated with significant functional impairment in personal, social, and professional domains (Andreassen et al., 2016; Bányai et al., 2017). Viewed through the lens of the Interaction of Person-Affect-Cognition-Execution (I-PACE) model (Brand et al., 2016), and its subsequent updates (Brand et al., 2019, 2025), the SMA is understood as the outcome of a complex, reinforcing interaction between predisposing individual characteristics (e.g., neuroticism, specific needs), affective and cognitive responses to social media cues (e.g., craving, fear of missing out), and deficient executive functioning (e.g., impaired inhibition) over time. These recent updates specifically emphasize the generalizability of the model to various behavioral addictions and the dynamic process character of self-regulatory failures. Consequently, the SMA is strongly associated with a spectrum of adverse psychological outcomes, positioning it as a critical issue for

contemporary health psychology (Kuss & Griffiths, 2017; Marino et al., 2018).

A well-documented consequence of SMA is its strong negative association with psychological well-being (PWB). PWB, as defined by Ryff's (1989) influential multidimensional model, transcends hedonic happiness (feeling good) and encompasses key eudaimonic facets of positive functioning, including autonomy, environmental mastery, personal growth, positive relationships with others, purpose in life, and self-acceptance (Arpacık et al., 2025; Kiremitçi Canıöz & Coşkun; 2018; Kiremitçi Canıöz et al., 2025; Okudur Sabuncu et al., 2023). Excessive and compulsive social media use is theorized to undermine these dimensions through several distinct pathways: the displacement of time and psychological energy allocated to more enriching real-world activities and goal-directed behavior (Shen & Williams, 2011); frequent exposure to upward social comparisons on curated feeds, which can diminish self-acceptance and foster envy (Vogel et al., 2014); and the disruption of circadian rhythms due to nighttime use, which subsequently impacts overall mood regulation and a sense of mastery (Twenge & Campbell, 2019; Vannucci et al., 2017). However, to move beyond merely establishing a correlation and toward understanding the underlying psychosocial mechanics, it is essential to identify the mediating processes that translate compulsive use into diminished well-being.

A prime candidate for this mediating role is the experience of loneliness—a distressing subjective state arising from a perceived qualitative or quantitative gap between one's desired and actual social relationships (Perlman & Peplau, 1981). This perceived deficit is crucial, as it highlights that loneliness is an internal, affective experience distinct from objective social isolation. Paradoxically, while social media promises connection, addictive engagement is often associated with increased feelings of loneliness and social disconnection (Hunt et al., 2018; Moody, 2001; Primack et al., 2017). This paradox can be explained by theories such as "social snacking" which posits that online interactions may provide superficial, low-quality social nourishment that fails to satisfy deeper relational needs, and the "hyperpersonal perspective" which suggests that text-based or curated interactions can lead to idealized perceptions of others, exacerbating feelings of social inadequacy and isolation upon comparison (Clark et al., 2018). Therefore, loneliness is hypothesized to be a key affective mechanism that explains how the behavioral pattern of the SMA is negatively linked to the 'positive relations' and 'self-acceptance' pillars of PWB. Nonetheless, the empirical link between the SMA and loneliness reveals inconsistencies, with studies yielding positive (Błachnio et al., 2016), negative, or null findings (Whitty & McLaughlin, 2007), strongly suggesting the presence of significant moderating variables that determine when and for whom this critical pathway is present or absent.

This study proposes that the individual difference variable of general procrastination—the voluntary, irrational delay of intended tasks despite expecting negative consequences (Steel, 2007)—serves as a critical moderator in this chain. Procrastination is more than poor time management; it is a core failure of self-regulation rooted in the short-term prioritization of mood repair (avoiding the negative affect associated with a task) over the pursuit of long-term goals (Sirois & Pychyl, 2016; Tice & Bratslavsky, 2000). Procrastination and the SMA share a common etiological ground in executive dysfunction, particularly concerning impulse control, emotional regulation, and goal maintenance, making their co-occurrence and interaction theoretically plausible (Dhir et al., 2018; Rozgonjuk et al., 2020). While existing research has established a link between SMA and academic procrastination (Meier et al., 2016), the role of general procrastination tendencies—a pervasive self-regulatory lifestyle pattern—in moderating the core psychosocial pathway from SMA to PWB via loneliness remains a significant and unaddressed gap in the literature. We posit that an individual's chronic tendency to postpone tasks may fundamentally alter the strength of the SMA-loneliness link. For example, for high procrastinators, social media might be one of many life domains where avoidance and maladaptive coping manifest; their loneliness may thus be more directly tied to a global pattern of life dissatisfaction, avoidance, and self-regulatory failure, potentially diluting the unique predictive power of the SMA. Conversely, for low procrastinators, who may otherwise exhibit more effective self-regulation, compulsive social media use might stand out as a primary, distinct source of social displacement and consequently loneliness.

Therefore, anchored in social and health psychology, this study investigates a novel moderated mediation model. It consciously examines these dynamics in a non-clinical, community sample of young adults, focusing on addictive tendencies and their interaction with common psychological processes, rather than clinical pathology. This study aims to (1) re-examine the negative association between social media addiction tendencies and psychological well-being, (2) test the hypothesis that loneliness mediates this relationship, and (3) investigate whether general procrastination moderates the proposed mediation. Specifically, we hypothesize that the indirect negative association of social media addiction on psychological well-being through loneliness is conditional upon the level of procrastination, such that mediation is stronger at lower levels of procrastination and weaker or nonexistent at higher levels. By testing this model, the study aims to address the crucial "for whom" question, providing a nuanced, person-centered understanding of the digital well-being landscape and establishing a refined theoretical foundation for targeted, evidence-based interventions. The conceptual model illustrating these hypothesized relationships is presented in Figure 1.

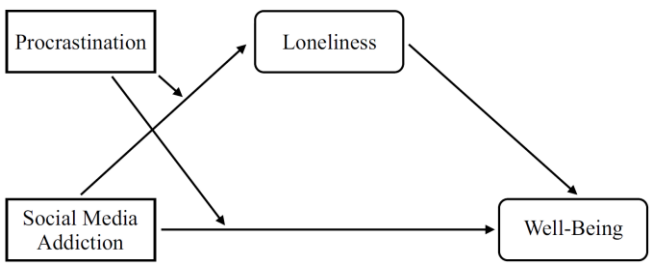

Figure 1. Conceptual model of the moderated mediation.

Methods

Participants

An a priori power analysis was conducted using G*Power (Version 3.1.9.7; Faul et al., 2009) to determine the required sample

size. Assuming a medium effect size ($f^2 = .15$), with $\alpha = .05$ and power ($1 - \beta$) = .95, the analysis indicated that a minimum of 119 participants was required. The final sample safely exceeded this requirement, consisting of 603 participants. This sample included 514 females (85.2%), 85 males (14.1%), and 4 individuals who identified as other (0.7%), ranging in age from 18 to 51 years (M = 21.08, SD = 3.34). Regarding marital status, the vast majority were single (n = 592, 98.2%), with the remainder being married (n = 11, 1.8%). The data collection process was organized via an online survey method, which included a personal information form and the relevant measurement scales. In this study, the mediating role of loneliness in the relationship between social media addiction and well-being, and the moderating role of procrastination in this mediation were examined.

Measures

Participant Consent and Demographic Information Form. A consent form, which consists of information and consent sections, was completed to inform participants about the research and to obtain their approval. The demographic information form was also used to determine the demographic characteristics of the participants, such as gender, age, and grade level.

Social Media Addiction Scale (SMAS). The SMAS, which was developed by Fırat and Barut (2018), consists of two subdimensions and 24 items. The subdimensions of the scale are interference with daily life (loss of control) and deprivation. This scale is a 5-point Likert type. In the reliability study, Cronbach's alpha coefficient for the loss-of-control subdimension of the SMAS was determined to be .86. The deprivation subdimension was found to be .90. For the total items of the scale, this value was found to be .93. With respect to the construct validity of the scale, according to the confirmatory factor analysis results, the fit indices of the scale were found to be at an acceptable level: $\chi2 = 469.86$, $df = 249$, $p < .001$, AGFI = .91, GFI = .90, CFI = .93, TLI = .92, SRMR = .047, RMSEA = .052. Although the instrument is formally named an 'addiction' scale, within the context of our non-clinical sample, we operationalize and interpret higher scores as an indicator of 'problematic' or 'excessive' social media use tendencies rather than a formal psychiatric diagnosis.

Adult Inventory of Procrastination (AIP). The scale (McCown & Johnson, 1995; McCown et al., 1989) was adapted into Turkish by Uzun Özer (2014). The scale consists of 15 items, and Cronbach's alpha reliability coefficient was found to be .71. According to the confirmatory factor analysis results conducted for the construct validity of the scale, the fit indices of the scale were found to be at an acceptable level: $\chi2 = 6.75$, $df = 2$, $p < .001$, GFI = .99, AGFI = .96, RMSEA = .075.

UCLA Loneliness Scale (ULS-8). The scale developed by Hays and DiMatteo (1987) was adapted into Turkish by Doğan et al. (2011). The scale consists of 8 items, and Cronbach's alpha reliability coefficient was found to be .72. According to the confirmatory factor analysis results conducted for the construct validity of the scale, the fit indices of the scale were found to be at an acceptable level: $\chi2 = 56.03$, $df = 18$, $p < .001$, CFI = .94, AGFI = .94, IFI = .94, RMSEA = .066

Psychological Well-Being Scale (PWS). It was developed by Diener et al. (2010) and adapted into Turkish by Telef (2013). The scale consists of 8 items, and Cronbach's alpha reliability coefficient was found to be .80. According to the confirmatory factor analysis results conducted for the construct validity of the scale, the fit indices of the scale were found at an acceptable level: $\chi2 = 92.90$, $df = 20$, $p < .001$, GFI = .96, CFI = .95, IFI = .95, NFI = .94, RFI = .92, SRMR = .04, RMSEA = .08.

Procedure

Participants were first informed about the research and asked to read the consent form concerning their voluntary participation. They then completed the demographic information form. Finally, the SMAS, AIP, ULS-8, and PWS were presented to the participants, respectively. The research was conducted using Google Forms as the data collection platform.

Analyses

The JAMOVI 2.4.14 and SPSS 27 programs were used for processing and analyzing the data obtained from the participants. The moderated mediation analysis was conducted on the model data through various regression models.

Results

Preliminary Analyses

Before moving to the main analysis of the study, confirmatory factor analyses were conducted to test whether the scales used worked validly and reliably in the current study. For the confirmatory factor analysis (CFA) method, the mean and variance adjusted weighted least squares (WLSMV) method, which is compatible with ordinal scales, was used. CFA was performed via fit indices such as the comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA),

Table 1. Summary of the factor analyses and reliability analyses

Scale	Factor	χ^2(df)	CFI	TLI	SRMR	RMSEA	α	CR	AVE
SMAS (second-order factor)		728(250)	.89	.88	.048	.056	.93	.94	.42
	Deprivation						.90	.90	.40
	Loss of Control						.89	.89	.44
AIP		436(87)	.84	.81	.071	.082	.86	.85	.30
ULS-8		63.1(18)	.96	.93	.036	.065	.85	.85	.41
PWS		88.8(20)	.90	.86	.041	.076	.88	.87	.47
Full Measurement Model		2273(1416)	.90	.89	.058	.032			

Note. TLI = Tucker–Lewis index. CFI = comparative fit index. RMSEA = root mean square error of approximation. SRMR = standardized root mean square residual. SMAS = Social Media Addiction Scale. AIP = Adult Inventory of Procrastination. ULS-8 = UCLA Loneliness Scale. PWS = Psychological Well-Being Scale. α = Cronbach's alpha. CR = composite reliability. AVE = Average Variance Extracted.

Table 2. Pearson correlations among variables

	SMAS	SMAS *Deprivation*	SMAS *Loss of Control*	AIP	ULS-8	PWS
SMAS	1					
SMAS - Deprivation	.944***	1				
SMAS - Loss of Control	.903***	.712***	1			
AIP	.301***	.192***	.391***	1		
ULS-8	.186***	.116**	.246***	.248***	1	
PWS	-.149***	-.074	-.223***	-.311***	-.521***	1

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

and standardized root mean square residual (SRMR) to evaluate the construct validity of the scales (Schumacker & Lomax, 2016). While CFI and TLI values between 0.90 and 0.95 indicate an acceptable fit, values above 0.95 indicate a good fit (Schumacker & Lomax, 2016). RMSEA values of ≤ 0.05 indicate a good fit, whereas values of ≤ 0.08 indicate an acceptable fit (Pituch & Stevens, 2016). SRMR values of ≤ 0.05 indicate a good fit, whereas values of ≤ 0.10 indicate an acceptable fit. Composite reliability (CR) was used to assess scale reliability, and average variance extracted (AVE) was used to examine convergent validity. Discriminant validity was assessed using the Fornell-Larcker criterion (Fornell & Larcker, 1981), which requires that the AVE for each construct should exceed the shared variances (SVs – squared correlations with other constructs).

To enhance the model fit for the confirmatory factor analysis, modification indices were consulted, leading to the sequential release of several theoretically plausible error covariances. Specifically, within the SMAS, the error terms between item 3 ("I feel better as the number of likes on my social media posts increases") and item 16 ("Before making a post on social media, I mentally plan it for a long time") were freed. For the AIP, a shared error covariance was permitted among items 2 ("I am punctual and arrive at my appointments on time"), 12 ("I am more punctual than many people I know"), and 14 ("When I am supposed to be somewhere at a certain time, my friends predict that I will be late"). Furthermore, in the ULS-8, error covariances were freed between items 3 ("I am a sociable person") and 6 ("I can find friends whenever I want"), as well as between items 1 ("I don't have a friend") and 2 ("There is no one I can turn to"). These specific adjustments were strictly guided by theoretical considerations to prevent model overfitting. Specifically, within the SMAS, the shared variance between items 3 and 16 is theoretically justified as both items capture a distinct sub-facet of social media use: the premeditated, validation-seeking aspect of content creation. For the AIP, items 2, 12, and 14 all explicitly measure 'punctuality' and 'time estimation,' forming a distinct semantic and behavioral cluster separate from general task delay. Lastly, within the ULS-8, the covariance between items 3 and 6 is driven by their positive wording and shared focus on self-perceived 'social competence' (method effect), while items 1 and 2 share extreme negative phrasing reflecting absolute social deprivation. Thus, the correlated errors account for shared method variance and specific semantic overlaps, rather than capitalization on chance.

A two-stage analysis was subsequently performed to evaluate the construct validity of the scales used in the study. In the first stage, separate confirmatory factor analyses were conducted for each scale, and all scales were found to have acceptable fit indices. In the second stage, a full measurement model incorporating all scales simultaneously was tested. When the full measurement model was constructed, the error covariances that had been freed in the individual confirmatory factor analyses of each scale (based on theoretical and statistical justification) were carried over to the new model. This approach ensured that the individual structures of the scales were preserved within the integrated model. The fact that this model also demonstrated acceptable fit indicates that the structural integrity of the scales was preserved. The measurement model demonstrated strong composite reliabilities, with all values exceeding .85. However, convergent validities, as assessed by the AVE values, were moderate as they fell below the .50 threshold. Despite this, all AVEs exceeded the SVs (squared correlations) with other distinct constructs, thus supporting discriminant validity. The correlations among the sub-factors of the SMAS, which constitute a single broader construct, were appropriately excluded from this assessment. The findings regarding validity and reliability are shown in Table 1.

Given that all data were collected via self-report measures at a single time point, we assessed the potential issue of common method bias using Harman's single-factor test (Podsakoff et al., 2003). All items from the study constructs were loaded into an principal component analysis with an unrotated principal components factor solution. The results indicated that the first extracted factor accounted for only 20.95% of the total variance, which is well below the recommended threshold of 50%. This finding suggests that common method variance does not pose a significant threat to the validity of our results.

Main Analyses

The correlations between the variables measured in the study are presented in Table 2. An examination of the results reveals that well-being has negative relationships with social media addiction, procrastination, and loneliness. Furthermore, positive relationships were observed between social media addiction, procrastination, and loneliness.

Within the context of the research's main model, the mediating role of loneliness in the relationship between social media addiction and well-being was examined. Additionally, the moderating role of

Table 3. Moderated mediation model: conditional indirect association of social media addiction on well-being through loneliness, moderated by procrastination

Dep	Pred	Label	Estimate	*SE*	*t*	*p*	95% CI [Lower, Upper]
ULS-8(*M*)	SMAS	a	0.34	0.11	3.18	**.002**	**[0.13, 0.55]**
	AIP		0.45	0.14	3.63	**<.001**	**[0.21, 0.69]**
	SMAS * AIP		-0.10	0.04	-2.41	**.016**	**[-0.18, -0.02]**
PWS (*Y*)	SMAS	c	-0.53	0.19	-2.78	**.006**	**[-0.91, -0.16]**
	AIP		-0.93	0.22	-4.19	**<.001**	**[-1.37, -0.50]**
	SMAS * AIP		0.18	0.07	2.45	**.015**	**[0.04, 0.33]**
PWS (*Y*)	SMAS	c'	-0.24	0.17	-1.44	.151	[-0.58, 0.09]
	AIP		-0.55	0.20	-2.77	**.006**	**[-0.94, -0.16]**
	SMAS * AIP		0.10	0.07	1.47	.141	[-0.03, 0.22]
	ULS-8	b	-0.85	0.06	-13.17	**< .001**	**[-0.98, -0.73]**

	Label	Estimate	*SE*	95% CI [Lower, Upper]
Conditional associations of social media addiction and loneliness moderated by procrastination				
16th Percentile (AIP = 1.73)	a_1	0.17	0.04	**[0.08, 0.25]**
50th Percentile (AIP = 2.33)	a_2	0.11	0.03	**[0.04, 0.17]**
84th Percentile (AIP = 3.13)	a_3	0.03	0.04	[-0.05, 0.11]
Index of moderation		-0.10	0.04	**[-0.18, -0.02]**
Conditional direct associations of social media addiction and well-being moderated by procrastination				
16th Percentile (AIP = 1.73)	c'_1	-0.08	0.07	[-0.21, 0.06]
50th Percentile (AIP = 2.33)	c'_2	-0.02	0.05	[-0.12, 0.08]
84th Percentile (AIP = 3.13)	c'_3	0.06	0.07	[-0.07, 0.19]
Index of moderation		0.10	0.07	[-0.03, 0.22]
Conditional total associations of social media addiction and well-being moderated by procrastination				
16th Percentile (AIP = 1.73)	c_1	-0.22	0.08	**[-0.37, -0.07]**
50th Percentile (AIP = 2.33)	c_2	-0.11	0.06	[-0.22, 0.00]
84th Percentile (AIP = 3.13)	c_3	0.04	0.07	[-0.11, 0.18]
Index of moderation		0.18	0.07	[0.04, 0.33]

	Label	Bootstrapping estimate	Boot *SE*	Boot95% CI [Lower, Upper]
Conditional indirect associations of social media addiction and well-being moderated by procrastination				
16th Percentile (AIP = 1.73)	a_1 * b	-0.14	0.03	**[-0.21, -0.07]**
50th Percentile (AIP = 2.33)	a_2 * b	-0.09	0.03	**[-0.15, -0.04]**
84th Percentile (AIP = 3.13)	a_3 * b	-0.02	0.05	[-0.12, 0.06]
Index of moderated mediation		0.08	0.04	**[0.00, 0.16]**

Note. SMAS = Social Media Addiction Scale. AIP = Adult Inventory of Procrastination. ULS-8 = UCLA Loneliness Scale. PWS = Psychological Well-Being Scale. Unstandardized regression coefficients are reported. Bootstrap sample size = 5,000.

procrastination in the relationships among social media addiction, loneliness, and well-being was also investigated. Consequently, how procrastination moderates this investigated mediation was also analyzed through a moderated mediation model. For the simple slope analyses in the moderated mediation model, the 16th, 50th, and 84th percentiles of the moderator variable's distribution were used to define relatively low, relatively moderate, and relatively high levels, respectively (Hayes, 2013, p. 250). The findings of these regression analyses, conducted via Hayes's (2013) PROCESS macro 4.2 on SPSS 27 and JAMOVI 2.4.14, are reported in Table 3.

First, the moderating role of procrastination was tested in two key relationships. For the outcome of well-being, a significant interaction between social media addiction and procrastination was found on the total association (b = .18, SE = .07, t(599) = 2.45, p = .015, 95% CI [0.04, 0.33]). However, this interaction became nonsignificant for the direct association when loneliness was included as a mediator in the model (b = .10, SE = .07, t(598) = .96, p = .141, 95% CI [-0.03, 0.22]). In other words, procrastination moderated the total association, but not the direct association.

For the outcome of loneliness, the interaction was also significant, indicating that procrastination moderates the first stage of the mediation. When procrastination was relatively low and moderate, social media addiction significantly and positively predicted loneliness, but when procrastination was high, there was no such prediction (Panel A, Figure 2).

For the moderated mediation, when procrastination was relatively low and moderate, social media addiction significantly and negatively predicted well-being through loneliness. However, when procrastination was high, no such mediation was observed (Panel B, Figure 2). A complete schematic representation of the moderated mediation model, including all standardized path coefficients, is provided in Figure 3. That is, for individuals with high procrastination,

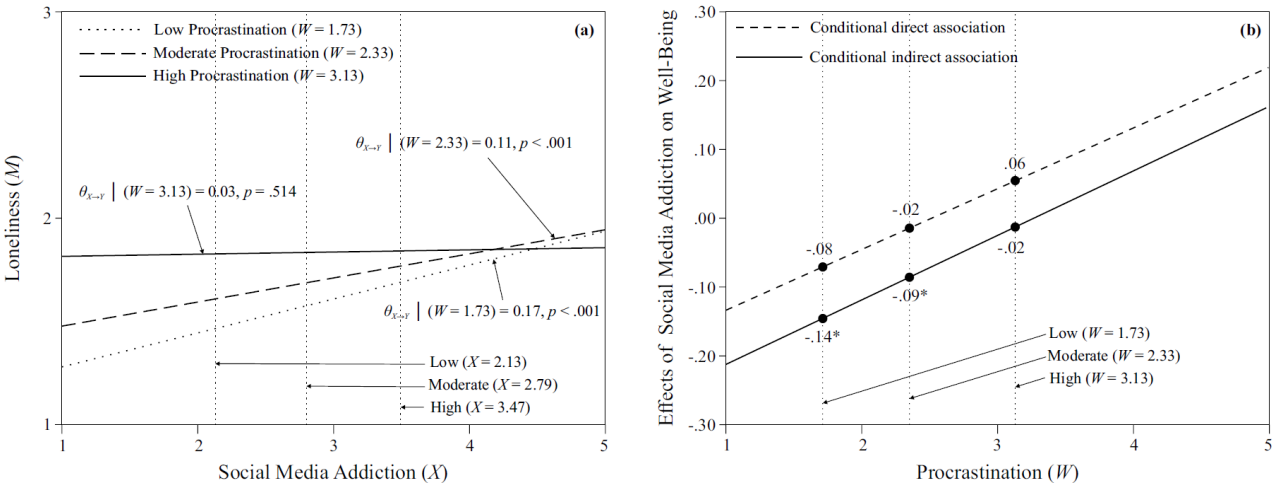

Figure 2. The illustrations of the analysis of moderations, conditional direct, and indirect associations. (a): The moderator role of procrastination on the association of social media addiction and loneliness. (b): Conditional direct and indirect associations of social media addiction and well-being through loneliness.

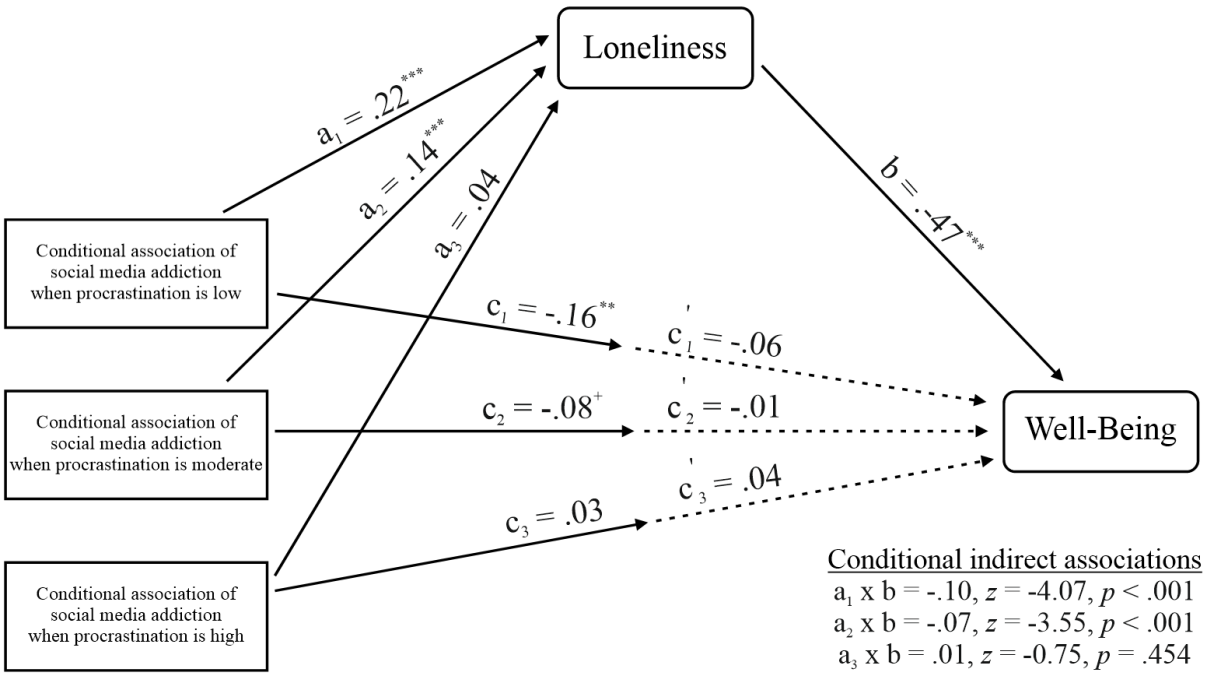

Figure 3. Results of the moderated mediation analysis: The association of social media addiction and well-being through loneliness, moderated by procrastination. *Note*. Standardized regression coefficients are shown. Path **a** is the association of social media addiction and loneliness moderated by procrastination. Path **b** is the association of loneliness and well-being (controlled for social media addiction and procrastination). Path **c** is the total association of social media addiction and well-being moderated by procrastination. Path **c**' is the direct association of social media addiction and well-being moderated by procrastination. The subscripts 1, 2, and 3 denote the conditional associations at the 16th, 50th (median), and 84th percentiles of procrastination, respectively. $^{+}p < .10$; $*p < .05$; $**p < .01$, $***p < .001$.

social media addiction was not negatively associated with well-being through loneliness. This mediation was observed only in those with moderate and low procrastination levels.

Discussion

This study aimed to investigate the complex relationships among social media addiction tendencies, psychological well-being, loneliness, and procrastination behavior in a nonclinical young adult sample. The core hypothesis, that the mediating role of loneliness on the negative relationship between social media addiction and well-being would change according to the level of procrastination behavior, was supported by the current findings. It is important to re-emphasize that the term social media addiction here refers not to a clinical diagnosis but to a pattern of excessive and impulsive use.

In the present study, only the psychosocial relationships in a general population were examined, and the subject was handled from a social-health psychology perspective.

The reported correlation analyses are consistent with the literature. Psychological well-being was found to be negatively correlated with social media addiction, procrastination, and loneliness. This situation is compatible with health psychology approaches, which suggest that maladaptive behaviors can harm mental health even at subclinical levels. The positive correlations found between social media addiction, procrastination, and loneliness point to a cluster of interrelated problems that can lower an individual's quality of life. Therefore, it can be said that a social psychological perspective, where these factors mutually influence each other in daily life, is supported.

The essence of the research model in the study was tested with a moderated mediation analysis. The results revealed that loneliness mediates the relationship between social media addiction tendencies and psychological well-being. This finding illuminates an important psychosocial mechanism: for young adults, increasing addictive use on social media platforms is associated with increasing feelings of social isolation. This situation, in turn, is associated with lower levels of general psychological well-being by affecting areas such as autonomy, environmental mastery, and positive relations with others as defined in Ryff's (1989) model.

The most important contribution of this study is the discovery of the regulatory role of procrastination behavior in this mediation pathway. The interaction here showed that for individuals with low and moderate levels of procrastination tendency, increasing social media addiction tendencies significantly predicted greater feelings of loneliness. However, for individuals with a high level of procrastination tendency, this relationship was not found to be significant. Consequently, the indirect negative association of social media addiction and well-being through loneliness was found only in those with low and moderate levels of procrastination behavior. In other words, procrastination behavior, which was found to be negatively related to well-being, was also found to potentially have a quality that simultaneously buffers the indirect negative relationship between social media addiction and well-being.

This pattern can be interpreted from a self-regulation and coping perspective. For individuals with relatively better self-regulation (low procrastinators), social media can be important, and because of these procrastination skills, their inability to detach from social media is a factor that negatively affects loneliness and well-being. When social media use becomes impulsive, it directly increases feelings of loneliness and thus is linked to lower well-being. In contrast, for high procrastinators, weak self-regulation is almost their savior in this negative relationship. This finding aligns with and extends the I-PACE model (Brand et al., 2016). It suggests that for individuals with high trait procrastination (a core predisposing vulnerability in the model), the affective and cognitive responses to social media (loneliness) may be overshadowed by a broader self-regulatory dysfunction. In these individuals, feelings of loneliness and low well-being can be attributed to the overarching avoidance pattern in various life domains (academic, personal, social), which renders the path from social media to loneliness to be less distinct. For them, social media may be just one of many areas where maladaptive habits emerge; it is not the central driving force of their psychological state. When the interaction regarding loneliness is examined, these individuals' levels of loneliness are already high; therefore, social media addiction does not show a strong association. However, in individuals with weak procrastination behavior, that is, with better self-regulation, loneliness increases as social media addiction increases.

Limitations and Future Research Directions

While this study provides insights into the psychosocial dynamics of social media use, it is also important to discuss its limitations, which open the way for future research. First and foremost, the cross-sectional study design prevents definitive causal inferences. Although our model suggests that social media addiction predicts loneliness, which in turn is associated with decreased well-being, and that procrastination regulates this, the opposite or bidirectional relationships are also probable. For example, individuals with low well-being may turn to social media more impulsively, or a high level of loneliness may fuel both procrastination and social media use. In light of these design constraints, the observed indirect effects within our mediation model should be interpreted as stable associative patterns rather than established causal sequences. Future research should use longitudinal or experimental designs to determine temporal precedence and strengthen causal claims about these relationships.

Second, the study relied solely on self-reported measurements. This method is prone to biases such as social desirability. The participants may have underreported their addictive social media use or procrastination behaviors. Future studies could investigate objective or behavioral data, such as actual screen times obtained from smartphone applications or different measurements of procrastination. Furthermore, while the composite reliabilities (CR) of all scales were strong, the Average Variance Extracted (AVE) values fell below the traditional .50 threshold. Although discriminant validity was confirmed, this marginal measurement quality regarding convergent validity suggests that the findings should be interpreted with caution.

Third, our sample was limited to young adults. This age group is known to be in a developmental period where social media participation is high, and issues of identity and social connection become important. Therefore, the generalizability of our findings to other age groups is unclear. The model should be tested in a wider age range and in different cultural contexts to determine its universality or to identify age-specific patterns. Moreover, the demographic distribution of our sample was notably skewed toward female participants (85.2%) and single individuals (98.2%). While this distribution is somewhat reflective of the demographic makeup of university-affiliated online surveys, the lack of gender and marital status balance limits the generalizability of the findings to more diverse populations. Future studies should aim for a more balanced representation to determine whether these moderated mediation pathways differ across gender or marital status.

Finally, as emphasized from the beginning, this research was conducted from social and health psychology perspectives, with a nonclinical sample. The findings are related to tendencies and patterns. These results should not be interpreted as representing individuals with a clinical diagnosis. Future research could

investigate whether these relationships hold true in clinical populations diagnosed with social media addiction.

Conclusion

In conclusion, this social and health psychology study illuminates a mechanism explaining how social media addiction tendencies are linked to the psychological well-being of young adults. The results confirm that loneliness is a fundamental psychosocial mechanism explaining this relationship. The novel contribution is the identification of procrastination behavior, a fundamental self-regulation failure, as a critical moderator and the determination of for whom the loneliness pathway is critical.

The findings show that the negative sequence of "social media addiction tendencies → loneliness → low well-being" is distinct for nonprocrastinating individuals. For high procrastinators, the psychological picture is different. Their well-being appears to be weakened by a general pattern of avoidance, which dilutes the mediating role of loneliness in the context of social media use.

These findings may have important implications for theory and practice within health and social psychology. It can be suggested that intervention programs aiming to enhance well-being and mental health among young adults need to be personalized. For individuals with low and moderate levels of procrastination tendencies, programs can focus on reducing social media-induced loneliness. For individuals with a high procrastination tendency, interventions should be designed primarily to address core self-regulation deficiencies. In light of these findings, we can say that their media usage habits and general psychological well-being need to be analyzed more accurately.

In conclusion, this study emphasizes the importance of considering individual self-regulation differences when examining the psychosocial effects of technology use. Future research should use longitudinal designs to confirm these causal pathways and explore these dynamics in different populations.

Compliance with Ethical Standards

Disclosure of Potential Conflicts of Interest. The authors declare no conflicts of interest related to the research, authorship and/or publication of this article.

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Ethical Approval. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments, or with comparable ethical standards. Ethical approval for this study was granted by Bolu Abant İzzet Baysal University Human Research Ethics Committee (Protocol No. 2025/296)

Informed Consent. Consent was obtained from all participants included in the study.

Data Sharing Statement. The data file for this study is available upon request.

Author Contributions. Conceptualization: SA, CA; Data curation: CA; Formal analysis: CA; Funding acquisition: SA; Investigation: SA, CA; Methodology: SA, CA; Project administration: SA; Resources: SA, CA; Software: CA; Supervision: CA; Validation: CA; Visualization: CA; Writing— original draft: SA, CA; Writing— review and editing: CA.

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Declaration of Artificial Intelligence Use. During the preparation of this work, the author(s) used Gemini in order to improve the English language, readability, and formatting of the manuscript. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication

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