

ORIGINAL RESEARCH

The Relationship Between Suicidal Behavior and Metacognitive Characteristics in Male Patients with Antisocial Personality Disorder

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Abstract

Objective: Antisocial personality disorder (ASPD) is a mental disorder with impaired psychosocial functioning and carries a high risk for suicide. Previous studies have investigated the role of metacognitive considerations in individual behavioral differences and provided ample evidence of significant relationships between emotional processes, cognition, metacognitive beliefs, and behavior. A close relationship between metacognitive functions and personality disorders was suggested. This study investigated the relationship between the metacognitive characteristics of male patients with ASPD and suicidal behavior.

Methods: We included seventy-four patients diagnosed with ASPD according to DSM-5 criteria, who applied to Çukurova University Faculty of Medicine Balcalı Hospital, Department of Psychiatry, as the patient group and 74 healthy volunteers as the control group. Sociodemographic data form, Metacognition Questionnaire (MCQ), Beck Suicidal Ideation Scale (BSIS), Suicidal Behaviors Questionnaire (SBQ), Beck Depression Inventory (BDI), and Beck Anxiety Inventory (BAI) were administered to the participants.

Results: The control and ASPD groups were similar in terms of age, years of education, educational and marital status, and place of residence ($p>0.05$ for each). The MCQ and its subscales, BSIS, SBQ, BDI, and BAI scale scores, were significantly higher in the patient group ($p<0.05$ for each). Patients who have previously attempted suicide have significantly higher MCQ – uncontrollability and danger ($p=0.028$), MCQ – need to control thoughts subscales ($p=0.016$), and BSIS, SBS, BDI, BAI ($p<0.001$ for each) mean scores than those who have not attempted suicide. There was a positive correlation between SBQ and MCQ-cognitive confidence ($p=0.04$) and MCQ – need to control thoughts ($p=0.01$) subscales in the patient group.

Conclusion: Metacognitive beliefs may be associated with the severity of suicidal behavior, depression, and anxiety symptoms in male patients with ASPD. The negative metacognitive functions, especially beliefs about the need to control thoughts, may help determine the risk of suicide in individuals with ASPD, and metacognitive therapy methods may be beneficial for those patients.

Keywords: Antisocial Personality Disorder, Metacognition, Suicide

INTRODUCTION

Antisocial personality disorder (ASPD) describes individuals with a widespread pattern of ignoring and violating the rights of others, beginning in childhood or early adolescence, and continuing into adulthood. Patients with ASPD fail to develop stable interpersonal relationships (1,2). Psychosocial, biological, and cultural factors play a role in ASPD development. A growing

body of research, including prospective longitudinal studies, suggests that a complicated interplay between biological and environmental factors contributes to the development and maintenance of ASPD (1). The prevalence of ASPD in the general population is 2-3%, and prevalence rates are considerably higher in men than in women (3-5). ASPD is highly associated with impaired psychosocial functioning, depression, substance use, and domestic violence (6-8). Mortality rates are high in individuals with ASPD due to unnatural causes such as suicide, murder, and accidents (9).

Globally, death rates from unnatural causes have been reported as 13% for personality disorders (10). Studies have shown that suicidal behavior increases among individuals with reactive aggression, repetitive delinquency, and antisocial personality traits (11,12). Impulsive behaviors are the main common feature

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associated with suicidality in personality disorders (13-15). Individuals with personality disorders, especially antisocial personality traits, have higher rates of suicide-related deaths (16,17). Individuals with ASPD are at high risk for more than one suicide attempt in their lifetime (18). Substance use, an essential factor in suicide, is closely related to ASPD. At the same time, inconsistent employment and low marriage rates are high in individuals with ASPD. These associations are an important predictor and predisposing factor for suicide in ASPD (19).

Metacognition is defined as awareness and control of one's learning (20). Metacognition, or "thinking about thinking", refers to an individual's ability to recognize internal states and consequently construct a complete, complex representation of himself/herself and others, including all elements of their experiences, thoughts, feelings, and behaviors (21). Metacognition plays an essential role in cognitive functions and adaptive behavior. A dysfunction in the metacognitive system may predispose the person to display maladaptive behaviors and develop various psychopathologies (22). Dysfunctional cognitive strategies and coping strategies are the results of a dysfunctional metacognitive system (23,24). Metacognitive dysfunctions underlie the social influence specific to personality disorders (25). Individuals with personality disorders typically fail to develop adaptive reactions to universal life tasks (26,27). For this reason, it has been suggested that there is a close relationship between metacognitive deterioration and personality disorders (28).

Metacognition is involved in developing coping strategies for complex problems, unusual situations, and problematic relationships (29). In general, it is essential for the individual to evaluate their resources and consider options for coping with stressful situations (29). Some individuals become vulnerable to suicide, especially when exposed to stressful life events (30,31). There is evidence that individuals have positive and negative metacognitive beliefs about suicidal ideation. In the study by Bradvik and Berglund, participants reported that they experienced suicidal thoughts as "undesirable," "beyond their intention," and "ego-dystonic" that they tried to repress and avoid (32). Vatne and Naden determined that participants had positive metacognitive beliefs about suicidal ideation, such as "suicidal ideation can provide consolation for continuing to experience the life" (33).

Although the relationship between metacognition and personality disorders has been investigated, there is no

enough data on suicidal behavior and metacognitive features in patients with ASPD. Our study aimed to investigate the relationship between metacognitive features and suicidal behavior in patients with ASPD. We hypothesized that negative metacognitive characteristics would be higher in men with ASPD than in healthy volunteers, and there would be a relationship between negative metacognitive beliefs and suicidality. We thought our results would contribute to assessing the risk of suicide in patients with ASPD and determining additional strategies for managing suicidal behavior.

METHODS

We included 84 male patients who applied to the Çukurova University Faculty of Medicine Mental Health and Disorders outpatient clinic with an anger complaint and were diagnosed with ASPD according to the Diagnostic and Statistical Manual of Mental Disorders, Version 5 (DSM-5) (26). Seventy-four healthy men with similar sociodemographic characteristics, living in a similar environment, not diagnosed with a psychiatric disorder, not receiving treatment, and having no complaints were included in the control group. Before the interview, the first author gave information about the study, and all participants signed an informed written consent form.

We included literate patients with ASPD, aged between 18-65, who were not diagnosed with mental retardation, delirium, or dementia which could affect cognitive functions. We also did not include patients with comorbid mental diagnoses and alcohol substance use disorder.

After giving information about the study, the first author interviewed the patients and filled out the sociodemographic-clinical data form. In the second stage, the participants filled the Metacognition Questionnaire (MCQ), Beck Suicidal Ideation Scale (BSIS), Suicidal Behaviors Questionnaire (SBQ), and Beck Depression Inventory (BDI), and Beck Anxiety Inventory (BAI). The clinician accompanied the participants who had difficulty filling in the self-report forms and explained the unclear points. Four patients were excluded from the study because they filled in the scales incompletely, and six wrote random answers to the questions. The study was carried out with 74 patients with ASPD and 74 healthy controls.

Power Analysis

With a moderate effect size (Cohen's $d = 0.50$), 0.80

power, and 0.05 error ($p = 0.05$), we calculated the sample size for the study to be 128 with the G Power program (version 3.1) (34). Therefore, we concluded that a sample consisting of 148 individuals had adequate power.

Measures

Sociodemographic/clinical Data Form: The data form created by the researchers includes characteristics such as age, marital status, education period, place of residence, physical illness, family history of psychiatric disorders, smoking, alcohol and substance use, duration of disorder for the patient group, history, and the number of suicide attempts.

Metacognition Questionnaire (MCQ): MCQ is a 30-item scale that evaluates metacognitive features (23). Items are scored between 1 and 4, and a score between 30 and 120 can be obtained from the scale. MCQ has five subscales consisting of six items: positive beliefs, uncontrollability, and danger, cognitive confidence, need to control thoughts and cognitive awareness. High scores on the scale indicate an increase in pathological metacognitive functions (35).

The positive beliefs subscale includes positive beliefs about worrying, which helps plan or solve problems. According to this factor, anxiety is a desired personality trait. Uncontrollability and danger subscale consists of two dimensions. The first dimension is the belief that 'controlling anxiety is essential for a person to function and stay safe.' The other dimension is the belief that 'anxiety cannot be controlled.' The cognitive confidence subscale is related to the lack of confidence in one's memory and attention skills. The need to control thoughts subscale includes the need to control negative beliefs, including superstition, punishment, and responsibility. These beliefs support that if the person cannot control them, the person is responsible for the harmful consequences that will occur and will be punished. The cognitive awareness subscale represents a person's constant preoccupation with personal thought processes. In the validity and reliability study of the Turkish version, the Cronbach alpha reliability coefficient was 0.86 (35).

Beck Suicidal Ideation Scale (BSIS): BSIS is a 19-item scale that evaluates suicidal thoughts, plans, and intention to commit suicide. Items are graded on a three-point scale (0-2), and total scores range from 0 to 38. Higher scores indicate an increased risk of suicide (36). In the validity and reliability study of the Turkish version, the Cronbach alpha coefficient was 0.84 (37).

Suicidal Behaviors Questionnaire (SBQ): SBQ consists of four items. The first item, 'suicide plan and attempt,' is related to a past suicide history and is scored between 0 and 5. The second item, 'suicidal ideation,' is scored between 0-4. The third item, 'threat of suicide,' is evaluated as yes (1) or no (0). The fourth item, 'repeatability of suicide,' is scored between 0-4. The scale scores range from 0 to 14, and higher scores are associated with the severity of suicidal behavior (38). In the Turkish validity and reliability study, the Cronbach alpha coefficient was 0.73 (39).

Beck Depression Inventory (BDI): BDI evaluates the emotional, cognitive, somatic, and motivational factors of depression. It is a self-report scale consisting of 21 questions and evaluated in the range of 0-3 points. An increase in the scale's score indicates an increase in the severity of depression (40). Validity and reliability were demonstrated in Turkish society (41).

Beck Anxiety Inventory (BAI): BAI is a Likert-type self-report scale consisting of 21 items that measure the frequency of anxiety symptoms. Each item is scored between 0-3, and the higher the total score, the higher the frequency of anxiety (42). A Turkish validity and reliability study was conducted, and the Cronbach alpha coefficient was 0.93 (43).

Statistical Analysis

IBM SPSS 25 program (IBM Corp, Armonk, NY) was used in the analysis of the data. In cases where the skewness and kurtosis values were between -1.5 and $+1.5$, the z-score was between -3.29 and 3.29 , and the histograms were considered, the distribution of variables was considered to be normally distributed (44). Pearson correlation analysis was used in the case of normal distribution, and Spearman correlation analysis was used in the case of non-normal distribution. Mediation analyses were performed using the bootstrap method, the maximum probability estimation method, and continuous variables. To examine the relationship between categorical variables, Yates' statistic was used if the expected number of observations was between 5 and 25, and the Chi-square test was used if it was greater than 25. ANOVA and Brown-Forsythe for variables with more than two subgroups in cases where the assumption of normality of comparison between the groups according to the scale means is provided; Independent groups t-test was used for two-group variables. The mean and standard deviation (mean \pm sd) values of the numerical variables were given according to the groups. In the absence of normality,

the Mann-Whitney U test was used to determine the difference between groups according to the medians of the scales. The p-value of <0.05 was considered significant in the analyses.

RESULTS

The control and ASPD groups were similar in terms of age, years of education, educational and marital status, and place of residence. The sociodemographic variables of the groups are shown in Table 1.

Considering habits; 63 (85.1%) participants in the ASPD group and 35 (47.3%) in the control group were smokers; 29 (39.2%) participants in the ASPD group and 16 (21.6%) in the control group had alcohol use; in the ASPD group

39 (52.7%) participants had substance abuse, and in the control group, there was no substance abuse. The difference between the two groups in terms of smoking, alcohol, and substance use was statistically significant ($\chi^2=23.68$, $p<0.001$, $\chi^2=4.60$, $p=0.03$, $\chi^2=50.27$, $p<0.001$, respectively).

Twenty-two (29.7%) participants in the ASPD group and 13 (17.6%) in the control group had a physical illness. There was no statistically significant difference between the ASPD and control groups in terms of diagnosis of physical illness ($p=0.12$). 15 (20.3%) patients in the ASPD group and 3 (4.1%) in the control group had a family history of mental disorders. The ASPD group's family history of mental disorder was statistically significantly higher than the control group ($p=0.01$).

Table 1. The sociodemographic variables of the participants

	ASPD (n=74)	Control (n=74)	
Age, years (mean±sd)	33.27±9.06	33.54±9.18	t=-0.18 p=0.86
Years of education (mean±sd)	9.48±3.18	9.58±3.15	t=-0.18 p=0.86
Educational Status n(%)			p=1*
Literate	2 (2.7%)	2 (2.7%)	
Primary school	10 (13.5%)	9 (12.2%)	
Middle School	25 (33.8%)	25 (33.8%)	
High school	35 (47.3%)	36 (48.6%)	
University	2 (2.7%)	2 (2.7%)	
Marital status n(%)			
Married	42 (56.8%)	36 (48.6%)	$\chi^2=0.98$ p=0.32**
Single	32 (43.2%)	38 (51.4%)	
Place of residence n(%)			
Rural	15 (20.3%)	14 (18.9%)	$\chi^2=0.04$ p=0.84**
Urban	59 (9.7%)	60 (81.1%)	

ASPD: Antisocial personality disorder, mean±sd: mean ± standard deviation
 **: Chi-square analysis, *: Fisher's Exact Test

Thirty-six (48.6%) patients in the ASPD group had at least one suicide attempt at any time, and the mean number of suicide attempts was 0.82 ± 1.15 . The mean age of onset of the disorder in the ASPD group was 20.67 ± 4.50 years, the mean disorder duration was 12.59 ± 8.11 years, and the mean number of hospitalizations for psychiatric treatment during the disorder was 1.97 ± 3.92 .

All scale scores were significantly higher in the ASPD group when MCQ and its subgroups, BSIS, SBQ, BDI, and BAI, were compared in the two groups. Table 2 presents

the mean scores or median values of the participants' MCQ and subscales, BSIS, SBQ, BDI, and BAI scales.

In the ASPD group, the mean scores of MCQ – Uncontrollability and Danger, MCQ – Need to Control Thoughts subscales, BSIS, BAI, and median values of BDI and SBQ of the patients who attempted suicide were significantly higher than the patients who did not. Table 3 presents the comparisons of the scale scores or median values between patients with and without previous suicide attempts.

Table 2. Comparison of scale scores of the participants

	ASPD (Mean±SD)/M(1Q-3Q)	Control (Mean±SD)/M(1Q-3Q)		p
MCQ	79.05±16.51	63.36±15.21	t= 6.01	p<0.001
Positive Beliefs	14.12±4.59	11.66±3.54	t=3.65	p<0.001
Uncontrollability and Danger	16.95±3.61	12.65±3.61	t= 7.25	p<0.001
Cognitive Confidence	14.09±5.17	11.78±4.12	t=3.01	p=0.003
Need to Control Thoughts	16.38±5.09	12.73±3.77	t=4.96	p<0.001
Cognitive Self-Consciousness	18(15-20)	15(11-17)	U= 1747.5 Z= - 3.81	p<0.001
BSIS	12(3-17.25)	2(0-6)	U= 1244.5 Z= - 5.80	p<0.001
SBQ	2(0-5.25)	0(0-1)	U= 1625.5 Z= - 4.64	p<0.001
BDI	22(10.75-34)	7(3-10.5)	U= 933.5 Z= - 6.93	p<0.001
BAI	24(10.75-36)	4.5(2-8)	U= 703.5 Z= - 7,81	p<0.001

ASPD: Antisocial personality disorder, MCQ: Metacognition Questionnaire, BSIS: Beck Suicidal Ideation Scale, SBQ: Suicidal Behaviors Questionnaire, BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory, Mean±SD: mean ± standard deviation, M (1Q-3Q): median and quartile values

Table 3. Comparison of scale scores according to suicide attempts in the ASPD group

	Previous Suicide Attempt			p
	Absent (Mean±SD)/M(1Q-3Q)	Present (Mean±SD)/M(1Q-3Q)		
MCQ	76.00±16.73	82.28±15.87	t=-1.65	p=0.103
Positive Beliefs	14.11±4.76	14.14±4.47	t=-0.03	p=0.975
Uncontrollability and Danger	16.05±3.49	17.89±3.54	t=-2.25	p=0.028
Cognitive Confidence	13.21±5.27	15.03±4.96	t=-1.53	p=0.131
Need to Control Thoughts	15.00±5.11	17.83±4.70	t=-2.48	p=0.016
Cognitive Self-Consciousness	17.50 (15-19.25)	18.00 (15.25-20.75)	U= 626.5 Z=-0.624	p=0.533
BSIS	7.34±6.65	15.31±6.97	t=-5.03	p<0.001
SBQ	0(0-1.25)	5(3-8)	U=191 Z=-5.53	p<0.001
BDI	13(6-23.5)	28.5(21.25-36.75)	U=272 Z=-4.46	p<0.001
BAI	17.79±12.08	31.47±13.73	t=-4.56	p<0.001

ASPD: Antisocial personality disorder, MCQ: Metacognition Questionnaire, BSIS: Beck Suicidal Ideation Scale, SBQ: Suicidal Behaviors Questionnaire, BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory, Mean±SD: mean ± standard deviation, M (1Q-3Q): median and quartile values

There was no statistically significant relationship between BSIS score and MCQ and its subscales scores in patients with ASPD. There was a weak, positive, and statistically significant correlation between SBQ score and MCQ – Cognitive Confidence ($p=0.04$) and MCQ–Need to Control Thoughts ($p=0.01$) subscale scores. There was also a weak, positive, and statistically significant correlation between BDI score and MCQ – Uncontrollability and Danger ($p=0.02$), MCQ – Cognitive Confidence ($p=0.002$), and MCQ ($p=0.004$) scores. A positive and moderate

correlation was found between the BDI score and MCQ – Need to Control Thoughts subscale score ($p<0.001$). A positive, statistically significant, and moderate correlation was found between the BAI score and MCQ – Cognitive Confidence ($p<0.001$), MCQ – Need to Control Thoughts ($p<0.001$), and MCQ ($p<0.001$) scores and a weak positive correlation was found between MCQ – Uncontrollability and Danger score ($p=0.003$). Table 4 presents the correlations between the scale scores in the ASPD group.

Table 4. The correlations between the scale scores in the ASPD group

	MCQ	Positive Beliefs	Uncontrollability and Danger	Cognitive Confidence	Need to Control Thoughts	Cognitive Self-Consciousness
BSIS	r=0.06 p=0.64a	r=0.04 p=0.74a	r=0.09 p=0.46a	r=0.08 p=0.50a	r=0.15 p=0.20a	r=-0.13 p=0.29b
SBQ	r=0.20 p=0.08a	r=0.07 p=0.57a	r=0.21 p=0.08a	r=0.24 p=0.04a	r=0.32 p=0.01a	r=-0.10 p=0.38b
BDI	r=0.33 p=0.004b	r=0.14 p=0.24b	r=0.27 p=0.02b	r=0.36 p=0.002b	r=0.42 p<0.001b	r=-0.05 p=0.68b
BAI	r=0.43 p<0.001a	r=0.16 p=0.18a	r=0.34 p=0.003a	r=0.42 p<0.001a	r=0.55 p<0.001a	r=0.06 p=0.62b

a: Pearson correlation b: Spearman correlation

ASPD: Antisocial personality disorder, MCQ: Metacognition Questionnaire, BSIS: Beck Suicidal Ideation Scale, SBQ: Suicidal Behaviors Questionnaire, BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory

Evaluation of the mediator role of MCQ and its subscales in the relationship between BDI and SBQ; there was a positive and significant relationship between BDI and SBQ without adding MCQ or its subscales. BDI predicted MCQ or its subscales after MCQ or its subscales were added, and also MCQ or its subscales predicted the SBQ. Since the bootstrap confidence intervals contain “zero,” MCQ or subscales did not have a mediator role in the relationship between BDI and SBQ.

Evaluation of the mediator role of MCQ and its subscales in the relationship between BAI and SBQ; there was a positive and significant relationship between BAI and SBQ without adding MCQ or its subscales. BAI predicted MCQ or its subscales after MCQ or its subscales were added, and also MCQ or its subscales predicted the SBQ. Since the bootstrap confidence intervals contain “zero,” MCQ or subscales did not have a mediator role in the relationship between BAI and SBQ.

DISCUSSION

Our study revealed that metacognitive beliefs were associated with the severity of suicidal behavior, depression, and anxiety symptoms in male patients with ASPD. The other significant result of the study was the positive correlation between the need to control thoughts and suicidal behavior.

Wells and Matthews described the Self-Regulatory Executive Function (S-REF) model to explain and understand the role of metacognition in the mental disorders (45,46). This model is the metacognitive information processing model. “Cognitive Attentional Syndrome (CAS),” which consists of increased self-focus, repetitious and difficult-to-control negative thoughts (anxiety and rumination), maladaptive coping behaviors,

and threat tracking, contributes to the maintenance of psychological difficulties. The CAS is affected by metacognition, which is the monitoring, evaluation, and regulation of cognition (47,48). Metacognition contains both metacognitive knowledge and regulation. Metacognitive knowledge is the understanding that individuals have about their thoughts. Metacognitive regulation refers to strategies used to change thoughts (49). There are positive and negative metacognitive beliefs in the S-REF model. It has been reported that negative metacognitions significantly affect CAS (50). CAS symptoms generally include positive beliefs about anxiety, worries about uncontrollability and danger, cognitive resource limitations, and negative beliefs about the need to control thoughts (51). Emerging evidence suggests that metacognitive beliefs may be a general susceptibility factor for psychological problems, independent of psychiatric diagnosis (52,53).

The relationship between metacognition and psychopathologies was investigated in patients with generalized anxiety disorder, obsessive-compulsive disorder, post-traumatic stress disorder, psychotic disorder, major depression and substance abuse (54). A few studies investigate the metacognitive functions of individuals with ASPD and their relationship with suicidal behavior. The result of our study that patients with ASPD had more negative metacognitive beliefs than the healthy population supports the relationship between CAS and metacognition and mental disorders. Patients with personality disorders have more significant difficulties regulating activities of daily living and coping with problems, and it is plausible that this inconsistency is, to some extent, attributable to their weaker metacognitive abilities. Studies indicate that patients with personality disorders have more dysfunctional

metacognitive abilities than those without personality disorders (28). The results of our study that the MCQ and subscale scores of the ASPD group were higher than the healthy controls is consistent with these data.

Consistent with the increased rates of suicide in patients with ASPD (17,18,55), our study revealed that almost half of the patients had at least one suicide attempt in their lifetime, and that individuals with ASPD who previously attempted suicide had impaired metacognitive beliefs ('uncontrollability and danger' and 'need to control thoughts') compared to those who did not attempt suicide. Cesur et al. determined a positive relationship between suicidal behavior and metacognitive traits of "uncontrollability and danger," "cognitive confidence," and "need to control thoughts" in patients with bipolar disorder (56). Ak et al. indicated that patients with major depression with suicide attempts than those without had more negative beliefs in the "need to control thoughts" and "cognitive confidence" (57). Similarly, our study revealed a positive correlation between cognitive confidence and the need to control thoughts and suicidal behavior in individuals with ASPD. Having metacognitive beliefs based on the idea that thoughts are dangerous or uncontrollable may cause the individual to have a persistent negative thinking style. Individuals who believe their thoughts are uncontrollable and should be controlled; can experience circular thinking patterns, maladaptive coping strategies such as avoidance, thought suppression, and threat monitoring (58). The positive correlation between suicidal behavior and the need to control thoughts in patients with ASPD suggests that in case of being unable to control thoughts, the person could blame himself/herself and believe that he/she should be punished (35). These results indicate that cognitive interventions aimed at metacognition, especially the need to control thoughts, may reduce the suicide rates in individuals with ASPD, a risk group for suicide.

There are strong relationships between the need to control thoughts and especially mood and anxiety symptoms. In prospective cohort studies, it was revealed that metacognitive beliefs predicted anxiety and depression and mediated distress related to psychological symptoms (59-61). In Wells's metacognitive model, dysfunctional metacognitive beliefs increase depression and anxiety symptoms (46). Spada et al. demonstrated that metacognition was positively and significantly associated with perceived stress and negative emotions (anxiety, depression, and neurotic problems) (58). The positive correlation between metacognitive functions

and the severity of anxiety and depression in our study supports that the increase in negative metacognitive features triggers mental distress in individuals with ASPD. We also investigated the mediator role of metacognitive functions in the relationship between suicidal risk factors like anxiety and depression and suicidal behavior, but no mediation role was demonstrated. The results suggest that negative metacognitive beliefs may trigger psychological symptoms, especially anxiety and depression, and suicidal behavior in male patients with ASPD and that anxiety, depression, and metacognitive beliefs may be independent risk factors for suicide.

Our study has some limitations. The sample selection from only male patients and the small sample size limits the generalization of the study's results to all individuals with ASPD. The cross-sectional design of the study prevents establishing a cause-effect relationship. In our study, we accepted every attempt to end life as suicidal behavior, but we did not classify the suicide attempts and suicidal ideation characteristics. Moreover, we did not classify according to recent or past suicide attempts, so we tried to overcome this limitation by evaluating suicidal thoughts.

CONCLUSION

Our study presents that male patients with ASPD have more negative metacognitive abilities than the healthy population and that metacognitive beliefs and severity of suicidal behavior, depression, and anxiety symptoms may be related in individuals with ASPD. It should be considered that negative metacognitive abilities may help determine the risk of suicide in individuals with ASPD and that patients may benefit from metacognitive therapy methods. More research is needed to understand better the metacognitive mechanisms involved in suicidal ideation to develop effective interventions. Studies investigating the metacognitive functions of individuals with ASPD who generally have more negative metacognitive abilities and the effects of these metacognitive functions on psychopathology are limited. Future studies may provide that many symptoms in individuals with ASPD are handled from a metacognitive perspective and that these symptoms are determined as targets for metacognitive therapy.

Ethics Committee Approval: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Çukurova University Non-Interventional Clinical Research Ethics Committee (protocol number:104 on 2020).

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