

The relationship between depersonalization/derealization symptoms and metacognitions in patients with panic disorder

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SUMMARY

Objective: The objective of this study was to examine whether the presence of Depersonalisation/Derealisation symptoms in individuals with panic disorder is associated with metacognitive differences, the frequency with which these individuals experience dissociative symptoms outside of attacks, and the relationship between metacognitions and the severity of panic disorder symptoms.

Method: The SCID-5 was utilized to assess the patient cohort, with the patient group diagnosed with panic disorder by the DSM-V diagnostic criteria. Patients exhibiting comorbid psychiatric disorders were excluded. Subsequently, the Panic Disorder Severity Scale was administered to the patient group, while the Metacognitions Scale-30 and the Dissociative Experiences Scale were administered to both the patient and control groups. The Panic Disorder Severity Scale, the Metacognition Questionnaire-30, and the Dissociative Experiences Scale were employed to assess the severity of panic disorder, evaluate metacognitive functions, and screen for dissociative symptoms.

Results: The study included 58 panic disorder patients and 61 healthy volunteers. In patients with panic disorder, more elevated scores were got in the Metacognition Questionnaire-30, particularly in the subscales measuring the need to control thoughts and the perception of uncontrollability and danger. Patients demonstrated statistically significant more elevated scores on all scales of the Dissociative Experiences Scale. A statistically significant difference was observed in the DES subscales of depersonalization/derealization and absorption between the patient group with and without Depersonalisation/Derealisation manifestation.

Discussion: Although patients with panic disorder exhibited metacognitive contrasts, no statistically significant difference was found between those with and without Depersonalisation/Derealisation. This suggests that the Cognitive Attentional Syndrome may be responsible for the onset of panic attacks. These patients tend to exhibit more severe symptoms. The use of metacognitive therapy may prove beneficial for patients exhibiting these symptoms who demonstrate a somewhat diminished response to conventional cognitive behavioral therapy.

Key Words: Metacognition, Panic Disorder, Depersonalization, Cognitive Attentional Syndrome.

INTRODUCTION

Metacognition is defined as the process of considering one's thinking, encompassing the awareness of one's knowledge and limitations, as well as the capacity to regulate one's thoughts. It delineates the psychological structures, occasions, information and procedures implicated in the regulation, change and understanding of thinking (1). The concept of metacognition was first proposed by Flavell in 1979. By Flavell's conceptualization, metacognition is defined as the understanding of one's cognitive processes and the utilization of this knowledge to regulate cognitive processes (2). In other words,

it examines one's cognitive processes (3). In the early 1990s, when the limitations of cognitive behavioral procedures used in the explanation and therapy of mental disorders were highlighted, the concept of metacognition emerged as a potential solution. It was postulated that any dysfunction in metacognitions played a role in the etiology and progression of psychopathology. Consequently, individuals hold both positive and negative beliefs about their thoughts, which in turn affects their evaluation of experiences (4,5). In other words, dysfunctional metacognitions result in the development of maladaptive behaviors.

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To date, theoretical research has concentrated more on the respiratory and cognitive characteristics of panic disorder. A common feature of cognitive models is the catastrophic misapprehension of physical sensations. For instance, palpitations may be misconstrued as a sign of a heart attack, while a slight shortness of breath may lead to respiratory arrest and death (6). Despite the subclassification of Panic Disorder (PD) as cardiorespiratory, gastrointestinal, non-respiratory, or cognitive, Depersonalisation/Derealisation (DD) symptoms appear to warrant a distinct classification in terms of treatment (7,8,9). A study, diagnosed with panic disorder, reported that 34.7% of the participants exhibited dissociative disorder symptoms during episodes of panic.

Furthermore, it was observed that these patients were more youthful, had an earlier commencement of the disorder, and suffered more from other psychiatric disorders (10). A study accomplished on patients diagnosed with panic disorder revealed that 24.1% of the patients exhibited symptoms of depersonalisation/derealisation during an attack. Furthermore, the patients were experience a greater number of attacks, and demonstrate lower functionality. It was also emphasised that these patients may have a more fierce subtype of panic disorder (11).

The metacognitive theory is concerned with how individuals think and assume that the issue lies in rigid and repetitive thinking manners in reaction to negative thoughts, sensations and beliefs (12). Wells designated this mode of cognition as Cognitive Attentional Syndrome (CAS), characterized by repetitious thought patterns, such as rumination or worry, and other maladaptive coping behaviors, including thought suppression (13). CAS develops as a consequence of metacognitive beliefs and an understanding of the efficacy of repetitive thought patterns and maladaptive coping behaviours. An individual may hold positive beliefs regarding the efficacy of repetitive thought patterns in mitigating perceived threats. One illustrative example is the belief that worrying about the future serves to avoid danger. Wells posits that coping mechanisms related to CAS are the primary factor in pathologies, rather than the underlying maladaptive beliefs (12).

CAS is characterised by a pervasive and persistent form of thinking, commonly referred to as rumination or worrying. This process involves focused attention on the perceived threat and the utilisation of maladaptive coping mechanisms, such as thought suppression, avoidance, explicit and implicit neutralisation, and rituals. In panic disorder, it is the worry about future attacks that ensures the persistence of anxiety. The act of scanning bodily sensations creates an environment conducive to the development of the illness, as it increases the likelihood of subsequent attacks being triggered. Consequently, those with a proclivity for such cognitive and attention-focused response patterns are at risk of perpetuating anxious arousal and experiencing recurrent panic attacks. Such patterns also contribute to the formation of beliefs that anxiety is uncontrollable and has harmful consequences (12).

In light of the aforementioned information, it is necessary to ascertain whether patients presenting with depersonalisation/derealisation symptoms in the context of panic disorder could be considered a distinct subgroup in terms of metacognitions. It is also important to determine whether different treatment approaches can be employed in the treatment of these patients compared to others. Furthermore, it is essential to investigate whether these patients exhibit DD symptoms outside of the context of panic disorder. Finally, it is crucial to scrutinize whether there is a noteworthy contrast in terms of metacognitions and DD scores when healthy individuals and panic disorder patients are compared. A review of the literature reveals that no study has examined the association between DD and metacognitions in patients with panic disorder. The inclusion of metacognitions in studies across different psychopathological fields may result in discrepancies in diagnosis and treatment approaches. This could pave the way for new developments in the field.

METHOD

Selection of Sample Groups

The study cohort comprised patients diagnosed with panic disorder by the clinician version of the Structured Clinical Interview for DSM-5 disorders

(SCID-5). The psychological assessment was conducted on volunteers between 18 and 65 who had applied to the Bağcılar Training and Research Hospital Psychiatry Outpatient Clinic and consented to partake in the study. The control group corresponded for age and gender and did not present with any psychiatric disorders.

A comprehensive anamnesis was conducted on the study participants, and the SCID-5 and a semi-structured Sociodemographic and Clinical Data Form were employed at the outset of the treatment. The SCID-5 is a structured interview devised to assess the presence and severity of mental disorders, while the Sociodemographic and Clinical Data Form gathers sociodemographic information and clinical data. Patients with other psychiatric disorders were excluded by applying the SCID-5, and solely patients with a diagnosis of panic disorder were contained in the study. The presence of symptoms consistent with DD was identified through the administration of the SCID-5. The Panic Disorder Severity Scale (PDSS) was applied to assess the severity of panic disorder in panic disorder patients. The Metacognition Questionnaire-30 (MCQ-30) was given to the patient and healthy groups to evaluate their metacognitive functions. Similarly, the Dissociative Experiences Scale (DES) was administered to the patient and the healthy control group to screen for dissociative symptoms. All patients included in the study were informed orally and in writing about the intention and method of the study, and their written informed consent was received. All interviews pertinent to the study were conducted by the same interviewer.

Data Collection Tools

Sociodemographic Data Form: All participants in the study were required to conduct a data form prepared by the researchers, which was designed to collect sociodemographic and clinical information. This included data on age, gender, educational status, psychiatric disorder, psychiatric drug use, and smoking.

Structured Clinical Interview for DSM-5 Disorders (SCID-5): The utilisation of the structured clinical

interview facilitates the achievement of standardisation, which serves several purposes. These include the enhancement of diagnostic validity and reliability, the prevention of missed diagnoses, the creation of a common language in studies, and the provision of epidemiological data through the utilisation of diagnostic criteria. The Turkish validity and reliability of the SCID-5 was evaluated by Elbir et al. (14).

Panic Disorder Severity Scale (PDSS): The seven-item, semi-structured, physician-scored PDSS, which has been documented to retain adequate psychometric properties, provides a grading of panic frequency, anticipatory anxiety, getaway of physical feelings, agoraphobia, and impairment in work and social functioning (15). To ensure the consistency of measurement, scoring is conducted for the preceding month. The Turkish validity and reliability of the scale have been established (16).

Metacognition Questionnaire-30 (MCQ-30): The scale was devised by Catwright-Hatton and Wells and thereafter, a 30-question brief form of the same scale was created by the same authors (4). A higher score on the scale indicates an increase in pathological and dysfunctional metacognitive activity. The Turkish version comprises five subscales that are conceptually distinct but related to one another. A Turkish validity and reliability study was evaluated by Tosun and Irak (3).

Dissociative Experiences Scale (DES): The scale allows for the evaluation of different manifestations of dissociation, including amnesia, depersonalisation, distractibility and absorption. It is not a diagnostic scale, but it is useful in detecting chronic dissociative experiences. The Turkish validity and reliability of the scale was evaluated by Şar et al. (17).

Statistical Analysis

Continuous variables were expressed as mean \pm standard deviation and/or median (min-max), while categorical data were expressed as numbers and percentages. The Kolmogorov-Smirnov test was employed to evaluate the normality of continuous variables. In studies where two groups of data were

Table 1. Demographic characteristics of the groups

	Patient group (n=58)	Control group (n=61)	<i>p</i>
Age (year) (Mean-SD)	35,9-11,6	34,2-8,8	0,376*
Sex (n,%)			
Female	41 (70,7)	43 (70,5)	0,981**
Male	17 (29,3)	18 (29,5)	

* T-Test was used. ** Chi-square test was used.

Abbreviation: SD: Standard deviation

found to fit a normal distribution, an independent groups t-test was employed. In contrast, when the data did not fit a normal distribution, a Mann-Whitney U test was utilized for comparison. A chi-square test was employed to compare categorical data. The linear relationship between the scales was analysed utilizing the Pearson correlation test. The analyses were conducted utilizing IBM SPSS (Statistical Package for Social Sciences) version 22.0 (IBM Corporation, Armonk, NY, USA). The statistical significance level was set at $p < 0.05$. It was determined that 61 individuals per group (122 individuals in total) would be sufficient to test the null hypothesis, assuming a calculated effect size of $d=0.51$, an alpha error (p-value) of 0.05, and a 1-beta error (power) of 0.80. The analyses were conducted using the G*Power Statistical Program, version 3.1.9.4, developed at the University of Düsseldorf in Germany.

RESULTS

The study included 58 panic disorder patients and 61 healthy volunteers. No statistically significant difference was obtained between the mean ages of

the groups (35.9 ± 11.6 vs 34.2 ± 8.8) ($p = 0.376$). In the patient group, 70.7% of the participants were female and 29.3% were male, while in the control group, 70.5% were female and 29.5% were male ($p=0.981$) (Table 1). The mean duration of education in the patient group was 11 years, while the prevalence of smoking was 25.9% in the same group. No statistically significant difference was obtained between the years of education and smoking rates in the control group.

The outcomes demonstrated that the scores for the uncontrollability and danger subscale of the MCQ-30 were higher in the patient group (20 (10-28)) than in the control group (15 (8-25)) ($p < 0.001$). The results demonstrated that the scores on the control of thoughts subscale of the MCQ-30 were statistically significantly more elevated in the patient group [12 (5-20)] compared to the control group [10 (6-18)] ($p=0.001$). The results demonstrated that the cognitive awareness subscale of the MCQ-30 exhibited a contrast between the groups, with the former displaying higher scores [17.5 (7-119)] compared to the control group [14 (7-27)] ($p < 0.001$). The DD subscale scores of the DES were seen to be statistically significant more elevated in the patient group (17.5, 7-119) compared to the control group (5, 0-40) ($p=0.020$). The results demonstrated that the scores on the absorption subscale of the DES were statistically significant higher in the patient group [21 (0-91)] compared to the control group [5 (0-40)] ($p < 0.001$). The amne-

Table 2. Comparison of Metacognition Questionnaire-30 subscales, Dissociative Experiences subscales and Panic Disorder Severity Scale median scores.

	Patient group (n=58) [median (min- max)]	Control group (n=61) [median (min- max)]	<i>p</i>
MCQ-30 Positive Beliefs Subscale	12 (6-21)	12 (7-19)	0.479*
MCQ-30 Uncontrollability and Danger Subscale	20 (10-28)	15 (8-25)	<0.001*
MCQ-30 Cognitive Confidence Subscale	13,5 (6-24)	12 (6-26)	0.137*
MCQ-30 Need to Control Thoughts Subscale	12 (5-20)	10 (6-18)	0.001*
MCQ-30 Cognitive Self Consciousness Subscale	17,5 (7-119)	14 (7-27)	<0.001*
DES DD	7,5 (0-75)	5 (0-40)	0.020*
DES Absorption	21 (0-91)	5 (0-40)	<0.001*
DES Amnesia	5 (0-70)	1 (0-15)	<0.001*
PDSS	13,5 (3-23)	-	-

Table 3. Comparison of Metacognition Questionnaire -30 subscales, Dissociative Experiences subscales and Panic Disorder Severity Scale median scores according to the presence of DD in the patient group

	DD not present (n=33) [median (min-max)]	DD present (n=25) [median (min-max)]	<i>p</i>
MCQ-30 Positive Beliefs			
Subscale	13 (6-17)	11 (6-21)	0.608*
MCQ-30 Uncontrollability and Danger			
Subscale	20 (14-27)	21 (10-28)	0.642*
MCQ-30 Cognitive			
Confidence Subscale	14 (6-24)	11 (6-21)	0.418*
MCQ-30 Need to Control Thoughts			
Subscale	12 (6-19)	12 (5-20)	0.968*
MCQ-30 Cognitive Self -			
Consciousness Subscale	17 (7-24)	19 (12-119)	0.095*
DES DD	3 (0-70)	15 (0-75)	0.034*
DES Absorption	16 (0-91)	25 (3-81)	0.044*
DES Amnesia	4 (0-60)	7 (0-70)	0.145*
PDSS	13 (6-23)	15 (3-22)	0.337*

* Mann-Whitney U Test was used

Abbreviation: DD: Depersonalization/Derealization, DES: Dissociative Experiences Scale, MCQ-30: Metacognition Questionnaire-30 PDSS: Panic Disorder Severity Scale

sia subscale of the DES demonstrated a statistically significant difference, with higher scores observed in the patient group (5, 0-70) compared to the control group (1, 0-15) ($p < 0.001$). The MCQ-30 cognitive confidence subscale exhibited no statistical significance in the patient group [13.5 (6-24)] compared to the control group [12 (6-26)] ($p=0.137$). The scores for the positive beliefs subscale of the

MCQ-30 were similar between the two groups, and no statistically significant difference was observed ($p > 0.05$) (Table 2).

The patient cohort was divided into two groups based on the presence of DD. There were 25 patients with DD, while there were 33 patients

Table 4. Correlation of Metacognition Questionnaire-30 subscales, Dissociative Experiences subscales and Panic Disorder Severity Scale in the patient group

	N=58	MCQ-30 Positive Beliefs Subscale	MCQ-30 Uncontrollability and Danger Subscale	MCQ-30 Cognitive Confidence Subscale	MCQ-30 Need to Control Thoughts Subscale	MCQ-30 Cognitive Self-Consciousness Subscale	DES DD	DES Absorption	DES Amnesia
MCQ-30 Uncontrollability and Danger Subscale	<i>r</i>	.033							
	<i>p</i>	.806							
MCQ-30 Cognitive Confidence Subscale	<i>r</i>	.221	.338**						
	<i>p</i>	.095	.010						
MCQ-30 Need to Control Thoughts Subscale	<i>r</i>	.274*	.503**	.273*					
	<i>p</i>	.038	.000	.038					
MCQ-30 Cognitive Self - Consciousness Subscale	<i>r</i>	.148	.321*	.037	.408**				
	<i>p</i>	.268	.014	.785	.001				
DES DD	<i>r</i>	.163	.263*	-.010	.308*	-.071			
	<i>p</i>	.221	.046	.942	.019	.596			
DES Absorption	<i>r</i>	.093	.241	.173	.213	-.066	.600**		
	<i>p</i>	.485	.069	.193	.108	.620	.000		
DES Amnesia	<i>r</i>	.131	.249	.259*	.192	-.182	.535**	.706**	
	<i>p</i>	.329	.060	.050	.148	.171	.000	.000	
PDSS	<i>r</i>	-.058	-.039	-.056	.272*	.093	.188	.146	.207
	<i>p</i>	.666	.772	.679	.039	.487	.158	.275	.119

Abbreviation: DD: Depersonalization/Derealization, DES: Dissociative Experiences Scale, MCQ -30: Metacognition Questionnaire -30 PDSS: Panic Disorder Severity Scale

without DD. In the patient population, the scores on the DD and absorption subscale of the DES were seen to be more elevated in patients with DD (15 (0-75) and 25 (3-81), respectively) compared to those without DD (3 (0-70) and 16 (0-91), respectively) ($p=0.034$ and $p=0.044$, respectively). In the patient group, no statistically significant differences were observed in the scores on the amnesia subscale of the DES between patients with DD [7 (0-70)] and patients without DD [4 (0-60)] ($p=0.145$). In the patient group, no statistically significant differences were observed in PDSS scores between those with DD [15 (3-22)] and those without DD [13 (6-23)] ($p=0.337$). In the patient group, no statistically significant differences were observed in the scores of the MCQ-30 cognitive awareness subscale between those with DD [19 (12-119)] and those without DD [17 (7-24)] ($p=0.095$). In the patient group, no statistically significant differences were observed in the scores of the MCQ-30 positive beliefs subscale, MCQ-30 uncontrollability and danger subscale, MCQ-30 cognitive confidence subscale, and MCQ-30 controlling thoughts subscale according to the presence of DD ($p>0.05$) (Table 3).

In the patient group, a positive, low, moderately strong correlation was observed between the uncontrollability and danger subscale of the MCQ-30 and the cognitive confidence subscale of the MCQ-30 ($r = 0.338$, $p = 0.010$). In the patient group, a positive, moderately strong correlation was observed between the scores on the uncontrollability and danger subscale of the MCQ-30 and the thoughts control subscale of the MCQ-30 ($r=-0.503$, $p < 0.001$). In the patient group, a positive, low, moderately strong correlation was observed between the scores of the MCQ-30 uncontrollability and danger subscale and the MCQ-30 cognitive awareness subscale ($r = 0.321$, $p = 0.014$). In the patient group, a positive, low, moderately strong correlation was observed between the scores of the MCQ-30 thoughts control subscale and the MCQ-30 cognitive awareness subscale ($r = -0.408$, $p = 0.001$). A positive, low, moderately strong correlation was observed between the control subscale of the MCQ-30 need to control thoughts subscale and the DD subscale scores of the DES ($r = 0.308$, $p = 0.019$). A positive, strong correlation was observed between the DD subscale of the DES and the

absorption subscale scores of the DES ($r=0.600$, $p<0.001$). A positive, strong correlation was observed between the scores of the DD subscale of the DES and the absorption subscale of the DES ($r = 0.706$, $p < 0.001$). A positive, very strong correlation was observed between the absorption subscale of the DES and the amnesia subscale scores of the DES ($r=0.535$, $p<0.001$) (Table 4).

DISCUSSION

A principal purpose of the study was to investigate the metacognitive aspects differentiating the groups with and without DD in the patient cohort. In the patient group, a positive, low, moderately strong correlation was observed between the scores on the MCQ-30 thoughts control subscale and the scores on the DD subscales of the DES. This could be clarified by the actuality that individuals who are confronted with a distressing situation such as DD, which is challenging to prevent and control, may engage in more frequent and elaborate cognitive processes related to the regulation and management of their emotional response to this situation.

The metacognitive theory posits that psychological disturbances persist due to the effects of the thought process, CAS, on emotional experiences and knowledge. CAS contributes to the keeping of a negative self-concept and the perception of threat through specific pathways. CAS is associated with the activation of positive and negative metacognitive beliefs. The distinction between the metacognitive and ordinary cognitive levels allows for the experience of inner occasions, such as thoughts, beliefs, and emotions, in different modes, including cognitive and metacognitive. Despite the proposal of a metacognitive model for certain psychiatric disorders, no such model has yet been put forth for panic disorder. While there have been previous studies examining metacognitive factors in panic disorder, there is currently no research comparing patients with and without DD symptoms among those diagnosed with panic disorder (13).

A sociodemographic analysis of the study cohort revealed that 70.7% of patients were female, 29.3% were male, and the mean age was 35.9 ± 11.6 years (Table 1). The sociodemographic data of our study

appear to align with those reported in the publications (10,11,18,19).

In studies that have employed a screening approach to identify DD symptoms during panic attacks, the frequency of DD symptoms has been observed to range from 24% to 70%. However, in our study, DD symptoms were identified in approximately 56% of the patient group (10,11,19,20). The prevalence rates of DD found in our study may be influenced by cultural differences of the patient group.

The uncontrollability and danger subscales of the MCQ-30 exhibited differences between the groups in our study. In a study performed in Turkey, the metacognitions of panic disorder patients were evaluated. The outcomes revealed that the uncontrollability and danger subscale was used more frequently, with a large effect size, while the need to control thoughts subscale was used more frequently, with a medium effect size. In the same investigation, no meaningful contrast was identified between the groups in cognitive confidence, positive beliefs and cognitive awareness subscales (21). In a study conducted by Cucchi et al. a meaningful contrast was identified between the 'uncontrollability and danger' and 'need to control thoughts' subscales. The researchers posited that this discrepancy may be attributed to the point that individuals diagnosed with panic disorder tend to perceive a necessity to regulate their cognitive processes to avert negative cognitions about apprehension and to avert catastrophic scenarios. The researchers proposed that the patients efforts to cope with the fear of losing control to prevent a loss of control activated the cognitive attentional syndrome, resulting in a vicious cycle and the perpetuation of the pathology (22). In a study conducted by Morrison and Wells, it was observed that patients with panic disorder exhibited elevated scores on the subscales of uncontrollability and danger and need to control thoughts. One might posit that individuals with panic disorder seek to maintain cognitive control to feel safe. However, this pursuit can inadvertently perpetuate a vicious cycle, as they ultimately believe that worry is unmanageable (3,23). The increase in DD symptoms may reinforce the belief that one cannot control one's thoughts, potentially intensifying the severity of the

attacks and creating a vicious cycle.

In our study, the Cognitive Awareness Subscale, which assesses an individual's ability to monitor and regulate their thought processes, showed a meaningful contrast between groups. This indicates that the patient group, ensured the continuous activation of CAS, thereby entering into a vicious cycle of being alert to dangers at all times.

According to the existing literature, the cognitive confidence scale scores, related to a deficiency of confidence in one's memory and attention abilities, were not statistically significant. This discrepancy in comparison to other studies may be attributed to the generally scarce level of education among the patient group. Concerning the positive beliefs subscale, which encompasses the notion that worrying facilitates the formulation of plans or the resolution of issues, no statistically significant discrepancy was observed between groups. The fact that panic disorder is characterised by sudden and unexpected panic attacks may explain the lack of difference between groups in positive beliefs.

In the field of psychiatry, dissociation is defined as an unconscious defensive mechanism involving the other psychic activities of the individual in any group of mental or behavioural processes. Dissociative symptoms are among the most prevalent in a spectrum of mental health conditions. In the present study, the DES was employed to ascertain the prevalence of dissociative symptoms other than dissociative amnesia in patients with and without DD symptoms, as well as in the control group. A statistically significant contrast was observed between the groups on all subscales of the DES scores for absorption, amnesia and DD. A further study conducted in Turkey investigating the comorbidity of dissociative disorders in patients with panic disorder lends support to our findings (24). In other studies, no meaningful correlation was seen between the severity of panic disorder and patients with DES scores (25,26). In another investigation, it was posited that the utilisation of dissociation as a defensive mechanism in patients exhibiting elevated dissociative scale scores may potentially result in a reduction in the severity of the panic disorder (27). Nevertheless, some litera-

ture suggests that a high dissociative level is associated with a poor answer to cognitive behavioural therapy (CBT) (25).

According to metacognitive theory, the foundation of psychological disorders is a detrimental mode of thinking, designated as CAS. CAS facilitates the perpetuation of negative thought patterns. CAS is characterised by repetitive thinking patterns, including worry or rumination, and a tendency to focus attention on threats and dysfunctional coping mechanisms. The effects of CAS are also evident in the context of panic disorder. Anxiety is heightened when one is preoccupied with the prospect of future attacks. The monitoring of bodily sensations serves to foster an environment conducive to the development of the illness, by increasing the likelihood of subsequent attacks. Therefore, individuals who exhibit a proclivity for cognitive and attention-focused response patterns are at an elevated risk of perpetuating anxious arousal and experiencing recurrent panic attacks. CAS is subject to the influence of erroneous beliefs on cognitive processes. Two distinct domains of metacognitive beliefs are implicated in this phenomenon. Such beliefs can be classified as either positive or negative metacognitive beliefs (13). Positive metacognitive beliefs are associated with the perceived utility of worry, rumination, threat scanning, and other related processes. The other domain pertains to the negative significance and meaning attributed to internal cognitive events. Negative metacognitions encompass beliefs commended to the uncontrollability of thoughts and those about the perceived threat, importance, and meaning of internal cognitive events (28). Such negative metacognitions result in unsuccessful control attempts and the formation of negative and menacing interpretations of cognitive events, which in turn serve to perpetuate the maintenance of the disorder (12). Therefore, as predicted in panic disorder, high scores were observed in the need to control thoughts subscale and the uncontrollability and danger subscales of the metacognitive scale in our study.

The cognitive behavioural therapy model posits that panic attacks are caused by subjectively perceived intense anxiety reactions, rather than objective danger. According to Clark's model, the occurrence of triggers results in an elevation of the level of anxiety, which subsequently gives rise to cogni-

tive misinterpretations (6). This results in a further increase in anxiety, a more pronounced somatic expression of anxiety, and the interpretation of these sensations as catastrophic. The perpetuation of catastrophic thoughts is also a consequence of this process. The objective of cognitive interventions is to facilitate the correction of patients thoughts and beliefs regarding the meaning and results of somatic manifestation associated with panic and anxiety (29). By metacognitive theory, dysfunctional metacognitive beliefs encompass the confirmation of catastrophic misinterpretations that are inevitable in patients diagnosed with panic disorder. It is therefore proposed that metacognitive therapy may prove an efficacious intervention for patients with panic disorder. However, an examination of panic disorder patients at the symptom level revealed no significant differences between those who exhibited DD and those who did not. This finding suggests that regardless of the symptoms experienced by an individual during an attack, CAS is exclusively focused on the attack itself. It is therefore proposed that metacognitive techniques may prove to be of significant benefit to patients diagnosed with panic disorder. These techniques include attentional training, which involves processing non-self-related external material to prevent self-focused perseverative processing in patients with DD; the refocusing of situational attention, which is used to bring new information to consciousness and modify beliefs by preventing attention patterns that maintain unrealistic threat perception; and the technique of distanced self-contemplation, which concerns awareness of internal cognitive events. It may be the case that patients exhibiting DD with a more pronounced severity of panic disorder may derive greater benefit from these techniques.

The extant literature indicates that patients diagnosed with panic disorder who exhibit heightened levels of catastrophic thinking tend to demonstrate suboptimal responsiveness to cognitive restructuring techniques and cognitive behavioural therapy. Meuret et al. (2010) reported that they found benefits in the patient group they followed with acceptance and stability therapy, which is a type of therapy based on mindfulness (30). They suggested that this type of therapy could be trialed in patients who do not profit from classical CBT. In another study, a notable lessening in the severity of panic

disorder was observed following the implementation of mindfulness-based cognitive therapy (31). These findings reinforce our hypothesis that metacognitive techniques are crucial for the effective treatment of panic disorder, particularly mindfulness and attention-oriented interventions, which are especially beneficial for patients with high symptom levels, including those with DD.

The cross-sectional character of the study and some scales completed by the participants themselves, the relatively low educational level of the groups participating in the study, and the fairly small number of patients contained in the study denote potential limitations of the study. While there are studies in the literature that have evaluated dissociative findings and metacognitions separately in patients with panic disorder, our study is the foremost, to the best of our knowledge, to examine these two variables together.

The chief purpose of our research was to examine and debate the hypothesis that DD symptoms engender a metacognitive distinction in patients diagnosed with panic disorder. Additionally, we sought to ascertain the prevalence of dissociative symptoms experienced by these individuals outside of the attack despite the presence of DD at the symptom level. We desired to examine the relationship between metacognitions and the severity of panic disorder symptoms. Finally, we sought to confine the potential efficacy of metacognitive interventions in this patient population.

The findings of our study indicate that, although a meaningful metacognitive contrast was identified between panic disorder patients and healthy participants, no metacognitive difference was discerned between those who exhibited DD during the attack and those who did not. It is postulated that this is because, during the attack, CAS is wholly directed towards the attack itself. It was observed that individuals within the patient group who exhibited DD symptoms also demonstrated a higher prevalence of dissociative symptoms in the absence of the disorder.

In consideration of the aforementioned information, it is postulated that metacognitive therapy may prove efficacious in patients exhibiting more pronounced panic symptoms. This is predicated on

the assumption that metacognitive beliefs that perpetuate catastrophic thinking are indeed effective. The attention training technique, which constitutes one of the fundamental techniques of metacognitive therapy, along with the attention refocusing technique and distant awareness techniques, which are the antithesis of CAS, may prove advantageous for these individuals. Nevertheless, further controlled studies are required in this area.

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Informed Consent

Ethics committee approval was obtained from the Health Sciences University Hamidiye Scientific Research Ethics Committee with the meeting date 07/05/2021, meeting number 2021/16 and decision number 16/4. All procedures followed were in accordance with the ethical standards stated in the Helsinki Declaration of 1975 (in its most recently amended version). Informed consent was obtained from both healthy volunteers and the patients informed consent form was signed by themselves. The authors thanks the all participants for his/her consent.

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Disclosure statement /Conflict of Interests

The authors declare no conflict of interest.

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