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Social Media Addiction, Psychological Flexibility, Self-Esteem, and Mindfulness: A Person-Centered Approach

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ABSTRACT

Social media addiction has attracted research attention over the past decade. The reasons and factors that cause social media addiction remain undiscovered. Therefore, the research investigates novel factors using a person-centered approach. More specifically, the purpose of the present study is to determine the students' profiles of social media addiction and to reveal the relationship between psychological flexibility, self-esteem, and mindfulness. Data was collected from 657 participants using convenience sampling. The research results indicated that university students have 4 distinct profiles. The profiles had characteristic: (i) Moderate user 'High mindfulness, average social media addiction, but low self-esteem and psychological flexibility', (ii) Balanced media engager 'Average level of social media addiction, psychological flexibility, self-esteem, and mindfulness', (iii) Tech-overuser 'high social media addiction, but low psychological flexibility, self-esteem, and mindfulness', (iv) Resilient low-addiction type 'low social media addiction but high psychological flexibility, self-esteem, and mindfulness'. Mixture modeling approach-based studies incorporate complementary perspectives of the previous psychopathology literature. The findings may help practitioners target at-risk college students with high social media addiction but low psychological flexibility, self-esteem, and mindfulness and design programs to help them mitigate the effects of social media addiction.

Keywords: Social media addiction, psychological flexibility, mindfulness, self-esteem

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* This study is derived from the first author's doctoral dissertation titled "Effects of acceptance and commitment therapy-based psyceducation programs on social media addiction, psychological flexibility, mindfulness, and self-esteem", completed at Van yüzüncüyıl University.

Introduction

The proliferation of the Internet and the increasing variety of ways to connect have increased the frequency and duration of use. We Are Social (2024) reported that during the first half of 2024, 5.61 billion mobile phone users (over two-thirds of the world's population) were recorded. Moreover, 266 million new social media profiles were added to the total profiles (Kemp, 2024). The same report also indicated that users allocate an average of 400 minutes per day to this activity. However, this intensive use has led to the emergence of technology-based addictions. Social media addiction is considered a behavioral addiction (Kuss & Billieux, 2017). Even though social media addiction has not been explicitly categorized in *the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) (American Psychiatric Association, 2013), *the 11th revision of the International Classification of Diseases* (ICD-11) provides definitions of addictive behaviors related disorders (World Health Organization, 2019). Addictions are conceptualized by their relationship with substance use (e.g., drug addiction) and non-substance use (i.e., behavioral) (Kuss & Billieux, 2017). Besides, these addictions can manifest themselves actively and passively (Griffiths, 2017). For instance, while social media addiction is an addiction in which the addict actively engages in social media, they are passive in television addiction.

Social media platforms are designed to capture users' attention, entertain them, and keep them actively engaged online. Encouraging users to follow the developments and spend more time on these platforms due to boredom and loneliness (Orsolini et al., 2023; Özok et al., 2025; Turan et al., 2024). The increased time spent distances the individual from real life and may lead to problems that are tried to be avoided, re-emerging in a cycle. Social media users often experience negative states such as depression, stress, anxiety, and social isolation (Boursier et al., 2020; Seabrook et al., 2016). Negative use of the Internet manifests itself in such ways as Internet addiction (Manap et al., 2023), social media addiction (Özok et al., 2025), online gaming addiction (Kaya et al., 2024), and gambling (Kristensen et al., 2024). Numerous studies have asserted that the problematic use of social media poses a significant risk to well-being, leading to low mindfulness (Sriwilai & Charoensukmongkol, 2016), psychological flexibility (Güldal et al., 2022), and self-esteem (Hawi & Samaha, 2017).

Numerous internal and external factors can influence social media addiction (Özok et al., 2025; Tanhan et al, 2024; Turan et al., 2024). For this reason, most of the studies have examined these phenomena as a whole (e.g., dependent and independent variables) (Köse & Doğan, 2019; Oral & Karakurt, 2025). However, a holistic view may be insufficient to capture all possible latent groups fully (Uras et al., 2025). Thus, the new use of new research methods provides a comprehensive understanding of structures (Uras et al., 2025). In addition to enabling the detection of symptoms, this approach can also reveal the underlying dynamics of multidimensional structures in their interactions (Nylund et al., 2007). Therefore, social media addiction, which has a multidimensional structure, needs to be examined with a method that can reveal possible latent structures. Although the structures of social media addiction, psychological flexibility, self-esteem, and mindfulness have been previously addressed in various studies (Andreassen et al., 2017; Chen et al., 2019; Sağar, 2022; Teoh et al., 2021), to the best of our knowledge, this is the first time that we aim to reveal their multidimensional structure using an individual-centered approach.

Literature Review

Social Media Addiction and Mindfulness

The increased time spent on social media distances the individual from real life and leads to problems that are tried to be avoided, only to re-emerge in a cycle (Şahin, 2017). An individual who withdraws from social life experiences stress, anxiety, and isolation again. An individual's escape effort may prevent them from being in the present. In this context, mindfulness can be presented as a concept that helps people live in the moment and break stress-causing cycles. Mindfulness is identified as 'drawing one's attention to the events that occurred in the present moment non-judgmentally and helping them act in this manner (Baer et al., 2006). The concept of mindfulness, introduced by Kabat-Zinn (Williams & Kabat-Zinn, 2013), is frequently used in the treatment of problematic behaviors (e.g., social media addiction) as well as in coping with depression, anxiety, and stress (You & Liu, 2022).

One of the characteristic features of behavioral addictions (e.g., social media addiction) is the addicts' drive to obtain behavior that they lack (DiClemente, 2018; Goodman, 1990). Moreover, Sriwilai and Charoensukmongkol (2016) suggest that the urge to access social media can cause distraction in social media addicts, preventing them from being in the present moment. Social media addicts often experience anxiety and stress when they are unable to check or update their social media status regularly (Fabris et al., 2020; Griffiths et al., 2014). This may challenge them to focus on other activities without thinking about what they wish to do on social media. Instead of focusing on these negative thoughts or being overwhelmed by what is happening around us, taking an aware and nonjudgmental approach can help overcome the negativity of social media.

Social Media Addiction and Psychological Flexibility

Acceptance and commitment therapy (ACT) aims to enable individuals to focus on their inner lives and change their behavior in line with their values by being present in the moment (Hayes & Pierson, 2005; Yavuz, 2015). The therapy approach is designed to enhance psychological flexibility (Yavuz, 2015). It is built around a model comprising six core processes (contact with the present moment, committed action, acceptance, cognitive defusion, values, and self-as context) aligned with this objective (see Figure 1). Making these basic dimensions functional can help individuals increase their awareness of their momentary thoughts and feelings and take action to create a life focused on values (LeJeune & Luoma, 2019). On the other hand, psychological inflexibility is associated with negative situations such as depression (Gilbert et al., 2019), anxiety (Simon & Verboon, 2016), academic procrastination (Glick et al., 2014), psychological vulnerability (Uğur et al., 2021), internet addiction (Chou et al., 2017), and social media addiction (Güldal et al., 2022).

The negative use of social media can isolate individuals from their social life and may prevent them from leading a value-oriented life. Organizing individuals' lives in a value-oriented manner may lead them to face unwanted risks such as addiction. Lack of committed action is a frequently encountered problem in addiction (Karekla & Kelly, 2022). Studies have shown that psychological flexibility is effective in overcoming addictions (Albal & Buzlu, 2021; Twohig & Crosby, 2010).

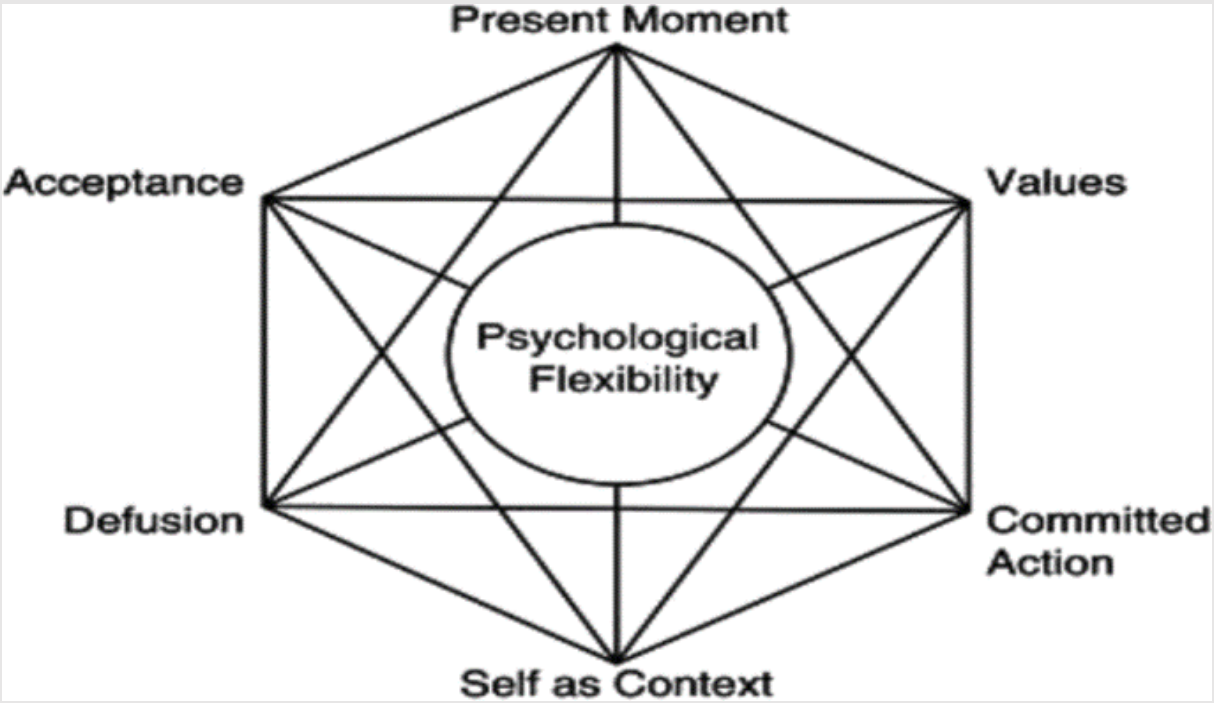

Figure 1: The core dimension of psychological flexibility

Note. The model illustrates the dimension of psychological flexibility in ACT. From "Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes, and outcomes. Behaviour research and therapy, 44(1), 1-25."

Social Media Addiction and Self-Esteem

Social media platforms allow individuals to interact with others and share content. This content can negatively impact users' self-esteem by making social comparisons with others. Self-esteem is the degree to which individuals have positive or negative feelings about themselves and their values (Rosenberg, 1965). Additionally, it is also suggested that for healthy self-esteem, individuals need to accept themselves and recognize that they are whole, despite their mistakes. Therefore, as individuals' level of self-acceptance increases, their self-esteem also increases (MacInnes, 2006; Thompson & Waltz, 2008; Randal et al., 2015). Research often associates social media addiction with low self-esteem (Hawi & Samaha, 2017; Köse & Doğan, 2019). Social media platforms enable virtual interactions and lead to social comparison with others. Due to this effect, the social media content that individuals encounter while using social media can have a negative impact (e.g., depression, anxiety, and social isolation) by making social comparisons about themselves and their values. Social media-related low self-esteem can distract an individual from social interactions, resulting in negative social media use (i.e., social media addiction) (Cingel et al., 2022).

The Present Study

Acceptance and commitment therapy, as well as social comparison theory, have been utilized in the conceptualization of the present study. Acceptance and commitment therapy suggests that accepting oneself, taking committed action in line with one's values, and being in the present moment can increase psychological flexibility, which may result in people living value-oriented lives (Hayes & Pierson, 2005). Similarly, the therapy suggests that using mindfulness techniques may help individuals enhance their engagement with life and make sense of the present

moment (Hayes & Pierson, 2005; Yavuz, 2015). Moreover, social comparison theory emphasizes that human beings have a fundamental drive to compare themselves with others, which serves several functions, including self-evaluation and fulfilling the need for competition (Festinger, 1954). In the context of these theories, a value-oriented and meaningful life can make individuals less dependent on their environment and increase their self-esteem as they pursue their life goals. In addition to the theoretical framework, empirical studies showed that social media addiction and psychological flexibility had a negative association (Güldal et al., 2022; Kabakcı & Traş, 2024). Similar to the aforementioned studies, increased levels of social media addiction had a relationship with lower levels of self-esteem (Acar et al., 2020) and mindfulness (Chang et al., 2023). Based on theoretical and empirical evidence, considering the interaction between psychological flexibility, mindfulness, self-esteem, and social media addiction, this study determined the following research questions: RQ1: What are the profiles of social media users? RQ2: Do detected profiles differ depending on social media addiction, psychological flexibility, self-esteem, and mindfulness?

Method

Participants

The sample size of 500 should provide sufficient accuracy to identify the correct number of latent profiles (Nylund et al., 2007). This study recruited a total of 657 participants (70.5% women) to achieve a sufficient sample size. While 27.7% (182) of participants reported having a low socioeconomic status, almost half of the participants, 50.7% (333), reported having a moderate socioeconomic status. Moreover, their mothers' education levels were determined to be 54.5% (358) of the participants had a primary school education level, and 20.9% (137) of their mothers were illiterate. Similarly, 43.5% (286) of the participants' fathers were primary school graduates. 17.4% (114) of the participants were in their first year, 23.4% (154) were in their second year, 30.4% (200) were in their third year, 24.8% (163) were in their fourth year, and 4.2% (26) were in their fifth year. Detailed information on participants' characteristics is presented in Table 1.

Table 1. Demographic characteristics of participants (N= 657)

Variables		Frequency(n)	Percentage (%)
Gender	Female	463	70.5
	Male	194	29.5
Socioeconomic level	Low	182	27.7
	Moderate	333	50.7
	High	142	21.6
Mothers' education level	Illiterate	137	20.9
	Elementary School	358	54.5
	Middle School	61	9.3
	High School	64	9.7
	University and above	37	5.6
Fathers' education level	Illiterate	31	4.7
	Elementary School	286	43.5
	Middle School	141	21.5
	High School	135	20.5
	University and above	64	9.7
Grade	First-year students	114	17.4
	Second-year students	154	23.4
	Third-year students	200	30.4
	Fourth-year students	163	24.8
	Fifth-year students	26	4.0
Participant's faculty	Faculty of Education	502	76.4

	Faculty of Arts and Sciences	118	18.0
	Faculty of Pharmacy	19	2.9
	Faculty of Theology	9	1.4
	Faculty of Economics and Administrative Sciences	9	1.4
Total		657	100

Measures

Bergen Social Media Addiction Scale (BSMA)

The 6-item BMSA (Andreassen et al., 2016; Turkish version: Demirci, 2019) was used to evaluate participants' social media addiction, assessed using a 5-point Likert scale ranging from 1 (*extremely rare*) to 5 (*extremely frequently*). Total scores on the scale range from 6 to 30. Increasing scores on the scale indicate that individuals' social media addiction is increasing. The scale includes items such as "*Have you spent much time thinking about or planning to use social media?"* and "*Has your excessive use of social media negatively affected your work/study?*". The confirmatory factor analysis indicated that the scale had a good fit (χ^2/df = 2.37; TLI = 0.98; CFI = 0.99; SRMR = 0.042; RMSEA = 0.046). In addition, the internal consistency was good (Cronbach's α = 0.83; McDonald's ω = 0.83). Subsequent studies have confirmed this structure in various populations (e.g., Bányai et al., 2017; Monacis et al., 2017).

Acceptance and Action Questionnaire (AAQ-II)

The 7-item AAQ-II (Bond et al., 2011; Turkish version: Yavuz et al., 2016) was used to assess participants' psychological flexibility, measured on a 7-point Likert scale ranging from 1 (*never true*) to 5 (*always true*). Total scores on the scale range from 7 to 49. Increasing scores on the scale indicate an increasing level of psychological flexibility. The scale includes items such as "*Past painful experiences and memories prevent me from living a life I value*" and "*Most people seem to manage their lives better than I do.*" The confirmatory factor analysis indicated that the scale had a good fit (χ^2/df = 1.77; TLI = 0.99; CFI = 0.99; SRMR = 0.041; RMSEA = 0.033). In addition, the internal consistency was good (Cronbach's α = 0.89; McDonald's ω = 0.89). Subsequent research has validated this structure across different populations (e.g., Alptekin et al., 2023; Uygur et al., 2020).

Rosenberg Self-Esteem Scale (RSS)

The 10-item RSS (Rosenberg, 1965; Turkish version: Çuhadaroğlu, 1986) was used to evaluate participants' self-esteem, employing a 4-point Likert scale ranging from 1 (*absolutely wrong*) to 5 (*absolutely right*). Total scores on the scale range from 10 to 40. Increasing scores on the scale increase the level of self-esteem. The scale includes items such as "*I tend to see myself as an unsuccessful person*" and "*I find myself at least as valuable as other people*." The confirmatory factor analysis showed that the scale had a good fit (χ^2/df = 1.50; TLI = 0.99; CFI = 0.99; SRMR = 0.067; RMSEA = 0.039). Moreover, the internal consistency was good (Cronbach's α = 0.89; McDonald's ω = 0.89). Subsequent studies have confirmed this structure across different populations (e.g., Bouih et al., 2022; Tinakon & Nahathai, 2012).

Mindful Attention Awareness Scale (MAAS)

The 15-item MASS (Brown & Ryan, 2003; Turkish version: Özyeşil et al., 2011) was used to evaluate participants' mindfulness, assessed on a 6-point Likert scale ranging from 1 (*almost never*) to 4 (*almost every time*). Total scores on the scale range from 15 to 90. Higher scores on the scale indicate a higher level of mindfulness. The scale includes items such as "*I concentrate heavily*

on my goals, often overlooking my current actions that contribute to them," and "*I hurry through tasks without fully recognizing their true nature*." The confirmatory factor analysis indicated that the scale demonstrates a strong fit ($\chi^2/df = 2.09$; TLI = 0.99; CFI = 0.99; SRMR = 0.047; RMSEA = 0.030). The internal consistency was deemed satisfactory (Cronbach's $\alpha = 0.88$; McDonald's $\omega = 0.88$). Subsequent research has validated this structure across multiple populations (e.g., Johnson et al., 2014; Osman et al., 2016).

Procedure and Ethics

Participants were included in the study using a convenience sampling approach. The inclusion criteria were determined to be being over 18 and being a social media user. The data for this research were collected over two months, from February to April 2023. The research data were gathered from university students attending a state university in the eastern region of Turkey. First, an online form was created after obtaining the necessary permissions (e.g., Ethics committee approval). This form (via *Google Forms*) was sent to participants who volunteered for the study. The first page of the form included information about the study (e.g., approximate duration time). Moreover, participants were required to indicate whether they participated in the study voluntarily. Additionally, participants were informed that they had the right to withdraw at any stage without providing a reason. After informing the participants about the voluntary nature of the study, the online form was implemented. This stage took approximately 20 minutes. Necessary permission was obtained from the original scale developers and its Turkish adaptations. All stages of the study were conducted in accordance with the principles outlined in the Declaration of Helsinki. Moreover, the ethics committee approval was provided by the Van Yüzüncü Yıl University ethics committee (*Reference number: 10838*).

Data Analysis

Before starting the analysis, it was investigated whether the required assumptions were met to conduct the necessary analysis. 674 participants filled out the scales completely. 8 participants who exhibited extreme value characteristics (i.e., outliers) and 9 participants who stated that they did not use social media were excluded from the study's scope. Analyses continued with 657 participants. The assumptions of distribution, multivariate normality, multicollinearity, and linearity were examined to detect any violations. No violations were detected.

Afterward, reliability and confirmatory factor analysis were performed to determine the reliability and validity of the measurement tools. It was observed that $\chi 2$ values were significant ($p > .05$) and $\chi 2/df$ values were below 5. The root mean square error of approximation (RMSEA) was below .08. The comparative fit index (CFI) and the Tucker-Lewis index (TLI) were above .90 (Kline, 2011; Tabachnick & Fidell, 2007). All values indicated that the fit of the scales was good. In addition, reliability values were found to be within acceptable limits. To perform the primary analysis (i.e., Latent Profile Analysis (LPA)), social media addiction, psychological flexibility, self-esteem, and mindfulness were identified as profile indicators. LPA is a form of latent cluster analysis (LCA) used to determine profiles using continuous variables (Muthen & Muthen, 1998-2017). It creates maximum heterogeneity between profiles and maximum homogeneity within the profile (Tein et al., 2013). The fit indices of the Akaike information criterion (AIC), the Adjusted Bayesian information criterion (ABIC), the Bayesian information criterion (BIC), the entropy value, and the Lo-Mendell-Rubin likelihood ratio test (LMR-LRT) were used to determine the profiles (Muthen & Muthen, 1998-2017). The decrease in the Akaike information criterion (AIC), Bayesian information criterion (BIC), and Adjusted Bayesian information criterion (ABIC) values indicates that the estimated model shows a better fit. Additionally, the Lo-Mendell-Rubin test

compares a model with class M+1 with a model with a class M solution (Lo et al., 2001). The significance of this index indicates that adding a new profile to the model improves the model. Its insignificance indicates that adding a new profile to the model does not improve the model (Lo et al., 2001). Finally, a one-way analysis of variance (ANOVA) was also conducted to determine if the detected profiles (i.e., 4 profiles) differed depending on social media addiction, psychological flexibility, self-esteem, and mindfulness. Latent profile analysis was performed using Mplus (*version 8*), and other analyses were performed using the SPSS (*version 26*) package program.

Results

Descriptive Statistics

Descriptive Statistics and correlations between the variables are shown in Table 2. All variables showed moderate to low correlations (see Table 2). It was also observed that the skewness and kurtosis values were under the normality assumption, that is, within the ±2 threshold values (George & Mallery, 2010).

Table 2. Descriptive statistics and Pearson correlations (N=657)

	1	2	3	4
1. Social media addiction	-			
2. Psychological flexibility	-.39**	-		
3. Self-esteem	-.15**	.35**	-	
4. Mindfulness	-.42**	.48**	.24**	-
Mean	16.75	29.69	25.04	55.73
Std. Deviation	5.14	8.94	6.57	11.98
Skewness	.00	-.25	.09	.01
Kurtosis	-.48	-.11	-.37	.18

Note: ***p*<.001; Correlations among all variables in the present study are shown (social media addiction, psychological flexibility, self-esteem, mindfulness). Variables had medium and low-level correlations.

Latent Profile Analysis (LPA)

LPA began with modeling from a single profile and expanded to six profiles to achieve the most suitable model (see Table 3). The BIC, ABIC, AIC, LMR-LR, and Entropy values were used to determine the most suitable profiles. After 2 profiles, these values were still close to each other. The LMR-LR value was still significant even in the 5-profile solution. The entropy value (greater than 0.80) indicated that the classes differed. The highest entropy value was seen in 4 profiles. BIC is suggested as the best indicator for determining the number of profiles (Nylund et al., 2007). In addition, since the lowest BIC value was determined, it was found that 4 profiles had the most appropriate fit values for the data. Latent profile analysis fit indices are presented in Table 3.

Table 3. Fit indices of latent profile analysis

Model	ABIC	BIC	AIC	LMR-LR	Entropy
1 Profile	17987.946	18023.847	17998.447	-	-
2 Profile	17569.169	17627.509	17586.234	415.954	0.770
3 Profile	17346.091	17426.869	17369.719	226.108	0.785
4 Profile	**17290.092**	**17393.308**	**17320.283**	**64.026**	**0.838**
5 Profile	17274.082	17399.737	17310.837	25.231	0.809
6 Profile	17261.799	17409.893	17305.117	21.617	0.812

Note: Abbreviations: BIC, Bayesian information criterion; LMR LRT, Lo-Mendell-Rubin likelihood ratio test; AIC, Akaike information criterion; ABIC, Adjusted Bayesian information criterion; The optimal model is bold.

In the next step, the mean and standard deviation values were calculated. The purpose of this calculation was to determine the z-score, which would reveal the characteristics of the profiles and their relationships with one another. The high mindfulness profile had a medium level of social media addiction, low levels of psychological flexibility and self-esteem, and a high level of mindfulness. These students consisted of 12 students. Students in the balanced media engager profile showed moderate levels of social media addiction, psychological flexibility, self-esteem, and mindfulness, with a total of 405 students in this group. Students in the Tech-overuser profile showed high social media addiction, low self-esteem, psychological flexibility, and mindfulness. The profile consisted of 85 students. Students in the resilient low-addiction type profile showed low levels of social media addiction and high levels of self-esteem, psychological flexibility, and mindfulness. The profile has 155 students (see Figure 1).

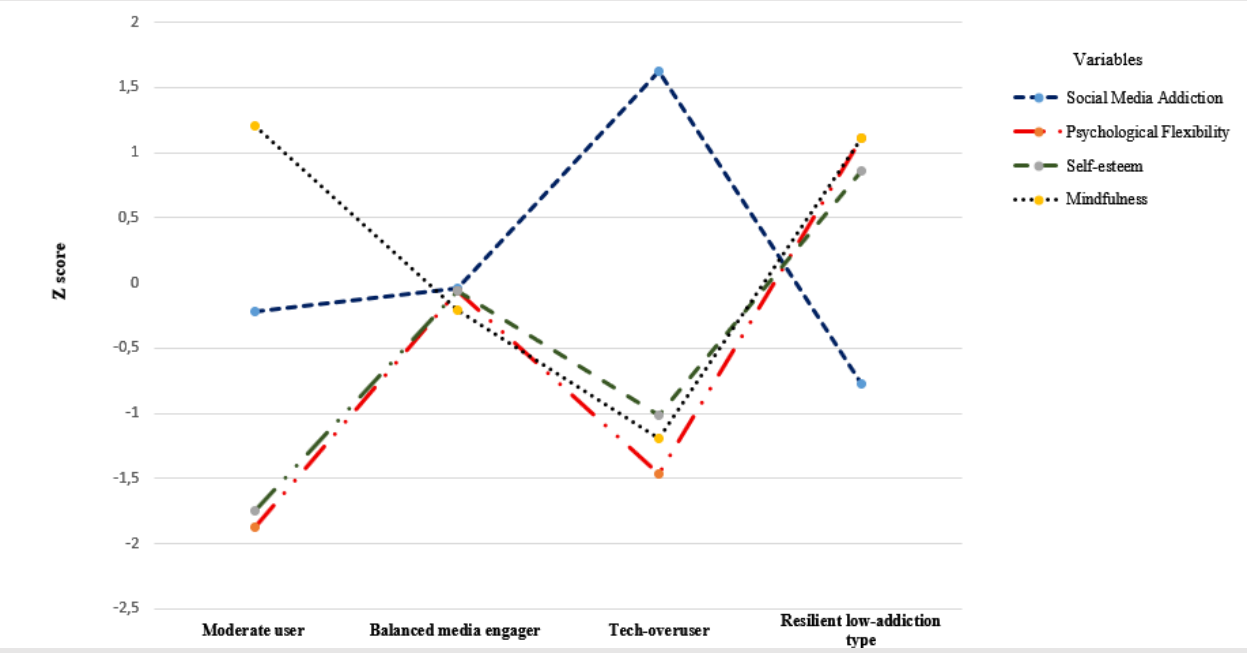

Figure 1. Characteristics of latent profiles

In the final stage of the research, a one-way ANOVA was conducted to compare the latent profiles of social media addiction, psychological flexibility, self-esteem, and mindfulness across the determined profiles. Table 4 shows that the *F* value was significant in all profiles. A significant difference was achieved in all profiles. Moreover, social media addiction had the highest mean in the Tech-overuser profile, while the lowest mean was in the resilient low-addiction type profile (see Table 4).

Table 4. One-way ANOVA results for latent profiles

Variables	High mindfulness M (Sd)	Balanced media engager M (Sd)	Tech-overuser M (Sd)	Resilient low-addiction type M (Sd)	*F* (3, 653)	*p*
Social media addiction	16.00(6.24)	17.07(4.22)	26.67(2.77)	12.79(4.48)	204.172	<0.001
Psychological flexibility	12.92(4.99)	29.16(5.39)	16.60(5.61)	39.57(5.41)	376.303	<0.001
Self-esteem	20.25(3.47)	28.38(3.91)	23.75(32.81)	32.81(3.63)	128.443	<0.001
Mindfulness	70.17(9.55)	53.23(8.26)	41.40(8.94)	69.03(7.61)	245.820	<0.001

Note: M, mean; Sd, standard deviation.

Discussion

The psychological flexibility in acceptance and commitment therapy includes six core dimensions: (i) contact with the present moment, (ii) committed action, (iii) acceptance, (iv) cognitive defusion, (v) values, and (vi) self-as context. The ACT suggests increasing psychological flexibility, which encompasses these dimensions, so that individuals can lead a meaningful life in alignment with their values (Hayes et al., 2006). As people's psychological flexibility decreases, they may try to avoid events, thoughts, and feelings that disturb them. Social media creates a virtual environment for them to escape from the problems they experience. As a result, people may engage in activities that bring them temporary pleasure. Negative use of social media can increase psychological inflexibility by preventing individuals from consciously experiencing the moment (e.g., through mindfulness). Thus, while individuals attempt to escape their problems, they can inadvertently enter a negative cycle and encounter additional issues.

The present study examined the profiles of social media users. The findings revealed the emergence of four distinct profiles among social media users. The high mindfulness profile had individuals with average levels of social media addiction and low levels of psychological flexibility and self-esteem. In the Balanced media engager profile, there were individuals with average social media addiction, psychological flexibility, and self-esteem. In the Tech-overuser profile, individuals had high levels of social media addiction but low levels of psychological flexibility, self-esteem, and mindfulness. Finally, in the resilient low-addiction type profile, individuals had low levels of social media addiction but high levels of psychological flexibility, self-esteem, and mindfulness. These findings were consistent with the existing literature. When the profiles are examined, the social media addiction of individuals in other profiles is negatively correlated with their psychological flexibility, self-esteem, and mindfulness, except for the balanced media engager profile. The participants of the profile had an average level of social media addiction, while their psychological flexibility, self-esteem, and mindfulness levels were also at average levels.

Viewing the profiles presented in this study from the perspective of ACT suggests that psychological flexibility and mindfulness, in particular, account for the link between psychological flexibility and mindfulness across different profiles (Güldal et al., 2022; Yavuz, 2015). This relationship is particularly evident in the Tech-Overuser profile, which exhibits low levels of psychological flexibility and mindfulness, and the Resilient low-addiction type, which exhibits high levels of psychological flexibility and mindfulness. According to the ACT model, individuals with high levels of psychological flexibility and mindfulness may act in a value-driven manner. Therefore, they may not use social media as a means of escape. In contrast, the Moderate user and Balanced media engager profiles exhibit balanced relationships, free from excessive control. According to social comparison theory, individuals' social comparisons with others negatively impact their self-esteem. It also emphasizes that humans have a fundamental drive to compare themselves with others, serving functions such as self-evaluation and addressing competing needs (Festinger, 1954). Therefore, as social media addiction increases across all profiles, lower self-esteem levels reveal this inverse relationship.

When the studies showing the relationship between social media addiction and self-esteem are examined, the literature reveals a negative relationship. For example, Hawi and Samaha (2017) reported that social media addiction lowers individuals' self-esteem. Additionally, it has a negative impact on their overall life satisfaction. Another study reported that addictive use of social media reflects the need to feed the ego and an attempt to ward off negative self-evaluation. As a result, it lowers individuals' self-esteem (Andreassen et al., 2017). Similarly, users of YouTube, VSCO, and WhatsApp had significantly lower self-esteem than non-users (Chen et al., 2019). Social media is an environment that allows for social comparisons (Lee et al., 2024). The relationship between social media addiction and self-esteem may have been affected by these comparisons. Social media addicts' frequent comparison of themselves with other users as a result of profiles and posts created on social media may have negatively affected their self-esteem by increasing their perception of inadequacy. These relationships are consistent with the negative association of social media addiction with self-esteem in Profiles.

Similarly, studies examining the relationship between psychological flexibility and social media addiction showed that there was an adverse relationship between social media addiction and psychological flexibility (Güldal et al., 2022; Sağar, 2022). Psychological flexibility can help individuals increase their awareness of their momentary thoughts and feelings and take action to create a life focused on their values (LeJeune & Luoma, 2019). Therefore, it can create a barrier against the negative effects of social media. In this context, behavioral addictions and psychological inflexibility were found to be positively correlated. For example, a study reported that psychological flexibility reduced depression and maladaptive cognitions related to internet gaming. Psychological inflexibility was found to predict internet game addiction (Yang et al., 2023). Another study showed that psychological inflexibility was positively related to Internet addiction (Chou et al., 2017). Consistent with the literature and current research findings, the negative relationship between individuals' increased social media addiction and psychological flexibility is consistent with the characteristics of the participants in the profiles.

A key finding of the present study showed that there were negative relationships between the participants' mindfulness levels and their social media addiction. Baer et al. (2006) identified mindfulness as a concept that draws one's attention to the events occurring in the present moment non-judgmentally and helps them act accordingly. Addiction’s characteristic feature includes the need to obtain the substance or behavior that is lacking (DiClemente, 2018; Goodman, 1990).

Sriwilai & Charoensukmongkol (2016) suggest that addicts have the urge to reach social media platforms, which can lead to distraction and prevent them from experiencing the present moment. Loss of conscious awareness of the present moment (e.g., mindfulness) can cause individuals to experience many negative emotions and experiences (e.g., depression, stress, anxiety, loneliness) (Grossman et al., 2004; Teoh et al., 2021; Vøllestad et al., 2012). Consequently, individuals may turn to virtual environments (social media platforms) to escape this negative cycle. Studies indicated that mindfulness and social media addiction were negatively correlated (Chang et al., 2023; Doğan & Turp, 2023; Moqbel et al., 2024). As a result, the findings of the literature were consistent with the current research.

To the best of our knowledge, this study is the first to identify latent constructs, despite previous research connecting social media addiction, psychological flexibility, self-esteem, and mindfulness separately. Furthermore, this study is the first to investigate this associated construct in conjunction. Selecting university students who are at risk for social media use as the sample in this study is important because it helps reveal possible hidden structures within a vulnerable group regarding behavioral addictions (Ranjbaran et al., 2017). Additionally, limited studies have explored social media addiction in depth using constructs that influence psychological dynamics in Turkey (where the present study has been conducted). Additionally, the research was conducted during the period following the long-term restrictions and quarantines imposed after the COVID-19 outbreak. Therefore, it is also important in terms of illustrating the effects of the post-COVID-19 period on individuals who have long used social media and related platforms.

Conclusion and Implications

The growing negative social media usage among college students poses a significant risk. The present study results reveal inverse relationships between social media addiction, psychological flexibility, self-esteem, and mindfulness. With an individual-centered approach (i.e., latent cluster analysis), the latent profiles of the sample provide researchers with important insights into determining the targeted sample to mitigate the adverse effects of social media. The study's findings revealed the emergence of four distinct profiles among the students. In the high mindfulness profile, when participants had average levels of social media addiction, they had above-average levels of mindfulness and low levels of self-esteem and psychological flexibility. In the balanced media engager profile, students had moderate levels of social media addiction, psychological flexibility, self-esteem, and mindfulness. In this profile, students had high levels of social media addiction but low levels of psychological flexibility, self-esteem, and mindfulness. In the resilient low-addiction type profile, students had low levels of social media addiction but above-average levels of psychological flexibility, self-esteem, and mindfulness.

This research provides scholars with resources to implement more individualized prevention and intervention strategies, as interventions focused on the person exhibit distinctive variations in latent structures and profiles. The sample can be directly targeted by specifically targeting students at universities and developing interventions to increase the levels of mindfulness, self-esteem, and psychological flexibility of these students. For example, university counseling centers can utilize the findings of this study to intervene with university students. Additionally, seminars and conferences can be organized to share information about these profiles that arise from the development of social media addiction. Interventions can be gradually developed with modules designed for students. The results of this study can be used to inform faculty members about this area of addiction, helping create a protective environment for students

against addiction. This research enhances the current body of literature by demonstrating psychological constructs such as psychological flexibility, self-esteem, and mindfulness, which may serve as underlying factors in social media addiction. Future research could expand upon these findings by investigating longitudinal patterns or by implementing similar models in diverse cultural contexts. Additionally, such research should support the content of longitudinal studies or applications, taking into account the characteristic structures of the samples involved in experimental studies.

Limitations and Suggestions

This research, like every research, has some limitations. One of them is that the research was conducted cross-sectionally. Longitudinal studies may be preferred to reveal the directionality of relationships and explain them through causality. Another possible limitation is that the sample consisted of Turkish university students, which weakens the generalizability of the study results to the entire Turkish population. Future cross-cultural studies might expand the generalizability of their sample by including different samples (e.g., adolescents or adults). Although university students are a suitable sample group for negative social media use, it has been suggested that social media addiction has increased, especially in adolescents (Yang et al., 2022). Therefore, further research can investigate the effects of social media addiction in adolescents and their profiles in students.

Conflicts of Interest

The authors declare no competing interests. This article is derived from the first author's doctoral dissertation under the supervision of the second author, "*Effects of acceptance and commitment therapy-based psychoeducation programs on social media addiction, psychological flexibility, mindfulness, and self-esteem*."

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Ethics

The study was approved by Van Yüzüncü Yıl University Scientific Research Ethics Committee (*Reference number: 10838*)

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Declaration of Generative AI and AI-assisted Technologies Usage

Authors disclose that no generative AI or AI-assisted technologies were used at any stage of the research process, including but not limited to conceptualization, data analysis, visualization, or writing.

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