

**Depressive Dysfunctional Attitudes and Post-Traumatic Stress
in Victims of Terrorist Attacks**

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The authors declare that they have no conflict of interest.

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This study is part of a broader investigation that was approved by the Ethics Committee of the Faculty of Psychology at Complutense University of Madrid (Spain).

Data availability:

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

Abstract

Background: The DSM-5's new conception of post-traumatic stress disorder (PTSD) includes, as a diagnostic criterion, the presence of persistent and exaggerated negative beliefs, thoughts, or expectations about oneself, others, the world, and one's guilt. These symptoms increase the symptomatic similarity with major depressive disorder (MDD) and with the negative cognitive triad of Beck's cognitive theory of depression and allow us to assume that the dysfunctional attitudes that this theory proposes as a vulnerability factor for MDD could also refer to PTSD. **Objective:** This study aims to examine the relationship between depressive dysfunctional attitudes and the symptoms and diagnosis of PTSD. **Methods:** A sample of 378 adult victims of terrorism completed measures of depressive dysfunctional attitudes (DAS-A), DSM-IV post-traumatic stress symptoms (PCL-S), depressive symptoms (BDI-II), and DSM-IV diagnosis of emotional disorders (SCID-I). **Results:** A significant relationship was found between depressive dysfunctional attitudes and PTSD symptomatology, even after controlling for the effect of depression, sex, age, education level, anxiety, and previous depressive episodes. It was also found that victims with PTSD, with or without MDD, had more depressive dysfunctional attitudes than those without emotional disorders and more achievement-perfectionism attitudes than victims with emotional disorders other than PTSD or MDD. **Conclusions:** The results suggest that depressive dysfunctional attitudes could be a vulnerability factor for PTSD. The results also suggest the need to refine Beck's cognitive theory proposals about dysfunctional attitudes common and specific to each emotional disorder and identify potential therapeutic targets of cognitive therapies for these disorders.

After a terrorist attack, a significant number of the direct and indirect victims may suffer from different mental disorders, especially post-traumatic stress disorder (PTSD) and major depressive disorder (MDD) (García-Vera et al., 2021). For example, the systematic review of García-Vera et al. (2016) estimated a prevalence of 38.9% of PTSD in direct adult victims 1-6 months after an attack and 32.9% at 6-12 months. In addition, the systematic review of Salguero et al. (2011) estimated that the average prevalence of MDD is approximately 20-30% in directly-affected adult victims. Furthermore, among victims of terrorism with chronic PTSD, 47.3% simultaneously suffered from MDD (Gillespie et al., 2002). In the treatment study of Duffy et al. (2007), 63.8% of the victims with chronic PTSD also suffered from MDD at the same time.

This comorbidity seems to be echoed in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), because, among the diagnostic criteria, a new symptomatic grouping for PTSD has been proposed, called "negative alterations in cognitions and mood associated with the traumatic event". This symptomatic grouping is very similar to the symptoms that define depressive disorders (American Psychiatric Association, 2013). Indeed, the new grouping includes emotional symptoms such as disinterest, detachment, affective restriction, and a persistent negative mood (e.g., fear, anger, shame, or guilt). Moreover, it adds the presence of persistent and exaggerated negative beliefs or expectations about oneself, others, or the world and the presence of persistent, distorted cognitions about the cause or consequences of the traumatic event that leads persons to blame themselves or others.

These negative beliefs, expectations, or thoughts described in the DSM-5 grant cognitive depressive symptomatology a specific and relevant place in the clinical picture of post-traumatic stress. For example, the distorted ideas that imply that people

blame themselves for the traumatic event and its consequences are similar to the excessive and inappropriate guilty preoccupations that constitute one of the diagnostic symptomatic criteria of MDD in the DSM-5 (American Psychiatric Association, 2013).

Moreover, the persistent and exaggerated negative beliefs or expectations about oneself, others, or the world are similar to the negative cognitive triad proposed as a proximate and sufficient cause of the rest of the depressive symptoms in Beck's cognitive theory of depression (Beck et al., 1979). According to this theory, the negative cognitive triad represents voluntary and automatic negative and distorted thoughts about oneself, the world, and the future. This triad results from biases and processing errors that, in turn, result from the activation of depressive cognitive schemas whose content is made up of dysfunctional attitudes. These schemas remain latent until a stressor activates them and leads to information-processing consistent with the dysfunctional content of those attitudes (Beck et al., 1979; Beck & Haigh, 2014). Therefore, in Beck et al.'s cognitive theory, the dysfunctional attitudes that form depressive cognitive schemas are the key vulnerability factors for all the symptoms of depression, including the cognitive ones, particularly for a negative view of oneself, the world, and the future.

In this empirical and theoretical context and taking into account the new way of understanding PTSD in the DSM-5, we wondered whether depressive dysfunctional attitudes also play a role in the persistent and exaggerated negative beliefs, thoughts, or expectations about oneself, others, the world, and one's own guilt. These attitudes symptomatically define PTSD according to the DSM-5 and are noted in symptoms that also make up the diagnostic criteria of PTSD.

Background of the Study

Different types of dysfunctional attitudes can make up depressogenic cognitive schemas (Beck & Haigh, 2014). Perhaps the most investigated are the conditional ones

or those based on categorical imperatives that establish unrealistic, inflexible, and inadequate conditions to determine one's worth. These attitudes are assessed by the Dysfunctional Attitude Scale, Form A (DAS-A; Weissman & Beck, 1978), the most used instrument to evaluate them in the research on Beck's cognitive theory or on cognitive or cognitive-behavioral therapy derived from that theory (Cristea et al., 2015; Soflau & David, 2017).

Two studies have examined the relationship between depressive dysfunctional attitudes and PTSD. In a sample of 22 patients with PTSD, Fodor and Perczel Forintos (2013) analyzed the relationship between the symptomatology of PTSD, measured by the Post-Traumatic Diagnostic Scale (PDS; Foa et al., 1997), and dysfunctional attitudes, measured by the DAS-A. The researchers found two positive, statistically significant correlations between the scores of two DAS-A subscales and the total PDS score ($r = .53$ and $.48$). However, they found no statistically significant correlation between the total scores of the two measures, even though it reached a moderate size ($r = .36$). The absence of statistical significance could be due to the lack of statistical power of the small participant sample size. On the other hand, finding statistically significant correlations between two DAS-A subscales and PTSD symptoms would support the hypothesis that depressive dysfunctional attitudes play a relevant role in PTSD. However, this finding is difficult to interpret. Although a statistically significant correlation was also found ($r = .77$) between the symptomatology measure of post-traumatic stress and a measure of depressive symptomatology shown in the Beck Depression Inventory or BDI, the relationships between the measures of depressive dysfunctional attitudes and PTSD, controlling for the effect of depression, were not examined. Thus, the significant relationships found may result from the relationship with a third variable, depression.

Çakır et al. (2014), using the DAS-A, compared a group of 30 women suffering from MDD with another group of 32 women suffering simultaneously from MDD and PTSD related to a traumatic sexual experience. The researchers found that women with MDD and PTSD showed more dysfunctional attitudes than women with only MDD, but only in some specific items of the DAS-A, not in its full scale or subscales. Again, the absence of statistically significant differences between the two groups may be due to the lack of statistical power of the study, given the small sample size of both groups of participants.

In summary, there are only two published studies on the relationship between depressive dysfunctional attitudes and PTSD. These studies have found some suggestive results, yet they are not entirely consistent. Moreover, they are questionable due to the methodological issues, including the absence of control of the effects of depression and the small participant sample size.

Purpose of the Study

This study aimed to examine the relationship between depressive dysfunctional attitudes and the symptoms and diagnosis of PTSD. Further, the study sought to examine this relationship by solving the methodological problems present in the two prior studies. This study follows a dimensional perspective similar to that of the study of Fodor and Perczel Forintos (2013). The relationship of dysfunctional attitudes measured by the DAS-A and a measure of PTSD symptoms was examined using a larger sample of adult victims of terrorist attacks, while controlling for the effect of depressive symptomatology and other sociodemographic or clinical variables that could affect this relationship (e.g., sex, age, anxiety symptoms, number of depressive episodes).

Furthermore, using the same sample of participants but following a categorical perspective similar to that used in the study of Çakır et al. (2014), a group of adult

victims of terrorism who suffered from PTSD or PTSD and MDD was compared with two groups of adult victims who either had emotional disorders other than PTSD or MDD, or who did not have any emotional disorder. This process created four comparison groups.

Methodology

Participants

Participant for the study were purposively drawn from 1,366 adult victims of terrorism who were members of the Association of Victims of Terrorism (AVT) of Spain and were part of a broader investigation of the long-term psychological consequences of terrorist attacks. Participants' verbal informed consent was obtained prior to the telephone interview, and, during the face-to-face interview, they signed an informed consent form to collaborate in a broader investigation on the long-term psychological consequences of terrorism.

The sample selection was carried out in two phases. In phase one, 1,366 adults were contacted by telephone. Twenty-three participants requested the telephone psychological interview in person, while 797 completed the interview by telephone. In phase two, these 820 victims were invited to undergo a second more comprehensive face-to-face psychological evaluation that included various psychopathological questionnaires, including the DAS-A, and a structured diagnostic interview for emotional disorders. Four hundred and forty patients performed this second psychological evaluation, but not all participants completed the DAS-A, so the final sample was reduced to 378.

The results of the diagnostic interview allowed us to identify that 38.5% of the participants suffered from an emotional disorder, the most frequent being PTSD

(16.5%), MDD (12.2%), specific phobia (10.1%), panic disorder (7.7%), and generalized anxiety disorder (6.9%).

The average age of the final sample was 50.3 years (range = 18-86; $SD = 14.15$) and 53.2% of them were women. Of these participants, 34.1% had been injured in a terrorist attack, 40.5% were direct relatives of a person killed in a terrorist attack, and 25.4% were direct relatives of a person injured in a terrorist attack. The terrorist attacks suffered by the participants had occurred an average of 21.4 years ($SD = 11.02$) before they participated in this study. Demographically, 43.1% of the victims had secondary education, 30.2% had university studies, and 21.2% had primary education. The majority of participants (55.3%) were married or living with a stable partner and working at the time of assessment (50%).

Instruments

Structured Clinical Interview for Axis I Disorders of the DSM-IV, Clinician Version (SCID-I CV; First et al., 1997; Spanish version of First et al, 1999). The SCID-I CV evaluates the presence of diagnosable mental disorders according to the DSM-IV. The diagnostic measures of SCID-I CV have good psychometric properties, including good inter-rater reliability and test-retest indices for the diagnosis of both PTSD and MDD (Lobbestael et al., 2010). However, in the present research, only modules A (affective episodes) and F (anxiety and other disorders) were applied for the diagnosis of PTSD, MDD, or other emotional disorders (e.g., anxiety disorders).

Beck Depression Inventory-II (BDI-II; Beck et al., 1996; Spanish adaptation in Beck et al., 2011). The BDI-II is a self-report instrument designed to assess the presence of depressive symptoms and their severity, consisting of 21 items scored from 0 to 3, offering a range of 0 to 63. The BDI-II presents good reliability and validity indices in its original version and its Spanish adaptation (Beck et al., 1996, 2011; Sanz

& García-Vera, 2013). In the terrorism victim sample of the present study, the BDI-II obtained an internal consistency alpha of .94.

PTSD Checklist, specific version (PCL-S; Weathers et al., 1993). The Spanish adaptation of Vázquez et al. (2006) of the PCL-S, designed for victims of terrorist attacks, was used. Both the original version of the PCL-S and its Spanish adaptation have good indices of reliability, convergent validity, and diagnostic validity (Cobos Redondo et al., 2021; Weathers et al., 1993). The PCL-S consists of 17 items that present symptoms of PTSD according to the DSM-IV. In the terrorism victim sample of the present study, the PCL-S obtained an internal consistency alpha of .94.

Beck Anxiety Inventory (BAI; Beck & Steer, 1993; Spanish adaptation of Beck & Steer, 2011). The BAI presents good reliability and validity indices in its original version and its Spanish adaptation (Beck & Steer, 1993, 2011; Sanz et al., 2012). The BAI is a self-report instrument designed to assess the presence of anxiety symptoms and their severity, consisting of 21 items scored from 0 to 3, offering a range of 0 to 63. In the terrorism victim sample of the present study, the BAI obtained an internal consistency alpha of .94.

Dysfunctional Attitude Scale, Form A (DAS-A; Weissman & Beck, 1978). The DAS-A is a 40-item self-report instrument designed to assess the presence and intensity of dysfunctional attitudes characteristic of depressed patients that, according to Beck's cognitive theory of depression, constitute a vulnerability factor for depression. For each DAS-A item, the respondents must indicate on a 7-point Likert-type scale, the degree to which they agree with the attitude reflected in the item. Each item is scored between 1 and 7, providing a total DAS-A score between 40 and 280, with higher scores indicating a higher level of dysfunctional attitudes. The DAS-A has a relatively stable bifactorial structure, which has been replicated in various studies

with different samples of participants, indicating a first factor related to issues of achievement and perfectionism, and a second factor related to issues of dependence and need for approval (de Graaf et al., 2009; Sanz & Vázquez, 1993). These two factors have also been found in a larger sample of victims of terrorism of which the present study is a part (Fausor et al., 2022). Based on these factorial results, the DAS-A also provides scores on a subscale of dysfunctional attitudes of Achievement/Perfectionism and a subscale of dysfunctional attitudes of Dependence/Need for Approval. The scores of the total scale and the subscales of the DAS-A have shown adequate reliability and validity indices in very different populations (de Graaf et al., 2009; Sanz & Vázquez, 1993, 1994). In the present study, the Spanish adaptation of the DAS-A of Sanz & Vázquez (1993) was used, and the scores were calculated in the subscales of dysfunctional attitudes of Achievement-Perfectionism and Dependence-Need for Approval defined by the two homonymous factors found in the larger Spanish sample of victims of terrorism (Fausor et al., 2022). The scores of these two subscales and the total scale also presented adequate indices of reliability and validity in that sample (Fausor et al., 2022). In the specific sample of victims of terrorism of the present study, the total score obtained an internal consistency alpha of .88, the score of the subscale of Achievement obtained an alpha of .82, and the score of the subscale of Dependence obtained an alpha of .75.

Procedure

A psychologist assessed the psychopathological consequences derived from the attack or attacks suffered through the following instruments applied in the following order: SCID-I VC, BDI-II, PCL-S, and DAS-A. All psychologists who acted as evaluators had been specifically trained in conducting the assessments through a university diploma focused on psychological care for victims of terrorist attacks,

observing assessments, conducting supervised assessments, and conducting weekly clinical sessions.

Data Analysis

Statistical analyses were carried out with SPSS, version 25. Pearson correlations between measures of dysfunctional attitudes and measures of depressive symptomatology and post-traumatic stress were calculated, as well as with various sociodemographic and clinical variables that have presented some relationship in previous studies with individual differences in dysfunctional attitudes, specifically, sex, age, marital status (married or living as a couple vs. other statuses), level of education, employment status (currently working vs. other situations), anxiety symptoms, and the number of previous depressive episodes.

Next, the possible existence of collinearity problems among those variables was tested by calculating the tolerance rates and variance inflation factors (VIF), and considering that tolerance rates below .20 indicate potential collinearity problems and indices below .10 indicate serious problems. In contrast, VIF above 12 also suggest a problem of collinearity (Martínez Arias et al., 2015).

Then, multiple regression analyses were performed on each of the measures of dysfunctional attitudes with the measures of depression and post-traumatic stress that had shown a statistically significant correlation ($p < .05$) with those measures of dysfunctional attitudes. These multiple regression analyses were performed controlling for the effect of sociodemographic and clinical variables that had shown statistically significant correlations with dysfunctional attitudes in the present study.

Based on the results of the structured diagnostic interview, the following four groups were created for comparison using the measures of depressive dysfunctional attitudes: with PTSD or PTSD and MDD ($n = 62$), with MDD ($n = 15$), with emotional

disorders other than PTSD or MDD ($n = 70$), and without any emotional disorder ($n = 62$). However, as the small size of the MDD group compromised the study's statistical power, this group was eliminated from the comparisons of the diagnostic groups.

Using the remaining three diagnostic groups, ANOVAs and chi-square tests were conducted. The diagnostic group was used as an intersubject factor for the ANOVAs on the continuous control variables and emotional symptomatology and for the chi-square tests on the categorical variables. In addition, ANCOVAs were conducted using the measures of depressive dysfunctional attitudes, with the diagnostic group as an intersubject factor and the statistically significant sociodemographic control variables as covariates. When these ANOVAs, chi-squares, and ANCOVAs revealed statistically significant results, the three diagnostic groups were compared pairwise with Bonferroni mean comparison tests (continuous variables) or with comparison tests of proportions using the Bonferroni correction of the levels of significance (categorical variables).

Results

Multiple regression analysis on depressive dysfunctional attitudes

Table 1 presents the correlations of the three measures of dysfunctional attitudes of the DAS-A (total scale and subscales of Achievement-Perfectionism and Dependence-Need for Approval) with the seven control variables (sex, age, level of education, marital status, employment status, symptoms of anxiety, and previous depressive episodes) and measures of depressive symptomatology and post-traumatic stress. As shown in Table 1, both depressive and post-traumatic stress symptoms and anxiety symptoms and previous depressive episodes showed statistically significant correlations with the total scale and subscales of dysfunctional attitudes, Achievement-Perfectionism and Dependence-Need for Approval. In the case of emotional symptoms,

these correlations ranged between .25 and .42, and were considered a moderate correlation (.30) according to Cohen's (1988) standards. In the case of previous depressive episodes, the correlations were lower, in the range between .14 and .18, and were considered a small correlation (.1) according to Cohen's (1988) standards. Another three variables showed statistically significant but small correlations (ranging, in absolute value, between .10 and .19) with some of the measures of dysfunctional attitudes, but not with all three. Sex correlated only with the attitudes of Dependence-Need for Approval. Age correlated with the global measure of dysfunctional attitudes and with the attitudes of Achievement-Perfectionism. Educational level correlated only with the attitudes of Achievement-Perfectionism.

Table 1

Next, these seven variables were included in the multiple regression analyses. In a model that explained 21.5% of the variance of the total scores in depressive dysfunctional attitudes ($R^2 = .215$, $F = 13.24$, $p < .001$), results indicated that only age, depressive symptomatology, and symptoms of post-traumatic stress were significantly associated with these scores ($p < .009$, $.001$, and $.036$, respectively; see Table 2).

The size of the beta coefficients and the partial correlations shown in Table 2 indicated that depressive symptomatology was the most important variable to explain the variance of total scores in depressive dysfunctional attitudes (*partial r* = .20) followed by age (*partial r* = .14) and post-traumatic stress symptomatology (*partial r* = .11), such that a higher level of depressive symptomatology, being older, and more significant symptomatology of post-traumatic stress, in that order of importance, were associated with a higher level of global depressive dysfunctional attitudes.

Table 2

The results of Table 2 also indicate that dysfunctional attitudes of Achievement-Perfectionism were significantly associated with age and depressive symptomatology ($p < .002$ and $.020$, respectively; $R^2 = .178$, $F = 10.23$, $p < .001$). This model explained 17.8% of the variance in these dysfunctional attitudes. The size of the beta coefficients and the partial correlations shown in Table 2 indicated that depressive symptomatology was the most important variable to explain the variance of dysfunctional attitudes of Achievement-Perfectionism (*partial r* = .17). This was followed by age (*partial r* = .12), such that a higher level of depressive symptomatology and being older, in that order of importance, were associated with a higher level of dysfunctional attitudes of Achievement-Perfectionism.

Likewise, in a model that explained 12.7% of the variance of the scores in dysfunctional attitudes of Dependence-Need for Approval ($R^2 = .127$, $F = 6.96$, $p < .001$), the results of Table 2 indicate that only depressive symptomatology and post-traumatic stress were significantly associated with these attitudes ($p < .041$ and $.012$, respectively), but not the rest of the variables which showed bivariate correlations. The size of the beta coefficients and the partial correlations shown in Table 2 indicated that the symptomatology of post-traumatic stress was the most important variable to explain the variance of dysfunctional attitudes of Dependence-Need for Approval (*partial r* = .14), followed by depressive symptomatology (*partial r* = .11), such that a higher level of symptoms of post-traumatic stress and depression, in that order of importance, were associated with a higher level of dysfunctional attitudes of Dependence-Need for Approval.

Further, these regression analysis results were not affected by collinearity issues, as all tolerance rates were higher than .28 and all VIFs were lower than 3.53.

Given that, for two of the three measures of depressive dysfunctional attitudes, multiple regression analyses showed that both depressive symptomatology and post-traumatic stress were significantly related to these attitudes, multiple regression analyses were also performed to examine whether the interaction between the two symptomatic measures improved the prediction of the respective regression models. For this purpose, the product of both symptomatic measures was included as a second independent step in the regression analyses. However, in none of the three analyses was the inclusion of the interaction between depressive symptoms and PTSD symptoms statistically significant (in all analyses, the F of change obtained a $p > .05$).

Differences between diagnostic groups in depressive dysfunctional attitudes

Table 3 presents the sociodemographic and clinical characteristics of the three diagnostic groups of victims of terrorism. The chi-square tests and the ANOVAs revealed statistically significant differences between the three groups regarding marital status and employment status ($p < .021$ and $.026$, respectively). Therefore, these two sociodemographic variables were included as covariates in the ANCOVAs that compared the three diagnostic groups in the measures of depressive dysfunctional attitudes.

Table 3

The means and standard deviations obtained in these measures in the three diagnostic groups are shown in Table 4. The ANCOVA results revealed statistically significant differences in the three measures of depressive dysfunctional attitudes ($p < .001$ in all three cases). Subsequent Bonferroni test results indicated that the group with PTSD or PTSD+MDD and the group with other emotional disorders did not significantly differ when comparing their overall dysfunctional attitudes and

Dependence-Need for Approval attitudes. However, both groups showed statistically significant and higher levels of dysfunctional attitudes than the group without emotional disorders (see Table 4). Thus, compared to this last group, the group with PTSD or PTSD+MDD showed a significant difference of large size (Cohen's $d = 0.81$) for the overall score and a moderate difference in size (Cohen's $d = 0.52$) for the Dependence-Need for Approval score. The group with other emotional disorders showed a significant difference of moderate size (Cohen's $d = 0.58$) for the overall score and almost moderate size (Cohen's $d = 0.45$) for the Dependence-Need for Approval score.

Regarding dysfunctional attitudes of Achievement-Perfectionism, Bonferroni's tests also revealed that the group with PTSD or PTSD+MDD showed statistically significant and higher levels of these dysfunctional attitudes than the group with other emotional disorders (Cohen's $d = 0.52$) and the group without disorders (Cohen's $d = 0.84$). In addition, the group with emotional disorders showed significantly higher levels than the group without disorders (Cohen's $d = 0.37$) (see Table 4).

Table 4

Given the significant results reported in Table 4, ANCOVAs were again performed on the measures of depressive dysfunctional attitudes, including additional covariates of depressive symptomatology or post-traumatic stress symptomatology. The results of the ANCOVAs with the additional covariate of symptomatology of post-traumatic stress were similar to those described above but were not exactly the same when the additional covariate was depressive symptomatology. In this case, the differences between the diagnostic groups were not statistically significant for the dysfunctional attitudes of Dependence-Need for Approval ($F = 1.78, p = .17$). However, for the overall measure of dysfunctional attitudes and dysfunctional attitudes of

Achievement-Perfectionism, the differences between the groups were statistically significant ($p = .036$ and $.031$, respectively), but some of the pairwise comparisons of groups were not. Specifically, the group with PTSD or PTSD+MDD did not show statistically significant and higher scores on the total scale of the DAS-A when compared with the group without disorders. However, the group with other emotional disorders did show significant differences. Likewise, the group with other emotional disorders showed statistically significant and higher scores on the DAS-A Achievement-Perfectionism subscale than the group without disorders. In contrast, the group with PTSD or PTSD+MDD did not show these differences, and no significant differences in these scores were found between the group with PTSD or PTSD+MDD and the group with other emotional disorders.

Discussion

This study provides novel data on the relationship between depressive dysfunctional attitudes and PTSD. First, results indicate a significant, direct, and moderate relationship between the symptomatology of post-traumatic stress and depressive dysfunctional attitudes in adult victims of terrorism. This result is consistent with those of the only previous study focused on the same issue, that of Fodor and Perczel Forintos (2013), conducted with a sample of adult victims of different traumatic events (e.g., traffic accident, death of a family member in tragic circumstances, such as suicide, physical/sexual abuse, work accident), although of they had a small sample size ($N = 22$). In the present study, not only was this relationship between PTSD symptoms and depressive dysfunctional attitudes found in a much larger sample of victims, but we also found that this relationship was independent of the relationship between these attitudes and symptoms with depression. Thus, controlling for the effect of depressive symptomatology and other control variables related to dysfunctional attitudes (sex, age,

level of education, anxiety symptomatology, previous depressive episodes), we found that post-traumatic stress symptomatology was related to a global measure of depressive dysfunctional attitudes and the measure of dysfunctional attitudes of Dependence-Need for Approval.

Consistent with the results obtained from a dimensional perspective and seen from a categorical perspective, the results indicate that adult victims of terrorism who suffered from PTSD, with or without MDD, had higher levels of depressive dysfunctional attitudes than adult victims of terrorism who did not suffer from any emotional disorder. Furthermore, in the case of the dysfunctional attitudes of Achievement-Perfectionism, adult victims of terrorism also had higher levels than adult victims of terrorism who suffered from emotional disorders other than PTSD and MDD.

On the other hand, the finding of a relationship between PTSD and depressive dysfunctional attitudes, even after controlling for the effect of depression, could question the hypothesis of content specificity proposed by Beck's cognitive theory (Beck et al., 1979; Beck & Haigh, 2014). Further, the finding suggests that such attitudes are a common vulnerability factor for emotional disorders in general, and not for depressive disorders in particular, especially when victims of terrorism who suffered from emotional disorders other than PTSD and MDD also had higher levels of depressive dysfunctional attitudes than victims of terrorism who did not suffer from any type of emotional disorder.

However, and consistent with the content specificity hypothesis of Beck et al.'s cognitive theory, the results of the present study also indicate that: (1) depressive dysfunctional attitudes are not related to anxiety symptoms, once the effect of depressive and post-traumatic stress symptoms has been controlled; (2) after controlling for the effect of the other emotional symptoms, depressive symptoms are related to the

three measures of dysfunctional attitudes of the DAS-A, whereas the symptoms of post-traumatic stress are not related to its subscale of Achievement-Perfectionism; (3) the partial correlation of depression symptoms with the total DAS-A was significantly higher than the partial correlation of post-traumatic stress symptoms with the total DAS-A (.202 vs. .114, $z = 1.83$, $p < .033$), although similar to the Dependence-Need for Approval subscale (.111 vs. .137, $z = -0.538$, $p < .295$), and (4) victims with PTSD or PTSD + MDD had higher levels of depressive dysfunctional attitudes of Achievement-Perfectionism than victims with emotional disorders other than PTSD or MDD.

Limitations

The results and conclusions of this study should be considered in the light of its limitations. First, this study's correlational and cross-sectional design does not allow conclusions about the cause-effect relationships between depressive dysfunctional attitudes and depressive and PTSD symptoms beyond verifying their relationship. Second, the sample of adult victims of terrorism that participated in the study was not selected through random procedures but was a convenience sample, which entails some caution about the possibility of generalizing the findings and the need to replicate them. Third, the small number of victims of terrorism who had MDD but not PTSD, or who had PTSD but not MDD did not allow a group of only MDD to be included in the comparative analyses or to separate a group of only PTSD from the group that combined victims with PTSD, with or without MDD. Fourth, the study did not include any measure of dysfunctional attitudes that, from the cognitive theory of Beck (Clark & Beck, 2010) or other theoretical or empirical proposals (Gómez de La Cuesta et al., 2019; Janoff-Bulman, 1992; Pugh et al., 2015), could be specifically related to PTSD. For example, previous studies have shown that victims of man-made traumatic events

often present thoughts and attitudes that imply that the world is evil, meaningless, that one has no dignity, or that people are dishonest (Janoff-Bulman, 1992).

Conclusion

Despite its limitations, the present study provides solid results of the relationship between depressive dysfunctional attitudes and PTSD in an issue about which there is hardly any previous research, but which has important implications not only for the cognitive theories of PTSD and emotional disorders but also for the identification of the therapeutic objectives of cognitive therapies for these disorders.

Given that the DSM-5's new conception of PTSD increases the symptomatic similarity with MDD and with the negative cognitive triad of Beck's cognitive theory of depression, it is essential to point out that PTSD diagnosis and symptomatology were measured with instruments reflecting the diagnosis criteria and symptoms of PTSD according to the DSM-IV. Therefore, the instruments did not include the new cognitive symptoms proposed by the DSM-5 to diagnose PTSD for this study.

The present study results also partially support Beck's content specificity hypothesis. However, they suggest the need to refine his proposals about dysfunctional attitudes that are common and specific to each psychological disorder, the need to review dysfunctional attitudes supposedly specific to depression contained in the DAS-A, or both.

Future Research

Results empirically support the hypothesis that depressive dysfunctional attitudes could be a vulnerability factor for PTSD. Therefore, future research should include measures of dysfunctional attitudes supposedly specific to PTSD, and examine their relationship with depressive symptomatology and post-traumatic stress as well as their relationship with dysfunctional attitudes that are supposedly depressive. In

addition, longitudinal or experimental studies are recommended to examine whether those relationships are cause-effect relationships.

The finding of the relation between dysfunctional attitudes of Dependence-Need for Approval and PTSD have significant implications for clinical practice and research. Screening for, and addressing, those dysfunctional attitudes in addition to symptom treatment may improve treatment outcomes for PTSD. Future clinical research should focus on testing this treatment hypothesis as well as other hypotheses concerning to constructs clinically relevant and theoretically related to dysfunctional attitudes of Dependence-Need for Approval. For example, Anderson and Perris (2000) found that these dysfunctional attitudes are linked to the following adult attachment factors: preoccupation, anxiety, and need for approval. These factors can be encompassed in the more general construct of adult anxious attachment which refers to fear of abandonment by partners, distress at perceived rejection by partners, and an excessive need for approval. Interestingly enough, the results of a meta-analysis based on 28 studies support a medium association of anxious attachment and sub-categories of anxious attachment (fearful attachment, preoccupied attachment) with higher PTSD symptoms (Woodhouse et al., 2015).

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Table 1. Correlations of dysfunctional attitude measures (DAS-A) with control variables and measures of emotional symptomatology, and mean, standard deviation (*SD*), and internal consistency coefficients (Cronbach's alpha) of the measures

| Variables | Correlation with the DAS-A | | | Mean | <i>SD</i> | Alpha |
|-------------------------------|----------------------------|-------------|------------|--------|-----------|-------|
| | Total | Achievement | Dependence | | | |
| Control predictors | | | | | | |
| Sex | .01 | .01 | .10* | — | — | — |
| Age | .19** | .19** | .07 | 50.3 | 14.15 | — |
| Level of education | -.08 | -.11* | .02 | 2.09 | 0.73 | — |
| Marital status | .01 | -.07 | .04 | — | — | — |
| Employment status | -.09 | -.09 | -.02 | — | — | — |
| Anxiety (BAI) | .35** | .33** | .26** | 9.47 | 11.43 | .95 |
| Previous depressive episodes | .18** | .16** | .14** | 0.77 | 1.22 | — |
| Interest predictors | | | | | | |
| Depression (BDI-II) | .42** | .38** | .30** | 10.07 | 11.25 | .94 |
| Post-traumatic stress (PCL-S) | .30** | .25** | .25** | 30.04 | 20.97 | .94 |
| Criterion variables | | | | | | |
| Total DAS-A | — | — | — | 113.82 | 33.13 | .88 |
| DAS-A achievement | .87** | — | — | 30.59 | 14.64 | .82 |
| DAS-A dependence | .76** | .55** | — | 22.83 | 8.34 | .75 |

Note. * Statistically significant at $p < .05$. ** Statistically significant at $p < .01$. BAI =

total score on the Beck Anxiety Inventory. BDI-II = total score on the Beck Depression Inventory-II. DAS-A dependence = score on the Dependence/Need for Approval subscale of the Dysfunctional Attitude Scale, form A. DAS-A achievement = score on the Achievement/Perfectionism subscale of the Dysfunctional Attitude Scale, form A. Total DAS-A = total score on the Dysfunctional Attitude Scale, form A. PCL-S = total score on the PTSD Checklist, specific version.

Table 2. Regression of measures of depression, post-traumatic stress, and anxiety on measures of dysfunctional attitudes

| Dysfunctional attitudes / Predictors | Beta | <i>t</i> | <i>p</i> | Partial <i>r</i> |
|--------------------------------------|-------------|-------------|-------------|------------------|
| Total DAS-A | | | | |
| Control predictors | | | | |
| Sex | -.071 | -1.44 | .149 | -.078 |
| Age | .135 | 2.62 | .009 | .141 |
| Level of education | .010 | 0.20 | .840 | .011 |
| Anxiety (BAI) | .065 | 0.76 | .448 | .041 |
| No. of depressive episodes | -.061 | -1.05 | .292 | -.057 |
| Interest predictors | | | | |
| Depression (BDI-II) | .340 | 3.80 | .001 | .202 |
| Post-traumatic stress (PCL-S) | .122 | 2.10 | .036 | .114 |
| DAS-A achievement | | | | |
| Control predictors | | | | |
| Sex | -.059 | -1.16 | .247 | -.064 |
| Age | .124 | 2.33 | .020 | .127 |
| Level of education | -.019 | -0.35 | .724 | -.019 |
| Anxiety (BAI) | .102 | 1.14 | .253 | .063 |
| No. of depressive episodes | -.043 | -0.72 | .470 | -.040 |
| Interest predictors | | | | |
| Depression (BDI-II) | .286 | 3.06 | .002 | .166 |
| Post-traumatic stress (PCL-S) | .068 | 1.12 | .260 | .062 |
| DAS-A dependence | | | | |
| Control predictors | | | | |
| Sex | .048 | 0.91 | .359 | .050 |
| Age | .071 | 1.29 | .197 | .071 |
| Level of education | .087 | 1.59 | .113 | .087 |
| Anxiety (BAI) | .080 | 0.89 | .372 | .049 |
| No. of depressive episodes | -.062 | -1.01 | .309 | -.056 |
| Interest predictors | | | | |
| Depression (BDI-II) | .191 | 2.05 | .041 | .111 |
| Post-traumatic stress (PCL-S) | .155 | 2.53 | .012 | .137 |

Note. Statistically significant predictors at $p < .05$ are in bold. BAI = total score on the

Beck Anxiety Inventory. BDI-II = total score on the Beck Depression Inventory-

II. DAS-A dependence = score on the Dependence/Need for Approval subscale

of the Dysfunctional Attitude Scale, form A. DAS-A achievement = score on the

Achievement/Perfectionism subscale of the Dysfunctional Attitude Scale, form

A. Total DAS-A = total score on the Dysfunctional Attitude Scale, form A.

PCL-S = total score on the PTSD Checklist, specific version.

Table 3. Sociodemographic and clinical characteristics of the groups of victims of terrorism

| Characteristic | With PTSD or PTSD+MDD (<i>n</i> = 62) | With other disorders (<i>n</i> = 70) | Without disorders (<i>n</i> = 231) |
|---|---|--|--|
| Females | 59.7 _a | 60 _a | 47.6 _a |
| Mean age in years (<i>SD</i>) | 49.82 _a (12.27) | 48.3 _a (12.42) | 51.12 _a (15.17) |
| Marital status: married or living as a couple | 53.6 _{a, b} | 73.3 _b | 54.6 _a |
| Level of education | | | |
| Primary | 28.6 _a | 20.6 _a | 21.2 _a |
| Secondary | 42.9 _a | 49.2 _a | 44.7 _a |
| University | 28.6 _a | 30.2 _a | 34.1 _a |
| Employment status: working | 32.3 _a | 40.0 _{a, b} | 50.2 _b |
| Emotional disorders* | | | |
| PTSD | 100.0 _a | 0 _b | 0 _b |
| MDD | 50.0 _a | 0 _b | 0 _b |
| Dysthymia | 16.9 _a | 0 _b | 0 _b |
| Generalized anxiety | 24.2 _a | 14.3 _a | 0 _b |
| Panic | 32.3 _a | 8.6 _b | 0 _c |
| Specific phobia | 24.6 _a | 27.1 _a | 0 _b |
| Agoraphobia | 6.5 _a | 10.0 _a | 0 _b |
| Social phobia | 16.1 _a | 8.6 _a | 0 _b |
| Obsessive-compulsive | 16.1 _a | 12.9 _a | 0 _b |
| Unspecified anxiety | 0 _a | 21.7 _b | 0 _a |
| Adjustment | 0 _a | 14.3 _b | 0 _a |
| Anxiety due to a medical condition | 0 _a | 1.4 _a | 0 _a |

Note. All values are percentages unless otherwise indicated. Means or percentages with

different subscripts differ significantly at $p < .05$ corrected with Bonferroni

method. *Some people suffered from more than one emotional disorder.

Table 4. Measures of dysfunctional attitudes and depressive, post-traumatic stress and anxiety symptoms in the groups of victims of terrorism

| Measures | With PTSD or PTSD+MDD (<i>n</i> = 62) | With other disorders (<i>n</i> = 70) | Without disorders (<i>n</i> = 231) |
|--|--|---|---|
| Depression (BDI-II) | 24.63 _a (12.66) | 12.22 _b (9.88) | 4.93 _c (6.09) |
| Post-traumatic stress (PCL-S) | 51.53 _a (13.27) | 30.96 _b (10.79) | 23.83 _b (21.73) |
| Anxiety (BAI) | 24.51 _a (13.38) | 12.38 _b (10.93) | 4.27 _c (5.75) |
| Mean number of previous depressive episodes (<i>SD</i>) | 2.07 _a (3.64) | 0.67 _b (1.11) | 0.29 _b (0.69) |
| Dysfunctional attitudes | | | |
| Total DAS-A | 134.22 _a (39.30) | 122.92 _a (29.59) | 105.68 _b (29.79) |
| DAS-A achievement | 41.01 _a (19.16) | 32.37 _b (13.65) | 27.51 _c (12.33) |
| DAS-A dependence | 25.88 _a (9.68) | 24.88 _a (8.14) | 21.35 _b (7.62) |

Note. All values are means (with standard deviations in parentheses). Means or percentages with different subscripts differ significantly at $p < .05$ corrected with Bonferroni method. BAI = total score on the Beck Anxiety Inventory. BDI-II = total score on the Beck Depression Inventory-II. DAS-A dependence: score on the Dependence/Need for Approval subscale of the Dysfunctional Attitude Scale, form A. DAS-A achievement: score on the Achievement/Perfectionism subscale of the Dysfunctional Attitude Scale, form A. Total DAS-A: total score on the Dysfunctional Attitude Scale, form A. PCL-S: total score on the PTSD Checklist, specific version.