

# Investigating the Relationship Between Problematic Social Media Use and Dark Personality Traits with the Mediating Role of Emotion Regulation Among Adult Instagram Users in Tehran

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## ABSTRACT

**Objective:** The aim of the present study was to investigate the relationship between problematic social media use and dark personality traits with the mediating role of emotion regulation among adult Instagram users in Tehran.

**Methods and Materials:** The research method was descriptive-correlational and utilized a structural equation modeling approach. The population included all adult Instagram users (aged 18 to 80) in Tehran in the year 2022. The sample consisted of 306 individuals selected through convenience sampling. The questionnaires used in the study were the Mobile Social Networking Addiction Scale by Khajeh Ahmadi et al. (2016), the Dark Personality Traits by Jonason and Webster (2010), Emotion Regulation by Gratz and Roemer (2004), and Self-Compassion by Neff (2003). Data analysis was performed using Structural Equation Modeling and Amos.22 software.

**Findings:** The results showed a significant positive relationship between problematic social media use and dark personality traits ( $p = .001$ ,  $\beta = .523$ ). There was a significant positive relationship between emotion regulation and dark personality traits ( $p = .001$ ,  $\beta = .376$ ). A significant positive relationship existed between problematic social media use and emotion regulation ( $p = .001$ ,  $\beta = .602$ ). Moreover, the indirect path coefficient between problematic social media use and dark personality traits was negative and significant ( $p = .001$ ,  $\beta = -.275$ ). The indirect path coefficient between problematic social media use and dark personality traits through emotion regulation was positive and significant ( $p = .001$ ,  $\beta = .226$ ). Emotion regulation significantly mediated the relationship between problematic social media use and dark personality traits in a positive manner.

**Conclusion:** It can be concluded that emotion regulation is an important component in predicting problematic Instagram use.

**Keywords:** Instagram, Emotion Regulation, Social Networks, Dark Personality Traits.

## 1. Introduction

Virtual social networks are forms of contact patterns in which interactions and communications among network agents are supported through a technical base and internet infrastructure. In such networks, a common goal, interest, or need can be a binding element that makes related agents feel as though they are in a real community and gathering, even without physical presence (Parsakia & Rostami, 2023). Misuse of social networks has led to issues such as internet addiction, online dating, and cybercrimes (Lee & Lim, 2021; Mérelle et al., 2017). Recently, researchers consider the term "social network addiction" as a maladaptive psychological dependency on social networks to the extent that it occurs with symptoms of behavioral addiction, termed "problematic use of social networks" (Cao et al., 2020). Researchers support this term and have formally distinguished maladaptive internet uses from clinical conditions. Problematic internet use is defined as a multidimensional syndrome that carries various consequences including disruption in social, psychological, academic, and professional areas for a person. Incorrect and problematic use of the internet carries the risk of addiction to it (Hadadian et al., 2020; Horwood & Anglim, 2020; Moretta & Buodo, 2018; Worsley et al., 2018).

In this regard, Stavropoulos et al. (2016) reported that excessive internet use leads to disruption in daily functioning, mental health disorders, and a decrease in well-being levels (Stavropoulos et al., 2016). Some studies have also reported higher levels of social anxiety, depression (Tao et al., 2016), compulsive habitual behaviors, and hyperactivity in individuals with internet dependency compared to others (Stavropoulos et al., 2016). The process involved in developing and maintaining potentially problematic behavior from social networks is influenced by personality traits, attachment models in childhood, motives, social cognitions, and psychological symptoms through the understanding of internal and external stimuli, as the perception of stimuli leads to specific emotional and cognitive responses which are affected by mental coping styles and emotion regulation, studies indicate the impact of personality traits in developing and maintaining potentially problematic behavior from social networks (Brand et al., 2019; Horwood & Anglim, 2020). Although studies have shown the relationship between problematic use of social networks and dark personality traits, the underlying mechanisms of this relationship are not yet clearly identified and present a challenge before us.

Among the pathological traits that have attracted much attention in recent years are the dark triad personality traits, which are associated with problematic use of social networks (Tang et al., 2020). Dark personality traits consist of a cluster of three personality features including narcissism, Machiavellianism, and antisocial behavior, which all individuals possess to some extent (Koladich & Atkinson, 2016). Machiavellianism reflects a highly self-centered orientation where the individual is inclined to achieve their goals through any means such as deceit, cheating, and exploitation (Zeigler-Hill et al., 2016). In fact, Machiavellians are individuals who are money-loving, ambitious, competitive, and self-serving, caring only about their own desires without regard for others' rights (Ueno et al., 2017). Antisocial individuals also include a set of negative and norm-breaking traits, among which aggression, lack of remorse, selfish behaviors, psychological distress, and harm to others can be mentioned (Vaughan et al., 2018). Another dark triad personality trait, narcissism, refers to exaggerated feelings of grandiosity, pride, self-absorption, and entitlement. Narcissism interferes in various aspects of interpersonal functioning, as others become exasperated with the exploitative, egocentric, and grandiose inclinations of the narcissistic individual (Zeigler-Hill et al., 2016). Kircaburun, Jonason, and Griffiths (2018) in their research showed that there is a significant positive relationship between Machiavellian and narcissistic personalities and problematic use of social networks, especially men showed higher scores in Machiavellianism and narcissism compared to women. Their research results showed the correlation of two variables in such a way that problematic use of social networks is significantly associated with the dark triad personality traits and disorder in emotion regulation (Kircaburun & Griffiths, 2018). Studies indicate the role of emotion regulation skills in the relationship between problematic use of social networks and dark personality traits (Horwood & Anglim, 2020; Şakiroğlu, 2019). Since adaptive emotion management is essential for mental health and emotion regulation involves processes of monitoring, evaluating, and modifying emotional responses to achieve goals (Ghafoori & Haghayegh, 2021; Horwood & Anglim, 2020; Monemi & Zeinali, 2022). There are many individual differences in emotional abilities, including identifying and understanding one's own and others' emotions, causes and outcomes of different emotions, and strategies used for regulating emotions, these differences in emotional processes and managing emotions have widespread consequences in many psychological functions. Emotion

regulation helps individuals in reducing, increasing, and maintaining emotional components and plays a significant role in reducing the intensity of negative emotions in stressful conditions (Goldsmith et al., 2013; Hadadian et al., 2020). Also, Worsley and colleagues (2018) in their research confirmed a significant positive relationship between attachment anxiety levels and problematic use of social networks and that in both attachment style models (anxious and avoidant), both levels experience high anxiety (Worsley et al., 2018). Another study by, Moretta and Buodo (2018) stated in their research that problematic use of social networks provides the ground for serious social, psychological, and cognitive harms such as decline in social skills, social withdrawal, and disintegration of social relationships, anxiety, depression, negative thoughts which are outcomes of emotional dysregulation (Moretta & Buodo, 2018). In other words, when individuals become dependent on social networks, their motivation for interaction with others decreases, which actually has negative effects on their emotion regulation construct and ultimately leads to their withdrawal from social communications.

The research gap of the present study is that empirical and theoretical studies related to problematic use of social networks in Iran have been very limited, and in some research variables, no studies have been conducted at all. What is completely clear is that the dark triad traits are correlated with low levels of empathy and negative emotional experience, especially, high scores in psychological disorders are the cause of experiencing negative emotions (Wai & Tiliopoulos, 2012). Investigations show that empathy is the only positive emotional trait in relation to problematic use of social networks that has been considered (Wai & Tiliopoulos, 2012). Muris et al. (2017) in their research found that dark triads are related to positive and negative emotions and individuals with problematic use of Instagram report poorer mental health, while having higher levels of self-compassion (Muris et al., 2017). Given the mentioned contents and that so far no research in Iran has exclusively dealt with Instagram users; therefore, the researcher seeks to answer the question whether emotion regulation plays a mediating role in the relationship between problematic use of social networks and dark personality traits among adult Instagram users in Tehran?

## 2. Methods and Materials

### 2.1. Study Design and Participants

The design of the present study was descriptive-correlational, based on a structural equation modeling approach. The population consisted of all adult Instagram users (ages 18 to 80) in Tehran in the year 2022. The sample size was chosen based on Kline (2010), who suggests that in exploratory factor analysis, 10 or 20 samples per variable are needed, but a minimum sample size of 200 is defensible. In this study, 306 individuals were evaluated based on the following inclusion criteria: consent to participate in the study, use of the Instagram app, age between 18 to 80 years. The sampling method was convenience sampling.

Initially, the questionnaires were prepared online. Participants were selected through convenience sampling. The research objectives and response instructions were shared along with the questionnaire link. Through Instagram posts and stories, Telegram channels, and WhatsApp groups, users who met the entry criteria were invited to respond to the questionnaires. Participants were also reminded to answer the questionnaires accurately and honestly. After the participants completed the questionnaires, the raw data were analyzed. Ethically, participants were informed that it was not necessary to mention names, and the results would be used in a generalized form in the research. Participants were reminded to answer the questions honestly and carefully if they agreed to participate in the study.

### 2.2. Measures

#### 2.2.1. Problematic Use of Social Networks

The Mobile Social Networks Addiction Questionnaire by Khajeh Ahmadi et al. (2016) was designed to measure addiction to mobile social networks. This questionnaire includes 23 items and 4 components: personal performance, time management, self-control, and social relationships, rated on a five-point Likert scale. The scoring ranges from 1 to 5. In Khajeh Ahmadi et al. (2016), the questionnaire's content, face, and criterion validity were deemed appropriate (Basharpoor et al., 2021). The Cronbach's alpha coefficient calculated in their study for this questionnaire was estimated to be above .70.

### 2.2.2. *Dark Personality*

The Dirty Dozen by Jonason and Webster (2010) was designed to measure dark personality traits. This questionnaire includes 12 items and 3 components: narcissism, Machiavellianism, and antisocial behavior, rated on a Likert scale. In Yousefi and Piri (2016), the questionnaire's content, face, and criterion validity were evaluated as appropriate (Basharpoor et al., 2021). The Cronbach's alpha coefficient calculated in their study for this questionnaire was above .70 (.77).

### 2.2.3. *Emotion Regulation*

Created by Gratz and Roemer (2004), this multidimensional questionnaire standardizes the identification, evaluation, change, moderation, and use of emotions. Gratz and Roemer (2004) confirmed the six-factor structure, including nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Items 1, 2, 6, 7, 8, 10, 17, 20, 22, 24, and 34 are reverse scored. The questionnaire's score ranges from 36 to 180, with lower scores indicating lower emotion regulation ability. In Khani Pour (2014), content validity was determined by consulting experts in organization and management (Kazemi Zahrani et al., 2019). The Cronbach's alpha for the entire questionnaire was .94, indicating very high reliability.

### 2.2.4. *Self-Compassion*

The Self-Compassion Scale by Neff (2003) consists of 26 items rated on a five-point Likert scale (almost never to almost always), including three bipolar scales: self-kindness vs. self-judgment, common humanity vs. isolation, and mindfulness vs. over-identification. In Khosravi et al. (2014), the questionnaire's validity was confirmed by experts and specialists in the field. The reliability of the questionnaire, using Cronbach's alpha method in their study, was above .70 (.86) (Masoumi et al., 2022).

### 2.3. *Data analysis*

Initially, the study variables were analyzed using descriptive statistics (mean, standard deviation, correlation matrix). The collected data were then prepared and screened, especially considering the main hypotheses of structural equation modeling (SEM), including missing values, normality, linearity, multicollinearity, and homoscedasticity. Finally, the research hypotheses were tested using structural equation modeling.

## 3. Findings and Results

Eighty-four participants (27.5%) were under 25 years old, 32 participants (10.5%) were aged 26 to 30 years, 58 participants (19%) were aged 31 to 35 years, 54 participants (17.46%) were aged 36 to 40 years, and 78 participants (25.5%) were over 40 years old. The mean age and standard deviation of participants were 34.23 and 10.68 years, respectively. Eighty-three participants (27.1%) were male, and 223 participants (72.9%) were female. The education level of the participants included: below high school diploma (1.6%, n=5), high school diploma (13.1%, n=40), associate's degree (5.6%, n=17), bachelor's degree (36.4%, n=112), master's degree (37.7%, n=115), and doctoral degree (5.6%, n=17). One hundred forty participants (45.8%) were single, 148 participants (48.4%) were married, 16 participants (5.2%) were separated from their spouse, and the spouses of 2 participants (0.7%) had died. One hundred eighty participants (58.8%) spent less than 2 hours, 96 participants (31.4%) spent 2 to 4 hours, and 30 participants (9.8%) spent more than 4 hours per day on Instagram. Table 1 shows the means, standard deviations, and Cronbach's alpha coefficients of the study variables, including problematic social media use components (personal performance, time management, self-control, and social relationships), emotion regulation components (nonacceptance, difficulties in goal-directed behavior, impulse control difficulties, lack of emotional awareness, and limited access to emotion regulation strategies), and dark personality traits (narcissism, antisocial behavior, and Machiavellianism).

**Table 1**

*Mean, Standard Deviation, and Cronbach's Alpha Coefficient of Research Variables*

Variable	Mean	Standard Deviation	Cronbach's Alpha
Problematic Social Media Use - Personal Performance	18.92	4.17	.85
Problematic Social Media Use - Time Management	15.62	3.38	.82
Problematic Social Media Use - Self-Control	9.98	3.09	.71
Problematic Social Media Use - Social Relationships	12.62	4.00	.68
Emotion Regulation - Nonacceptance	7.13	2.72	.87
Emotion Regulation - Difficulties in Goal-Directed Behavior	8.98	3.06	.89
Emotion Regulation - Impulse Control	7.42	2.37	.81
Emotion Regulation - Lack of Emotional Awareness	8.66	2.84	.72
Emotion Regulation - Limited Access to Strategies	10.54	3.67	.78
Emotion Regulation - Emotional Clarity	4.76	2.08	.69
Dark Personality Traits - Narcissism	13.04	3.97	.86
Dark Personality Traits - Antisocial	5.95	2.23	.82
Dark Personality Traits - Machiavellianism	8.28	2.89	.63

Table 1, in addition to the means and standard deviations of the study variables, also shows their Cronbach's alpha coefficients. As can be observed, the Cronbach's alpha coefficients for all variables are close to or greater than 0.7.

This finding indicates that the questionnaires used to measure the current study's variables have suitable internal consistency.

**Table 2**

*Correlation Matrix of Research Variables*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Personal Performance	-	.70*	.50*	.29*	.51*	.42*	.44*	.33*	.43*	.46*	.35*	.28*	.26*
2. Time Management		-	.54*	.36*	.40*	.39*	.45*	.27*	.35*	.37*	.27*	.25*	.17*
3. Self-Control			-	.49*	.36*	.37*	.33*	.21*	.32*	.24*	.29*	.31*	.20*
4. Social Relationships				-	.20*	.21*	.17*	.06	.18*	.13*	.29*	.26*	.03
5. Nonacceptance					-	.61*	.62*	.46*	.76*	.57*	.35*	.26*	.23*
6. Difficulties in Goal-Directed Behavior						-	.68*	.33*	.68*	.37*	.36*	.24*	.19*
7. Impulse Control							-	.39*	.71*	.48*	.35*	.31*	.23*
8. Lack of Emotional Awareness								-	.45*	.65*	.10	.09	.03
9. Limited Access to Strategies									-	.53*	.35*	.21*	.23*
10. Emotional Clarity										-	.24*	.19*	.08
11. Narcissism											-	.33*	.11
12. Antisocial												-	.36*
13. Machiavellianism													-

\*p < .01

Table 2 presents the correlation coefficients between the variables, which were in the expected direction and consistent with theories. In the current study, variables of addiction to social networks, emotion regulation, and narcissistic personality were latent and formed the measurement model (Figure 1). It was hypothesized that the latent variable of problematic social media use is measured by indicators of personal performance, time management, self-control, and social relationships, the latent variable of emotion regulation is measured by indicators of nonacceptance, difficulties in goal-directed behavior, impulse control difficulties, lack of emotional awareness,

and limited access to strategies, and the latent variable of narcissistic personality is measured through indicators of narcissism, antagonism, and Machiavellianism. The fit of the measurement model was evaluated using confirmatory factor analysis with AMOS 26.0 software and the maximum likelihood (ML) estimation method. Table 3 provides the fit indices of the measurement model. The structural model of this study (Figure 1) hypothesized that problematic use of social networks in adult Instagram users affects dark personality traits both directly and through the mediation of emotion regulation. The structural model was analyzed using

the structural equation modeling method. Table 3 shows the fit indices for the structural model.

**Table 3**

*Total, Direct, and Indirect Path Coefficients Between Research Variables in the Research Model*

Pathways	b	S.E.	$\beta$	p
Problematic Use of Social Networks → Emotion Regulation	.429	.047	.602	.001
Emotion Regulation → Dark Personality Traits	.214	.061	.376	.001
Direct Effect of Problematic Use of Social Networks → Dark Personality Traits	.100	.044	.248	.018
Indirect Effect of Problematic Use of Social Networks → Dark Personality Traits	.111	.029	.275	.001
Total Effect of Problematic Use of Social Networks → Dark Personality Traits	.212	.035	.523	.001

Note: b = unstandardized regression coefficient; S.E. = standard error;  $\beta$  = standardized regression coefficient; p = significance level.

The evaluation of the fit indices for the initial structural model in Table 3 supports the acceptable fit of the structural model with the collected data. Consequently, it was concluded that the structural model of the study fits

acceptably with the collected data. Subsequently, Table 4 presents the total, direct, and indirect path coefficients between the study variables in the structural model.

**Table 4**

*Fit Indices for Structural Model*

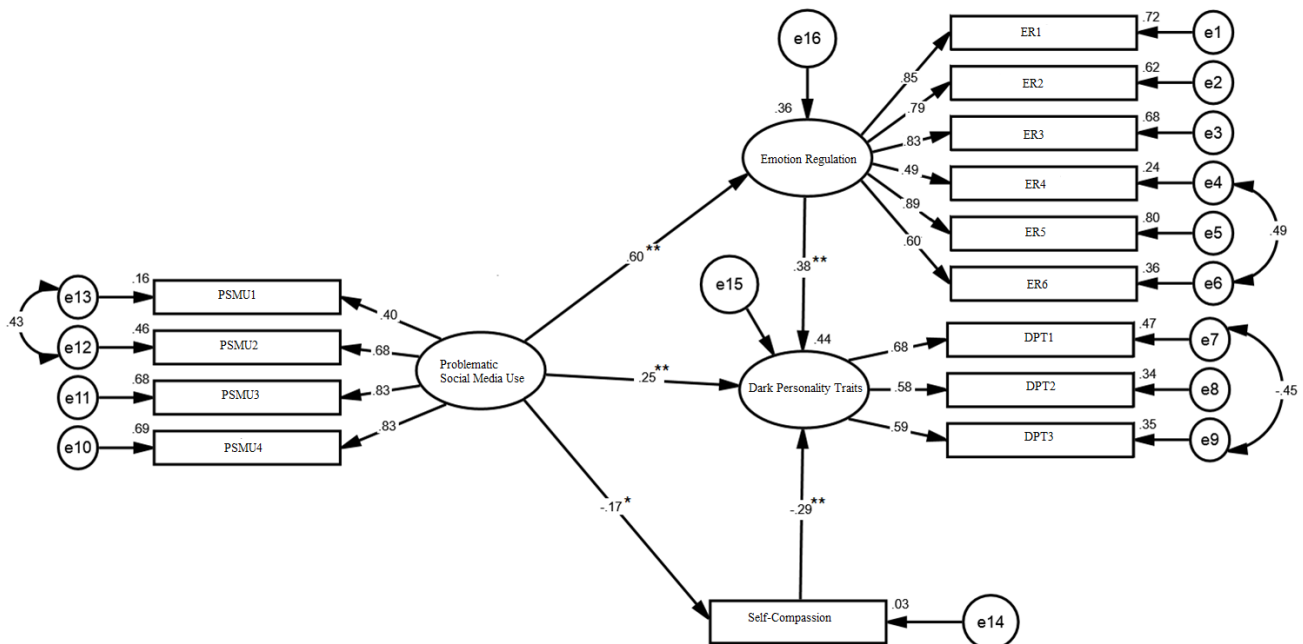
Fit Indices	Structural Model
Chi-Square	176.84
Degrees of Freedom	70
Chi-Square/Degrees of Freedom	2.53
GFI	.923
AGFI	.884
CFI	.943
RMSEA	.071

According to the results in Table 4, the path coefficient between problematic use of social networks and dark personality traits ( $p = .001$ ,  $\beta = .523$ ) is positive and significant. Based on this, it was concluded that problematic use of social networks in adult Instagram users is positively and significantly related to dark personality traits. The path coefficient between emotion regulation and dark personality traits ( $p = .001$ ,  $\beta = .376$ ) is positive and significant. Hence, it was concluded that emotion regulation in adult Instagram users is positively and significantly related to dark personality traits. The path coefficient between problematic use of social networks and emotion regulation ( $p = .001$ ,  $\beta = .602$ ) is positive and significant. Thus, it was concluded that problematic use of social networks in adult Instagram users is positively and significantly related to emotion regulation. The indirect path coefficient between problematic use of social networks and dark personality traits ( $p = .001$ ,  $\beta = -.275$ ) is negative and significant. Accordingly, it can be said that the emotion regulation variable significantly mediates

the relationship between problematic use of social networks and dark personality traits. However, the significance of the mediating role (emotion regulation) in the relationship between problematic use of social networks and dark personality traits was not determined. For this reason, to determine the significance or insignificance of the mediating role of each of the two mediating variables, the formula by Baron and Kenny (1986, as cited in Mallinckrodt et al., 2006) was used. Using the Baron and Kenny formula showed that the indirect path coefficient between problematic use of social networks and dark personality traits through emotion regulation ( $p = .001$ ,  $\beta = .226$ ) is positive and significant. Based on this, it was concluded that emotion regulation positively and significantly mediates the relationship between problematic use of social networks in adult Instagram users and dark personality traits. Figure 1 shows the structural model of the study explaining the relationships between problematic use of social networks, emotion regulation, and dark personality traits.

Figure 1

Final Model with Beta Coefficients



As observed in Figure 1, the multiple correlation coefficient for the variable of dark personality traits was .44. This indicates that problematic use of social networks and emotion regulation in Instagram users explain 44% of the variance in dark personality traits.

#### 4. Discussion and Conclusion

The findings of the present study demonstrated that the structural model has an acceptable fit with the collected data. These findings are consistent with the results of previous research (Ghafoori & Haghayegh, 2021; Hadadian et al., 2020; Horwood & Anglim, 2020; Mohebi et al., 2020; Monemi & Zeinali, 2022). In this regard, Mohebi et al. (2020) also found that emotional non-expression has a direct and significant positive effect on internet addiction among students, and their research model statistically had acceptable fit indices (Mohebi et al., 2020). The results of the present study showed that problematic use of social networks among adult Instagram users is positively and significantly related to dark personality traits. These findings are consistent with the previous results (Kircaburun & Griffiths, 2018; Lee & Lim, 2021; Tang et al., 2020).

To explain these results, it can be said that there is a significant relationship between dark personality traits and problematic use of social networks. Researchers have

concluded that individuals with higher levels of dark personality traits may be more vulnerable to developing problematic online behaviors and addiction (Kircaburun & Griffiths, 2018). It can be said that social media utilizes motivations of entertainment, connection, self-expression, and relationship maintenance, each of which, to some extent, benefits from the tendencies of dark personality traits. For example, narcissistic tendencies for grandiosity lead to attention and admiration, which are utilized for communicative motivation, and exhibitionism tendencies are utilized for the motivation of self-expression; therefore, it can be concluded that dark triad traits are predictors for problematic use of social networks. Also, it can be stated that dark personality traits, meaning having low levels of empathy, little ability or motivation to relate one's emotions with others, and dealing with emotions, facilitate hostile social strategies encapsulated in the dark triad traits. In fact, the external orientation of individuals with dark personality traits may indicate that those high in the dark triad, especially antisocial traits, spend little time attending to their inner world and instead focus more on what they gain from the external world. In other words, spending a lot of time worrying about their own or others' feelings may be a barrier for the individual in pursuing quick life strategies encapsulated in dark personality traits (Ho et al., 2017; Horwood & Anglim, 2020); therefore, social network

environments like Instagram may be particularly attractive for individuals with higher levels of these dark traits; as the online virtual environment provides behavioral opportunities that may not be possible in offline contexts and these traits cannot be displayed or acted upon in the real world (e.g., increased exhibitionism, aggression without presence, manipulation); thus, it may facilitate the development of addictive online behavior. Research has shown the connection between dark personality traits (such as narcissism, Machiavellianism, psychopathy, sadism, spitefulness) and addiction to social networks. Dark personality traits are linked to addictive uses of online networks, from video games and pornography to social media addiction (Kircaburun & Griffiths, 2018). Therefore, individuals with high levels of dark personality traits use social media to express their dark inclinations, and the reinforcing cycle of satisfaction from social media use may lead to problematic social media disorder.

The findings of the present study showed that emotion regulation among adult Instagram users is positively and significantly related to dark personality traits. These findings are consistent with the results of previous studies (Horwood & Anglim, 2020).

To explain these results, it can be said that individuals who score high in narcissism tend to exhibit online self-promotion, aggressive behavior, and attention-seeking, vain, exhibitionist, self-adulatory, socially insensitive, and egotistic behaviors. Additionally, considering that individuals with Machiavellian traits may face difficulties in face-to-face interactions, they may prefer online communication. Since they also may have low adaptability and emotional intelligence, as well as high emotional manipulation and non-disclosure, they may feel more comfortable in the online space (Kircaburun & Griffiths, 2018). Individuals who score high on the psychopathy scale exhibit impulsive, antisocial, selfish behaviors, seek stimulation, and show no signs of remorse, empathy, or guilt. These psychological traits may increase the tendency toward problematic internet use. Wei and Tiliopoulos (2012) argue that individuals with dark personality traits are capable of recognizing the emotional experiences of others, although they do not experience emotional distress when exposed to the suffering of others. They argue that this lack of emotional responsiveness may allow individuals with high levels of the dark triad traits to exploit others without any concern for the consequences (Wai & Tiliopoulos, 2012). These networks actually provide a space for repairing a damaged ego. Profile sharing and interpersonal conversations are seen as

impulsive behavior and actions in individuals with a deficit in emotion regulation. To explain these results, it can be argued that managing the emotions of others is positively linked to dark personality traits. Dark personality traits, especially narcissism and antisocial (psychopathic) personality, are related to difficulties in emotion regulation following negative events.

The findings of the present study showed that problematic use of social networks among adult Instagram users is positively and significantly related to emotion regulation. These results are consistent with the findings of prior studies (Ghafoori & Haghayegh, 2021; Horwood & Anglim, 2020; Şakiroğlu, 2019).

To explain these findings, it can be said that the characteristics of individuals with a deficit in emotion regulation reflect deficits both in the cognitive-experiential domain of emotional response and at the level of interpersonal emotion regulation, inability in accurately identifying feelings, significant weakness in verbal transmission, and emotional helplessness to others, failure in seeking help from others provides the possibility for the emergence of abnormal behaviors as a result of continuous life with others. When individuals use social networks excessively, this usage may be a way to escape from reality and divert the mind from stress and negative emotions, and individuals with emotion regulation problems are more likely to use the internet as a strategy to regulate their negative emotions, leading to internet addiction (Alimoradi et al., 2019; Asrese & Muche, 2020). In general, results have shown that emotion regulation plays an important role in individuals' adaptation to stressful life events. Increasing control and regulation of emotions, as well as self-regulation, facilitates the optimal management of mood and enhances problem-solving ability and exploitation of emotions. Inadequate emotional development, difficulty in organizing behavior and emotion, and having negative emotions are characteristics of individuals with addictive behavior. Lower emotional regulation and higher negative emotion regulation strategies can prevent harmful use of virtual space.

In this regard, findings suggest that individuals with internet addiction are more likely to have difficulties in emotion regulation, aligning with the results of other studies (Elhai et al., 2018; Hadadian et al., 2020; Moeinoddini et al., 2021). Individuals with internet addiction use more maladaptive strategies compared to non-addicted individuals; thus, it can be concluded that individuals with deficits in regulating their emotions often avoid negative



emotions through addictive behaviors; because they lack appropriate strategies to manage their emotions; although failure in controlling psychological and physical dependency causes them to have more negative emotions (Hadadian et al., 2020).

The current study's results showed that emotion regulation mediates the relationship between problematic use of social networks in adult Instagram users and dark personality traits in a positive and significant manner. The results of the current study are in line with the findings of previous studies (Brand et al., 2019; Ghafouri & Haghayegh, 2021; Horwood & Anglim, 2020; Mohebi et al., 2020; Şakiroğlu, 2019).

To explain these results, the mediating role of emotion regulation in the relationship between problematic use of social networks and dark personality traits can refer to the model by Brand, Young et al. (2016), which includes the person-affect-cognition-execution (I-PACE) model. This model states that specific facilitating variables such as personality traits, use of motives, social cognitions, and symptoms of psychological pathology affect the perception of internal and external cues. It is also assumed that the perception of those cues leads to specific emotional and cognitive responses, which are also influenced by mental coping style, emotion regulation strategies, and inhibitory control, leading to the decision to use a particular online program, for example, problematic use of social networks (Brand et al., 2019). It appears that individuals with maladaptive personality traits are at a greater risk of developing addictive behavior, especially when they have difficulties in regulating their emotions.

It can be concluded that individuals who seek admiration and self-enhancement, such as narcissistic individuals and those who show less empathy for achieving personal goals, face more problems in controlling their use of social networks. It seems that impulsive, non-empathetic, selfish, manipulative, and merciless individuals have difficulties in regulating their emotions, which could lead to greater vulnerability in developing problematic use of social networks. These findings confirm previous research (Sirois et al., 2015; Tao et al., 2016) indicating that an ineffective coping style can be described as a reinforcing mechanism that increases the risk of problematic internet use when examining specific personality traits. Furthermore, it can be assumed that inefficient emotion regulation strategies act as reinforcing mechanisms for individuals to experience rewards or compensate for (emotional) deficiencies using social networks. Inability to manage emotions may be

associated with an ineffective coping style and may also indicate a more fear-driven approach in which individuals with maladaptive personality traits attempt to compensate for this inefficient emotion regulation strategy using social networks, leading to repetitive behavior and problematic use. On the other hand, it has been established that dark triad traits (antisocial, Machiavellianism, and narcissism) are associated with lower levels of empathy and the experience of negative emotions as an emotional component, especially high scores in antagonism cause difficulty in experiencing negative emotions (Wai & Tiliopoulos, 2012) and difficulty in processing emotional states may play a fundamental role in forming dark traits, especially antisocial tendencies. Consequently, given that individuals with dark personality traits are associated with certain social media behaviors (like self-promotion, selfies, etc.) and express their inclinations, it is logical that their behaviors have similar motivations.

## 5. Limitations & Suggestions

Due to time constraints, self-report questionnaires were used, as there was no opportunity for deeper implementation of the research within the timeframe of the present study, which could affect the results. The researcher's geographic limitation, only conducting the study in Tehran, was another limitation of the research. Data were collected using self-report measures, which are prone to known biases. The cross-sectional nature of the study prevents the delineation of causal relationships. Another limitation of the present study is its execution during the COVID-19 pandemic, which could affect the research variables and problematic use of social networks due to quarantine periods. Future research should examine the relationship between specific personality traits and additional risk factors against the background of specific socio-demographic variables. Future studies should use more in-depth methods to investigate existing relationships. The cross-sectional design prevents determining causal relationships based on current findings. Future studies should adopt a longitudinal design to understand the direction of relationships found in the current study. It is suggested that the current research be conducted in other cities and cultures and compared with the results of the present study to generalize the results to the broader society with more confidence. To prevent internet addiction among individuals in society, it is recommended to provide necessary training to improve emotion regulation skills. Also, emotion regulation training should be included as a fundamental component in various treatments, such as

emotion-focused therapy and emotion regulation therapy. Considering the role of mobile phones in people's lives, it is recommended that this important issue be addressed in counseling centers, schools, or at the city level, and necessary training and information regarding the negative impact of excessive use of mobile phones on physical and psychological health be provided to the public. It is suggested that educational packages on proper use of the virtual world be developed and presented to the public in the form of books, posters, banners, pamphlets, audio files, or educational posts on Instagram. It is recommended that educational packages on emotion and its management and control be offered through workshops in administrative, educational environments, and even neighborhoods by psychologists and counselors under the supervision of organizations such as municipalities and health centers. It is suggested that the results of the research be used in the counseling and individual treatment section, where counselors and psychologists address these issues and provide suitable solutions to clients.

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### Declaration of Interest

The authors of this article declared no conflict of interest.

### Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

### Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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### Authors' Contributions

Mana Chamzadeh Ghanavati contributed to the research design, data collection, and the implementation of the educational package based on the theory of five-factor positive thinking skills. Mohsen Golparvar provided expertise in research methodology, data analysis, and interpretation. Hadi Farhadi assisted in data analysis and overall research coordination.

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