

Social Media Addiction among Turkish Young Adults Is Partially Mediated by Automatic Thoughts and Social Problem-Solving Skills

ABSTRACT

Objective: This study aimed to reveal a process model of the relations between automatic thoughts, dysfunctional attitudes, social problem-solving skills, and social media addiction. In this context, the aim was to investigate the mediating effect of automatic thoughts and social problem-solving skills in the relationship between intermediate beliefs and social media addiction.

Methods: This study included 56 male and 107 female young adults aged 18-25 years who were referred to the psychiatry outpatient clinic of Yenimahalle Training and Research Hospital, Ankara, Turkey. The participants completed sociodemographic data form, social problem-solving inventory revised form, social media addiction scale, dysfunctional attitudes scale short form, and automatic thoughts questionnaire. In the data analysis, the effect and mediation were tested by the process method.

Results: Dysfunctional attitudes positively affected social media addiction and automatic thoughts and negatively affected social problem solving. According to this, the effect of dysfunctional attitudes on social media addiction was mediated by automatic thoughts and social problem solving.

Conclusion: In this sense, both cognitive and behavioral processes can be useful in the treatment of social media addiction, and cognitive behavioral therapies can be an effective option.

Keywords: Social networking, addiction, social media, problem solving, cognitive behavioral therapy

Introduction

The use of social media (interacting with others through online electronic forums, such as Facebook, Instagram, Twitter, YouTube, and so on) has become an extremely popular tool for social interaction.¹ Social media addiction is thought to affect approximately 5% of young people, and it is defined that social media is more addictive than smoking and alcohol.^{2,3}

Different theoretical models provide explanations for the development of problematic social media use (for example, cognitive-behavioral or social skills or socio-cognitive models).⁴ One of the most comprehensive studies to explain Internet addiction is the cognitive-behavioral model created by Davis. This model places maladaptive cognitions at the center of pathological Internet use. Davis's cognitive-behavioral model showed that maladaptive cognitions may be directly related to the symptoms of pathological Internet use, and subsequent studies have supported this hypothesis with strong evidence.⁵⁻⁷ Caplan⁸ made additions to the model; he suggested that people who lack the skills of self-disclosure prefer online social interaction rather than face-to-face communication.

Zurilla et al⁹ have defined the concept of social problem solving as "a cognitive-behavioral process created by individuals to find effective ways of coping with problem situations they



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face in daily life." There are several processing steps. First, perceptual skills allow the identification of specific clues in the emotional expression of the interactive partner. Second, the cognitive components provide an understanding of the other person's thoughts, feelings, and intentions (that is, theory of mind and empathy). Third, there are performance-based steps, such as choosing an appropriate alternative to solve the interpersonal problem.⁹

Bingham¹⁰ has also suggested that the problem-solving process is influenced by factors, such as creative thinking, intelligence, emotions, will and action, needs, goals, values, skills, habits, and attitudes. The problem-solving process is influenced by one's personal perceptions or cognitive assessment.¹⁰⁻¹³ At this point, one of the problems that make it difficult to find solutions to problems is that individuals have negative orientation toward the problems they face. Negative orientation to problems includes negative thoughts, beliefs, or attitudes about the problems.¹⁴ According to this information, it is possible to consider social problem-solving skills as a cognitive-behavioral process.

In a meta-analysis of the treatment of Internet addiction, no difference was reported between pharmacological and psychological approaches.¹⁵ However, in our pilot study, the frequency of social problem-solving behaviors and negative cognitions of individuals are seen to be related to social media addiction.¹⁶ In this sense, a thorough understanding of psychological approaches could be beneficial.

Therefore, this study aimed to investigate social media addiction and the effect of maladaptive cognitions and social problem-solving skills in a Turkish sample. Given the lack of information about the development of social media addiction, this research is primarily an exploration.

It is important to understand both the cognitive and behavioral aspects of the addiction process. According to the cognitive theory, dysfunctional attitudes are considered the source of automatic thoughts. Automatic thoughts are the most superficial part of the cognitive structure and are the part that comes in closest contact with our attitudes. Social problem solving takes place at a point that has a cognitive basis and behavioral consequences. Increasing use of social media has produced behavioral consequences. In this sense, we wanted to test the cognitive-behavioral model of addiction. We reveal dysfunctional attitudes (intermediate beliefs) on the basis of the theoretical model.

We have put forward three different hypotheses for this. Dysfunctional attitudes (intermediate beliefs) originate from core beliefs; conditional rules can be explained as attitudes and assumptions,¹⁷ and these dysfunctional attitudes can be a resource for systems of behavior and thought.¹⁸ Our first hypothesis was that the severity of dysfunctional attitudes might be a predictor of social media ad-

diction (Hypothesis 1). Secondly, we hypothesized that automatic thoughts as a product of dysfunctional attitudes¹⁷ could mediate this relationship (Hypothesis 2).

Third, we assumed that social problem-solving skills, which constitute both the cognitive and behavioral part of this model, would be a negative tool in this relationship (Hypothesis 3) (Figure 1).

Methods

Procedure

This study included 56 male and 107 female young adults aged 18-25 years who were referred to the psychiatry outpatient clinic of Yenimahalle Training and Research Hospital, Ankara, Turkey. After a mental state examination and structured clinical interview for the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) Axis I evaluation (reviewed by DSM-5 in terms of changing diagnostic criteria), individuals who did not meet the diagnostic criteria for a mood disorder, psychotic disorder, or anxiety disorder and who were literate and volunteered for the study were included. Patients with mental retardation, epilepsy, head trauma, dementia, and psychiatric comorbidities were not included in the study. As a preliminary evaluation criterion (not a diagnostic criterion), it has been determined that the weekly social media usage period was > 8.5 hours. Ethics committee approval was received by the Ankara Yıldırım Beyazıt Yenimahalle Training and Research Hospital Clinical Research Ethics Committee (Approval Date: April 30, 2019; Approval Number: 2019/38).

Participants

In the first phase, of 198 participants who volunteered and whose social media use was > 8.5 hours,¹⁹ 23 were excluded because they had psychiatric disorder diagnoses. Moreover, 12 participants were not included in the analysis owing to random marking, and the study was completed with 163 participants. Hence, the study sample included volunteers who applied to the clinic for various subjective problems, such as relational problems, concerns about the future, and desire to seek counseling. Informed consent forms were signed by all participants.

The sociodemographic data of the participants are shown in Table 1. The participants included 107 (65.6%) female and 56 (34.4%) male members. Their average age was 20.6 years, and the average educational year they received was found to be 13.5 years (Table 1).

Measures

After the participants provided consent to participate in the study, they were given a sociodemographic data form, social problem-solving inventory revised form, social media addiction scale (SMAS), dys-

MAIN POINTS

- Intermediate beliefs are associated with social media addiction.
- Intermediate beliefs and automatic thoughts affect positively social media addiction.
- Social problem solving skills affects negatively social media addiction.

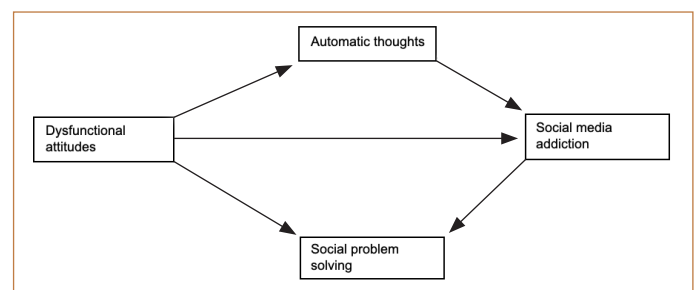


Figure 1. Conceptual Model

functional attitudes scale short form, and automatic thoughts questionnaire as self-tests.

Sociodemographic Data Form: It is a form prepared by the research team to examine the sociodemographic data such as age, sex, educational status, and psychiatric and medical diseases of the volunteers.

Social Media Addiction Scale: The SMAS has been developed by Tutgun et al²⁰ to measure the social media addictions of university students. It is a 5-point Likert-type scale including 41 items. In this study, individuals with a score ≥ 74 were included and evaluated as those with social media addiction.

Dysfunctional Attitude Scale-Short Form (DAS-R): Dysfunctional attitudes scale includes 40 items to evaluate dysfunctional assumptions and beliefs and was developed by Weisman and Beck.²¹ Batmaz and Ozdel²² created the short form in Turkey, and validity and reliability studies were conducted. The attitudes dealt with in this scale reflect intermediate beliefs between negative automatic thoughts and deeper core beliefs.

Automatic Thoughts Questionnaire (ATQ): This scale includes 30 items, and the answers range from 1 to 5.²³ High scores indicate that the individual's negative automatic thoughts occur frequently. The scale was adapted to Turkish, and validity and reliability studies were conducted.²⁴

Social Problem-Solving Inventory Revised (SPSI-R): Belzer et al²⁵ have developed a tool to measure individuals' problem-solving orientation and skills. The SPSI-R consists of 2 dimensions: problem-orientation and problem-solving styles. Eskin and Ayca²⁶ have found that both long and short form of this inventory had sufficient validity and reliability.

Statistical Analysis

The data were evaluated with the Statistical Package for the Social Sciences 15.0 (SPSS Inc.; Chicago, IL, USA) for Windows Evaluation Version. The sociodemographic information of the patients was shown as percentages. Numerical variables were indicated with mean and standard deviation, whereas categorical variables were indicated by numbers and percentages. The Levene test evaluated the homogeneity of the variance of the groups.

In the data analysis, impact and mediation were tested by the process method. Until recently, the causal steps approach by Baron and Kenny²⁷ in the statistical testing of a possible mediating effect between 2 variants has received great interest and has been extensively favored by researchers. In recent years, some researchers have suggested that the Baron and Kenny²⁷ method is not a powerful method for mediational tests and that a modern approach based on the bootstrap technique provides more valid and reliable results.^{28, 29}

In the modern approach, the primary focus of the mediation model analysis is to calculate the indirect and direct impact values and to make inferences from these calculated values. The indirect effect is the product of the effect of the independent variable on the mediating variable and the effect of the mediating variable on the dependent variable. In the mediation effect model given according to the modern approach, if the indirect effect of X is significant as a result of the bootstrap test, the mediation model is considered valid.

Results

Table 2 presents the scores obtained from the related scales. The mean ATQ, DAS-R, SMAS, SPSI-R scores were 41.32 (SD = 19.67), 89.43 (SD = 37.33), 101.77 (SD = 43.67), and 55.58 (SD = 18.69), respectively.

Dysfunctional attitudes ($\beta = 0.81$, standard error [SE] = 0.05, 95% confidence interval [CI] = 0.72-0.90) positively predicted social media addiction, explaining 65.47% of the variance ($R^2 = 0.65$, $F = 305.26$, $P < 0.005$). Dysfunctional attitudes ($\beta = 0.81$, SE = 0.04, 95% CI = 0.72-0.90) positively predicted automatic thoughts, explaining 66.13% of the variance ($R^2 = 0.66$, $F = 314.39$, $P < 0.005$). Dysfunctional attitudes ($\beta = -0.80$, SE = 0.05, 95% CI = -0.89, -0.71) negatively predicted social problem solving, explaining 63.99% of the variance ($R^2 = 0.64$, $F = 286.09$, $P < 0.005$).

Dysfunctional attitudes ($\beta = 0.30$, SE = 0.07, 95% CI = 0.15-0.44) and automatic thoughts ($\beta = 0.47$, SE = 0.08, 95% CI = 0.32-0.62) positively predicted social media addiction, and social problem solving ($\beta = -0.16$, SE = 0.07, 95% CI = -0.31, -0.01) negatively predicted social media addiction; the variables explained 76.80% of the variance in social media addiction ($R^2 = 0.77$, $F = 175.48$, $P < 0.005$). When the indirect effects of dysfunctional attitudes on social media addiction were examined, automatic thoughts (CI = 0.227-0.544) and social problem solving (CI = 0.012-0.244) were significant because the low and high values of the CI did not consist of 0. According to this, the effect of dysfunctional attitudes on social media addiction was mediated by automatic thoughts and social problem solving (Table 3).

Table 1. Sociodemographic Characteristics of the Participants

Gender	n (%)		
Female	107 (65.6)		
Male	56 (34.4)		
	Mean (SD)	min	max
Age	20.6 (2.3)	18	24
School year	13.5 (2.2)	8	18

Abbreviations: SD, standard deviation; min., minimum; max., maximum.

Table 2. The Mean Scores of ATQ, DAS-R, SMAS, and SPSI-R (n = 163)

	n	min.	max.	Mean (SD)
ATQ	163	13	83	41.32 (19.67)
DAS-R	163	30	148	89.43 (37.33)
SMAS	163	41	184	101.77 (43.67)
SPSI-R	163	14	89	55.58 (18.69)

Abbreviations: ATQ, automatic thoughts questionnaire; DAS-R, dysfunctional attitudes scale short form; SMAS, social media addiction scale; SPSI-R, social problem-solving inventory-revised form; min., minimum; max., maximum.

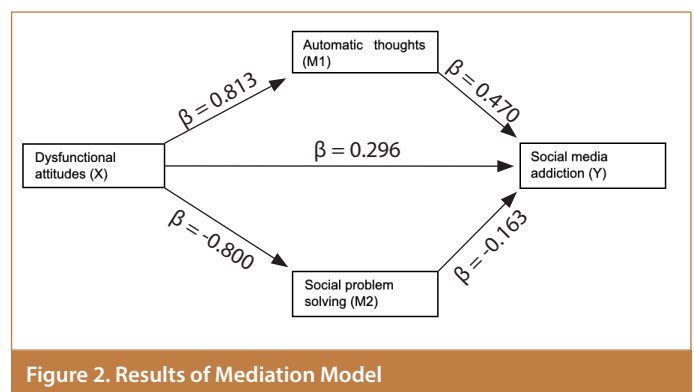


Figure 2. Results of Mediation Model

Table 3. Mediation Role of Automatic Thoughts and Social Problem Solving in the Effect of Dysfunctional Attitudes on Social Media Addiction

Effect/way	B	sh.	%95 lower GA.	%95 upper GA.	R ²	F
X -> Y						
DAS-R > SMAS	0.8091 ^a	0.0463	0.7177	0.9006	0.6547	305.2598 ^a
X > M1						
DAS-R > ATQ	0.8132 ^a	0.0459	0.7227	0.9038	0.6613	314.3950 ^a
X > M2						
DAS-R > SPSI	-0.7999 ^a	0.0473	-0.8933	-0.7065	0.6399	286.0956 ^a
X > Y; M1;M2 > Y						
DAS-R > SMAS	0.2960 ^a	0.0707	0.1563	0.4357	0.7680	175.4811 ^a
ATQ > SMAS	0.4702 ^a	0.0778	0.3166	0.6239		
SPSI > SMAS	-0.1634 ^a	0.0755	-0.3124	-0.0144		
X > M1;M2 > Y						
DAS-R > ATQ > SMAS	0.3824 ^a	0.0778	0.2272	0.5441		
DAS-R > SPSI > SMAS	0.1307 ^a	0.0594	0.0122	0.2443		

Abbreviations: SE, standard error; CI, confidence interval; DAS-R, dysfunctional attitudes scale short form; SMAS, social media addiction scale; ATQ, automatic thoughts questionnaire; SPSI-R, social problem-solving inventory-revised form.

^aP < 0.05.

Discussion

Although studies have started to clarify the relationship between social media use and cognitive-behavioral factors, this relationship has still not been clearly explained. To contribute to the elucidation of this uncertainty, this study carried out a process model, including automatic thoughts and social problem-solving skills. The results showed that social media addiction was positively associated with dysfunctional attitudes, and Hypothesis 1 was supported. In this study, the relationship between automatic thoughts, social media addiction, and dysfunctional attitudes was mediated, and Hypothesis 2 was supported. Social problem solving negatively mediated the relationship between social media addiction and dysfunctional attitudes, and Hypothesis 3 was supported. These results provided an explanation of how dysfunctional attitudes were linked to social media addiction (Figure 2).

Young³⁰ has argued that negative core beliefs could be associated with pathological Internet use to overcome perceived inadequacies. Subsequent studies assumed that negative core beliefs and cognitive distortions also contribute to the pathological use of Internet.^{5,31}

According to Davis,³¹ an element that contributes to the causal way of pathological Internet use is related to the social context of the individual. The high online social interaction preferences of people with socializing problems and maladaptive cognitions have also been identified as the main correlations of social networking site addiction, and these 2 factors have been added to the cognitive-behavioral model of pathological Internet use.^{4,32} Davis³¹ explains that "the vicious circle of cognitive distortions and their negative enhancers facilitate pathological Internet use symptoms and negative behaviors associated with spending too much online time."

It would be useful to interpret these findings through cognitive theory.

Cognitive schemes control information processing as a control mechanism. When a scheme is activated, interaction occurs with the systems of affect, motivation, and behavior in its orbit. The resulting biased beliefs can be true, false, conditional, or definite (for example, nobody loves me when I'm not on the Internet). In this case, secondary evaluations of the emotions or feelings that emerge are also

under the influence of the schema.³³ The affected cognitive system in the scheme orbit can also be expected to directly and indirectly affect behavioral systems (for example, since I am not loved when I am not on the Internet, I have to go online more).

It can be said that social problem-solving skills have 3 pillars on the basis of perceptual, cognitive, and performance (behavior).¹⁴ Previous studies have highlighted the relationship between dysfunctional attitudes and poor problem-solving skills.³⁴⁻³⁶ In this sense, problem-solving strategies have been incorporated into the Beck's cognitive therapy model for the best modification of cognitive distortions.³⁷ Although the main objective of cognitive-behavioral therapy (CBT) is to use individuals' successful experiences to evaluate cognitive distortions, concrete behavioral tasks provide better problem-solving skills throughout the therapy.³⁸ Studies have reported that CBT is effective in improving individuals' problem-solving assessments.³⁹

On this theoretical basis, we assumed that maladaptive cognitions and inadequate social problem-solving skills could be associated with social media addiction.

In this study, the participants included people who applied for an examination, although these individuals could not be diagnosed with a mood disorder, anxiety disorder, or psychotic disorder. This is among our limitations because it was a group of participants seeking treatment. Therefore, automatic thoughts, which were the most primary aspect of the cognitive structure in these individuals, may differ from that of the general population. In addition, considering the reasons for these people to apply to the outpatient clinic, their social problem-solving skills may also be different from those of the general population. In addition, a control group was absent. The scales were self-reported; as in all self-reported scales, sloppiness in terms of filling the scales could occur, but this also does not make it possible to evaluate cognitive avoidance.

Moreover, 107 (65.6%) of the participants in our study were women. Recent research has shown that problematic social media use has a higher prevalence among female users than among male users.^{40,41} Unfortunately, in studies evaluating different aspects of problematic social media use, sex distribution was often unbalanced owing to the

over-representation of women,^{41,42} which may be explained by the willingness of women to participate in such studies. Considering the positive findings obtained from this study, it is thought that studies with larger groups will contribute to the literature.

In conclusion, dysfunctional attitudes are associated with social media addiction through both direct and automatic thoughts and social problem-solving skills. In this sense, both cognitive and behavioral processes can be useful in the treatment of social media addiction, and CBTs can be a practical option.

Ethics Committee Approval: Ethics committee approval was received for this study from the Clinical Research Ethics Committee of Ankara Yıldırım Beyazıt Yenimahalle Training and Research Hospital (Approval Date: April 30, 2019; Approval Number: 2019/38).

Informed Consent: Informed consent was obtained from the patients who participated in this study.

Peer-review: Externally peer-reviewed.

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