

CHRONIC THOUGHT SUPPRESSION AND POSTTRAUMATIC SYMPTOMS: DATA
FROM THE MADRID MARCH 11, 2004 TERRORIST ATTACK

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Abstract

Although a considerable number of people either witnessed directly or in the mass media the traumatic scenes of the terrorist attack that took place on March 11th, 2004 in Madrid, only a fraction of Madrid citizens developed posttraumatic symptoms. In this study, posttraumatic stress-related symptoms, degree of exposure, coping strategies related to the attack, and chronic attempts to avoid intrusive thoughts (i.e., thought suppression) were assessed in a general population Madrid sample ($N = 503$) after the attacks. Our results showed that participants with higher scores in chronic thought suppression exhibited higher levels of PTSD symptoms. Higher scores in chronic thought suppression also correlated positively with the use of avoidant coping strategies after the attacks. We discuss the possible common roots of avoidance of intrusive thoughts and avoidant coping strategies and the implications of this relationship for the emergence of stress-related symptoms as well as for public health policies.

1. Introduction

Terrorist attacks are events that can be considered as an important source of traumatic responses (DiMaggio & Galea, 2006; Norris, Byrne, Diaz, & Kaniasty, 2001). Moreover, the fact that terrorism is directly provoked by humans whose only goal is to generate deaths, suffering, and horror may aggravate its psychological consequences (Danieli, Brom, & Sills, 2005). However, not all of those who are directly or indirectly exposed to this type of events develop substantial symptoms of stress or even posttraumatic clinical disorders. For instance, recent studies in community samples have shown that only a rather low percentage of people exposed to terrorist attacks develop clinically significant disorders as a consequence of the attack (e.g., Galea et al., 2003; Vázquez, Pérez-Sales, & Matt, 2006). Although the initial symptom levels are usually high in the first weeks after the attacks (e.g., Blanchard et al., 2004; Muñoz et al., 2004; Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002), these initial responses return to previous levels for most of the people within weeks (Galea et al., 2003; Miguel-Tobal, Cano-Vindel, Gonzalez-Ordi, et al., 2006; Shalev & Freedman, 2005).

What makes some people vulnerable to developing posttraumatic symptoms? Recent meta-analyses (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003) have identified several factors related to the characteristics of the traumatic episode (e.g., severity, sudden, repeated, and intentional events) and clinical and demographic factors (e.g., female gender, low socioeconomic status, previous psychiatric history, previous history of childhood abuse, and lack of social support) that increase the probability of developing stress-related symptoms.

Vulnerability factors related to psychological mechanisms have also received attention as probable etiological components of psychopathological responses to traumatic events. Most of the psychological models of trauma-related responses have emphasized the fact that the magnitude of the responses depends on the way the event is subjectively appraised and is finally accommodated into the individual's self- and world-schemas (Janoff-Bulman, 1992). In processing threatening information, several factors, such as the ability to handle intrusive memories (Brewin, Dalgleish, & Joseph, 1996), the ability to provide meaning to the stressful experience (Davis, Nolen-Hoeksema, & Larson, 1998), or previous beliefs that one's psychological skills are effective to deal with stressful situations (Roussis & Wells, 2006), have all been found to play an important role in coping with traumatic events (see Brewin & Holmes, 2003; Dalgleish, 2004). Research on cognitive processes in stress-related symptoms has consistently found that certain coping strategies such as the use of effortful strategies to avoid thinking of the traumatic event (i.e., thought suppression), are usually not effective to adequately process emotional information (Horowitz, 1986; Lavy & van den Hout, 1990).

The concept of thought suppression, originally developed by Wegner and his group (Wenzlaff, Wegner, & Roper, 1988), is particularly relevant as it highlights the consequences of employing avoidance as a strategy to cope with intrusive thoughts. In a classical paradigm to study thought suppression mechanisms, participants who are requested to suppress an image (e.g., a white bear) typically experience more intrusions in the subsequent period of time than participants who are told to think about such an image. Although the underlying mechanisms of this "rebound effect" are still under discussion (e.g., Liberman & Förster, 2000), this phenomenon has been often found in the literature

(for a detailed discussion, see Wenzlaff & Wegner, 2000) and has been proposed as an explanation of why intrusive images are paradoxically maintained despite the individual's efforts to get rid of them. It has been suggested that thought suppression can be understood as either a state or a trait level. That is, some people could be *chronically* inclined to use thought suppression as a typical way of coping with undesired thoughts (Wegner & Zanakos, 1994). According to this view, chronic thought suppression is defined as the general tendency or desire to suppress distressing thoughts.

After traumatic experiences, trying to block intrusive cognitions and images might be experienced as a useful strategy in the short term by chronic suppressors. However, it might actually interrupt cognitive processing and, consequently, perpetuate the threatening cognitions and the anxiety associated with them. Preliminary evidence for such a relationship has been found in diverse groups of survivors. For example, a study with survivors of rape found that those who developed PTSD showed more difficulties suppressing rape-related thoughts and more frequent rebound experiences than the survivors without PTSD (Shipperd & Beck, 1999). Thought suppression has also predicted PTSD severity in samples of flood survivors (Morgan, Hazlett, Wang et al., 2001) and survivors of traffic accidents (Ehlers, Mayou, & Bryant, 1998, 2003). In evaluating the specific role of thought suppression as a maintenance factor, Mayou, Bryant, and Ehlers (2001) found that thought suppression assessed 3 months after a motor vehicle accident predicted the persistence of PTSD 3 years later. Similarly, Engelhard, van den Hout, Kindt, Arntz, and Schouten (2003) found that patients who showed higher levels of peritraumatic dissociation also showed higher levels of thought avoidance which, in turn, was associated with trauma-related symptoms.

Coping research has also revealed a significant relationship between avoidance strategies and trauma-related symptoms, which is highly relevant in this discussion, as chronic attempts to suppress distressing thoughts might be considered a specific type of avoidant coping strategy. For example, studies with brain injury patients (Bryant, Marosszeky, Crooks, Baguley, & Gurka, 2000) and victims of traffic accidents (Bryant & Harvey, 1995) have found an association between patients' avoidant coping style and PTSD severity. In a sample of burned patients, a pattern of avoidant behaviors at discharge predicted the severity of intrusions 4 months later even after controlling for initial level of intrusions (Lawrence, Fauerbach, & Munster, 1996). An additional study with victims of physical and sexual assault found that specific avoidant coping strategies such as denial by fantasy or mental undoing (e.g., trying to erase memories of the assault) were associated with the persistence of PTSD symptoms (Valentine, Foa, Riggs, & Gershuny, 1996). Thus, it seems that there is a consistent relationship between the use of avoidant cognitive and behavioral strategies and the severity and persistence of stress-related symptoms. However, the relationship between cognitive processes and behavioral avoidance strategies remains relatively unexplored in the context of PTSD research.

The goal of the present study was to investigate the relationship between the tendency to suppress unwanted thoughts and both posttraumatic symptomatology and specific trauma-related coping behaviors in the immediate weeks after the Madrid 11-M terrorist attack. On March 11th 2004, exactly 2½ years after the September 11 attacks on the United States, an unprecedented terrorist attack targeted the citizens of Madrid (Spain). That day, a series of bombs exploded almost simultaneously in three different train stations of the metropolitan area of Madrid, killing 191 and wounding more than 1,500 people. The

September 2001 attacks on American soil instigated the analysis of psychological effects of large scale terrorist attacks on general population (Galea et al., 2002; Schlenger et al., 2002; Schuster et al., 2001). However, perhaps because of the difficulty of designing this kind of study in an emergency setting (North & Pfefferbaum, 2002), until now, the works on the impact of terrorist attacks have focused almost totally on the symptoms and prevalence of psychological disorders, and they lack information on the role of the psychological processes involved in such naturalistic traumatic situations (Mehl & Pennebaker, 2003). Thus, when designing our study a few days after the attack, we included not only clinical measures (e.g., a PTSD questionnaire) but also, among other measures, a self-report measure of a cognitive process (i.e., chronic thought suppression) that is hypothetically related to vulnerability to developing clinical symptoms. Our main hypotheses were twofold. First, it was hypothesized that higher levels of thought suppression would be positively correlated to higher severity of trauma-related symptoms. Our second hypothesis was that higher scores on chronic thought suppression would, in turn, be positively associated with a pattern of avoidant behaviors and cognitions specifically related to the terrorist attack.

2. Method

2.1. Participants

The final total sample consisted of 503 respondents (67% female) whose average age was 31.4 years (SD=14.8). Our sample was made up of 194 university students and 309 individuals from the general population. All participants returned the questionnaires 18-25 days after the terrorist event. We compared our sample with Madrid population as

described in the 2003 official statistics (INE, 2007). Our sample included more women (67% in our sample vs. 53% official census), more participants between ages 18-34 years (67.1% vs. 35.2%), fewer participants between ages 34-49 years (16.3% vs. 27.9%), fewer participants between ages 50-65 years (14.3% vs. 20.3%), and fewer participants over 65 years (2.2% vs. 16.4%).

2.2. Measures

2.2.1. Initial reactions to the event

To explore whether different initial reactions could affect the development of subsequent trauma-related cognitive and behavioral reactions, we used a 10-point rating scale (ranging from 0 = *not at all* to 10 = *extreme intensity*) on which participants rated the intensity of “fear,” “feelings of horror,” and “helplessness” felt in the first hours after the trauma occurred. In addition to these three symptoms that make up DSM-IV-TR Criterion A2 for PTSD (APA, 2000), we also included three additional initial reactions (i.e., fear that someone known to the person could have been hurt, feeling upset and angry, and bodily symptoms such as sweating or trembling) which also may play an important role in the development of traumatic responses in the context of a terrorist incident (Bracha et al., 2004; Brewin, Andrews, & Valentine, 2000).

2.2.2. Posttraumatic stress symptoms

The 17-item self-report measure of posttraumatic stress reactions *Posttraumatic Stress Disorder Checklist-Civilian* (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1993) adequately covers the set of symptoms associated with PTSD as defined in the DSM-IV—that is, Re-experiencing, Avoidance, and Hyperarousal. Items are scored on a scale

ranging from 1 (*not at all*) to 5 (*extremely*). The possible range of scores is 17–65. Test-retest reliability at 2-3 days has been reported at .96 (Weathers et al., 1993) and the overall diagnostic efficiency has been found to be acceptably high at .90 (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). In our study, the scale demonstrated high internal consistency (Cronbach's $\alpha = .89$).

2.2.3. *Exposure to the Events*

A 7-item questionnaire was used to explore the role of exposure in the reactions to the terrorist attacks. The questionnaire was made up of questions from Galea et al. (2002), Schuster et al. (2001), and also items that were recommended by the NIH Office of Behavioral and Social Sciences Research (2002) to assess the degree of exposure to the 9/11 attack. Respondents were asked to report whether they had been injured or physically affected by the attacks and whether they had thought that their life was in risk (both these items were responded on a 3-point rating scale where 0 = *not at all*; 2 = *a lot*); and whether they had directly witnessed the attacks, whether they used to take the train lines where the attacks took place, or had known (a) people, (b) friends, or (c) relatives who were wounded or killed during the attacks (these five items were responded on a 2-point rating scale where 0 = *no*; 1 = *yes*). We obtained a total score of level of exposure by adding the scores of the responses to these items.

2.2.4. *Chronic thought suppression*

The 15-item *White Bear Suppression Inventory* (WBSI, Wegner & Zanakos, 1994) was originally designed to measure chronic thought suppression. Participants are required

to respond to the items (e.g., “I wish I could stop thinking of certain things,” “I often have thoughts that I try to avoid”) using a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*). In this study, we used a shorter version of the scale, proposed by Muris, Merckelbach, and Horselenberg (1996), which excludes five items related to the intrusiveness of unwanted thoughts rather than to thought suppression itself in order to obtain a one-factor solution¹. Internal consistency was high in this sample ($\alpha = .87$).

2.2.5. Coping behaviors related to the traumatic event

An 8-item questionnaire was designed to assess coping behaviors that were used to deal with the consequences of the terrorist attack. It included four questions from Schuster’s et al.’s (2001) *9/11 Questionnaire* (i.e., “I talked to other people about my thoughts or feelings about what happened”, “I turned to prayer, religion, or spiritual feelings”, “I participated in public activities in recognition of what happened”, “I avoided activities like watching TV that would remind me of what happened”) and four additional questions believed to be relevant to the psychological mechanisms that can be activated in such a stressful context (i.e., “I tried do something to help victims”, “I gave support or comfort to people who were close to me”, “I tried to recover my daily routines as soon as possible, to normalize my life”, “I tried to do things to avoid thinking about what happened”). Participants were asked to rate the extent to which they had used each strategy on a 4-point Likert scale (ranging from 1 = *not at all* to 4 = *a lot*).

2.3. Procedure

One week after the March 11, 2004 attack, a class of university psychology students in Madrid was asked to participate in a study on the effects of terrorist attacks in the general population. The students completed a questionnaire and were asked to recruit two more adult persons aged 18 or older who were in Madrid on the day of the terrorist attack. They were encouraged to recruit people who had been affected in some way by the attacks. The final sample was made up of 194 university students (38.6%) and 309 individuals from the general population (61.4%). All participants returned the questionnaires 18-25 days after the terrorist event. The return rate was 66.8%.

3. Results

3.1. Description of the sample

Data from 503 participants were initially included in the study. Twenty participants (4.0 %) reported having been directly exposed to the terrorist attack, and seven (1.4 %) suffered injuries as a consequence of the attack. Seventy-three participants (14.5 %) were daily users of the subway lines that were affected by the attack, and 218 participants (43 %) knew someone affected by the attack; 116 (23%) were friends of some of the direct victims, whereas 32 participants (6.4 %) were relatives of someone directly affected by the attack.

3.2. Posttraumatic symptoms

Table 1 shows the means and standard deviations of posttraumatic symptoms assessed by the PCL-C, which includes the PCL total score and its three subscales (i.e., Intrusions, Avoidance, Hyperarousal). In our sample, the mean PCL-C total score was 31.9

($SD = 12.9$). Using the standard cut-off scores suggested for the PCL (Blanchard et al., 2004; Ruggiero, Del Ben, Scotti, & Rabalais, 2003), 13.3% of the participants scored 44 or above in the PCL-C total scores, whereas 7.2% of the sample scored 50 or above.

Insert Table 1 about here

We also conducted a series of analyses comparing PCL-C scores in students vs. general population but no significant differences in any PCL-C subscale were found (Total PCL-C: $t(497) = .86, ns.$; Intrusive thoughts: $t(496) = 1.8, ns.$; Avoidance: $t(497) = .49, ns.$; Hyperarousal: $t(497) = .21, ns.$).

3.3. Sex differences

An analysis of sex differences showed that women had a more intense reaction than did men as reflected in higher scores on the PCL-C total, $t(487) = 3.15, p < .002$; symptoms of Intrusions, $t(487) = 3.85, p < .001$; and Hyperarousal, $t(487) = 2.97, p < .003$. However, there were no significant sex differences in Avoidance, $t(487) = 1.16, p < .11$. Due to these results, sex was included as a covariate in further analyses.

There were no significant sex differences in the WBSI scores, $t(487) = -1.7, p < .10$.

3.4. Thought suppression and PTSD symptoms

Our first hypothesis was that there would be a positive correlation between thought suppression and PTSD scores. Our results revealed a significant correlation between the WBSI total score and the PCL-C total score, $r = .29, p < .001$, as well as the three PCL-C subscales: Intrusions, $r = .28, p < .001$; Avoidance, $r = .28, p < .001$; and Hyperarousal, $r = .23, p < .001$. The correlational design used might produce a confound in which the tendency to suppress thoughts overlaps with the tendency to have thoughts that one wishes to suppress, which in turn is a typical symptom related to traumatic stress. However, it is interesting to note that the WBSI correlated significantly with the three subscales of the PCL-C, which suggests that a tendency to suppress thoughts is related to a broad spectrum of posttraumatic reactions. Furthermore, to rule out the possibility that this confound was responsible for the association between thought suppression and posttraumatic reactions, we partialled out the effect of exposure by using each participant's composite index of exposure (see Method section). Partial correlations did not show any significant change in the pattern of results on PCL-C total score ($pr = .28, p < .001$; Intrusions, $pr = .26, p < .001$; Avoidance, $pr = .27, p < .001$; and Hyperarousal, $pr = .21, p < .001$), which seems to exclude a confounding effect due to the cross-sectional design used in this research.

In order to better test whether the degree of exposure to the terrorist attack can increase both PTSD symptomatology and thought suppression, thus resulting in a spurious correlation between these variables, we compared the means of both variables in several exposure indexes.

Insert Table 2 about here

As shown in Table 2, in all the exposure-related items of the PCL-C, participants who witnessed the attacks or were directly affected by the explosions scored significantly higher than the rest of participants. However, WBSI scores were not significantly affected by whether or not the people were directly or indirectly exposed to the terrorist attack. The only exception to this was in the question “Did you think that your life was in risk?” where significant differences were found. This item covers a subjective feeling of exposure, which may be affected by the participant’s personality, rather than an objective threat. These results confirm that exposure did not artificially increase the degree of thought suppression, which further contributes to ruling out a spurious correlation between thought suppression and PTSD symptoms.

Some authors have noted that the WBSI includes items of both thought suppression and intrusions (Muris et al., 1996; Rassin, 2003). Thus, we repeated the analyses including only the four WBSI items that, according to the Höping and Jong-Meyer’s factor analysis (2003), are specifically related to thought suppression. With this reduced version of the WBSI scale, the correlations with the PCL-C still remained significant (PCL-C total score, $r = .23, p < .001$; Intrusions, $r = .20, p < .001$; Avoidance, $r = .25, p < .001$; and Hyperarousal, $r = .16, p < .001$). It is important to note that the reduction in magnitude of the correlations may be attributed to a poorer internal consistency found in this four-item version of the WBSI (i.e. Cronbach’s $\alpha = .76$).

3.5. Coping behaviors and thought suppression

Our second main hypothesis predicted a significant relation between thought suppression tendencies and avoidant coping behaviors. As shown in Table 3, only three of the eight coping behaviors correlated significantly with thought suppression. As expected, the two avoidance-related strategies (i.e., “I tried to do things to avoid thinking about what happened,” “I avoided activities like watching TV that would remind me of what happened”) included in this questionnaire did correlate positively with the WBSI scores. Interestingly, the third coping behavior related to thought suppression was “turning to praying and religion,” which cannot be considered an active strategy in the face of a sudden and intense stressful event.

Insert Table 3 about here

All coping behaviors included in the study were positively associated with PTSD symptom severity except for “I tried to recover my daily routines as soon as possible, to normalize my life,” which was not associated with symptomatology. Trying to do things to avoid memories ($r = .42, p < .001$) and avoiding activities because of the memories ($r = .30, p < .001$)—the two avoidant strategies—showed the strongest correlations with severity of symptoms.

3.6. Initial reactions, thought suppression, and avoidant coping behaviors

An intense initial emotional reaction is a diagnostic requirement (Criterion A2) to fulfill a diagnosis of PTSD. We explored whether the intensity of that initial response, in the first hours after the attacks, was associated with thought suppression tendencies. As shown in Table 4, there was a highly consistent pattern of results showing that emotional reactions were significantly and positively correlated to chronic thought suppression.

Insert Table 4 about here

On the other hand, as Table 4 also shows, initial reactions were positively correlated with most of the coping behaviors, suggesting that the way people behave initially might be a consequence, at least in part, of the intensity of their initial reaction.

3.7. Prediction of symptom severity

A hierarchical regression analysis was conducted to explore the relative contribution of the various sets of variables used in this study to predict the severity of stress-related symptoms. Sex, initial reactions, avoidance coping behaviors, and thought suppression were all sequentially included in three steps as predictors of the PCL-C total score. The three steps added significantly to the predictive capacity of the model. The regression model explained 48% of the variance of the overall severity. As shown in Table 5, sex and some initial reactions (i.e., fear, distress, and somatic symptoms) were significant predictors

of the PCL-C total scores; however, both avoidance coping behaviors and thought suppression explained the unique variance of symptom severity. It was noteworthy that the only predictor that seemed to protect participants from developing posttraumatic symptoms was to “I tried to recover my daily routines as soon as possible, to normalize my life” which, as shown in Table 5, correlated negatively with the dependent variable.

4. Discussion

First of all, our results suggest that the psychological distress of our sample is similar to that found in similar studies. For instance, Schlenger et al. (2002) found that 1-2 months after the 9-11 attack, the percentage of people scoring 50 or above in the PCL-Total score ranged from 2.7% (Washington, D.C.) to 11.2% (New York City metropolitan area). Using a cut-off score of 44 or above on the PCL-C, Blanchard et al. (2004) found that, 6-10 weeks after September 11, 11.3% of their sample of US undergraduates from the University of New York at Albany scored above that cut-off score. In our study, 13.3% of the Madrid sample scored 44 or above and 7.2% of the sample scored 50 or above. Despite the fact that the epidemiological implications of using these procedures have been criticized elsewhere (see a further elaboration of this issue in Wessely, 2004; Vázquez, 2005; and Vázquez et al., 2006), our results show that the sample gathered in this study showed a similar psychopathological impact to that found in similar studies in comparable situations.

Cognitive models of PTSD (Dalgleish, 2004) emphasize that the onset of symptoms may depend not only on the appraisal of the threatening situation but also on a number of

characteristics related to the processing of traumatic memories (e.g., intrusiveness, poor elaboration, or strong priming)—see Ehlers and Clark (2000). Within this context, the role of suppression seems particularly important as it may impede efficient processing of the emotional information and, as a result, it may be an obstacle for the integration of the event into previous knowledge (Ehring, Ehlers, & Glucksman, 2006). As hypothesized, we found that thought suppression, as measured by the WBSI, was positively correlated to greater severity of trauma-related symptoms. As we assessed thought suppression after the attack, it could be argued that level of exposure could increase both symptom severity and reported chronic thought suppression. Nevertheless, our data seem to rule out this alternate hypothesis. First, higher levels of exposure are associated with increases in symptom severity, but not with higher scores in thought suppression which suggests that the WBSI is a stable measure not easily affected even by a terrorist attack. Second, after partialling out the level of exposure, the relationship between thought suppression and posttraumatic symptoms remained the same. Third, despite of the fact that the initial reaction to the traumatic situation was associated both with symptomatology and thought suppression, regression analysis showed that a tendency to suppress thoughts still contributed to explaining the variance of the PCL-C total score, even when initial reaction was controlled. Although it could be argued that the WBSI questionnaire may measure as intrusive thoughts in addition to thought suppression (Rassin, 2003), the use of a reduced version of the WBSI, which only included items strictly related to thought suppression, did not affect the pattern of results. Thus, after ruling out some alternative explanations for the data found, a chronic tendency of thought suppression can be considered, as hypothesized, a predictor of posttraumatic reactions.

We also found that thought suppression was significantly related to certain coping behaviors. As hypothesized, higher scores on the WBSI were significantly related to avoidant behaviors (e.g., not watching TV because of the memories that images might provoke). This finding suggests that thought suppression could be part of a broader behavioral and cognitive general pattern of avoidance (Thompson et al., 2006).

It is noteworthy that avoidant strategies were positively associated with stronger initial reactions to the event. Some interpretations may be offered for this result. First, it is possible that avoidance is a consequence of a strong initial reaction. Alternatively, it is also possible that people with a thought-suppressive style react more negatively as a rebound effect of this cognitive style, which operates from stimulus onset. Further research should be conducted to clarify the nature of this relationship. Nevertheless, it is possible that stress sensitivity (e.g., neuroticism) or even anxiety sensitivity—as participants' initial somatic reactions were the strongest predictor of PCL-C stress-related symptoms—is associated with higher vulnerability to developing posttraumatic symptoms (see Fedoroff, Taylor, Asmundson, & Koch, 2000). Thus, it would be interesting to include a measure of anxiety sensitivity and/or neuroticism in future studies. Nevertheless, the role of initial reactions did not explain the influence of avoiding both activities and thoughts on stress-related symptoms. In fact, our regression analysis showed that the relationship between these symptoms and both avoidant behaviors and thought suppression was significant even after controlling for such initial reactions.

Future studies might also explore the mechanisms involved in the development and maintenance of intrusive thoughts and the precise role of avoidance strategies. For instance, people with inhibition deficits would experience more intrusive thoughts which might, in

turn, lead to an intensified tendency to suppress such thoughts. In fact, there is some evidence for this hypothesis. For example, it has been shown that PTSD patients, when compared with healthy controls, have a reduced directed forgetting effect, which has been interpreted as a difficulty to inhibit emotionally significant information (Cottencin et al., 2006). Furthermore, survivors of rape without PTSD seem to be able to suppress thoughts related to the sexual assault and show no subsequent rebound effects (Shipherd & Beck, 1999). Therefore, suppressing thoughts may not be harmful—it may even be adaptive—at least, for people with adequate inhibition capacities. Future studies should address this issue in order to disentangle the key processes that, for some people, lead to the vicious circle of intrusion-suppression.

Finally, some limitations of the study should be kept in mind when interpreting the results. The time of the assessment—less than 1 month after the terrorist attack—did not allow us to explore the long-term consequences of the event with regard to symptoms and coping behaviors and cognitions derived from it. Nevertheless, previous research has demonstrated that initial posttraumatic reaction is a good predictor of later development of posttraumatic disorders (McNally, Bryant and Endler, 2003). Following previous research on the study of the effects of terrorist attacks (see North & Pfefferbaum, 2002), we employed a cross-sectional design and some of the variables were retrospectively assessed, so issues of causality cannot be adequately addressed.

Several implications for prevention may be also noted. For example, after a terrorist attack, it seems that an attempt to recover daily routines may be an effective coping strategy for reducing future symptoms (Vázquez, Hervás, and Pérez, in press). Moreover, it would be advisable to give a clear message to the exposed population that having intrusive

thoughts and images is not dangerous in itself but is, in many cases, an adaptive process that may prevent the activation of thought suppression mechanisms. Likewise, as mentioned, future research should also address whether certain subgroups might, in fact, benefit from cognitive suppression strategies before making over-generalized recommendations to the general population.

In sum, although important theoretical issues are still unresolved, our data shows that avoidance—both behavioral and cognitive—may be an important predictor of higher stress-related symptomatology, and this should be explored in depth in the laboratory as well as, like in this case, in naturalistic settings.

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Footnotes

ⁱTo confirm this, a principal components factor analysis with direct oblimin rotation was conducted and only one factor was extracted, which accounted for 48.5 % of the variance. We also explored two- and three-factor solutions but they were uninterpretable and, furthermore, all the items saturated basically in the first factor.

Table 1

Mean and standard deviation (in parentheses) of the PCL-C scores and the WBSI

<i>N</i> = 503	Total	Males	Females
PCL-Total	31.9 (10.3)	29.6 (9.4)	32.8 (10.5)**
PCL-Intrusions	10.9 (3.6)	9.9 (3.3)	11.3 (3.7)**
PCL-Avoidance	10.9 (3.9)	10.5 (3.6)	11.1 (3.9)
PCL-Hyperarousal	10.1 (4.2)	9.2 (3.9)	10.5 (4.4)**
WBSI	31.6 (8.3)	30.7 (8.3)	32.1 (8.3)

Note: PCL-C: Posttraumatic Stress Disorder Checklist-Civilian; WBSI: White Bear Suppression Inventory.

* $p < .05$. ** $p < .01$.

Table 2

Differences between exposed and non-exposed groups

Exposure items		PCL-C				WBSI		
		<i>N</i>	<i>X</i>	<i>SD</i>	<i>t</i>	<i>X</i>	<i>SD</i>	<i>t</i>
<i>Were you injured or affected physically by the attacks?</i>	Yes	7	48.6	14.3		32.8	7.8	
	No	481	31.6	10.0	502 ^{*a}	31.6	8.3	1438 ns. ^a
<i>Did you think that your life was at risk?</i>	Yes	147	36.9	11.5		33.0	7.7	
	No	338	30.0	9.0	-6.4 ^{***}	31.0	8.6	-2.4*
<i>Did you personally witness the terrorist attacks?</i>	Yes	20	41.0	13.4		34.6	8.3	
	No	483	31.5	9.9	-4.1 ^{***}	31.5	7.9	-1.6 ns.
<i>Are you a daily user of the affected train lines?</i>	Yes	73	35.9	11.8		31.6	9.6	
	No	430	31.2	9.9	-3.2 ^{**}	31.7	8.1	0.07 ns.
<i>Do you know someone who has been directly affected by the attacks?</i>	Yes	218	33.8	11.4		31.7	8.7	
	No	285	30.5	9.1	-3.5 ^{***}	31.6	8.11	-1.4 ns.
<i>Do you have any friend directly affected by the attacks?</i>	Yes	116	34.5	11.9		32.4	8.5	
	No	387	31.1	9.7	-2.8 ^{**}	31.4	8.3	-1.0 ns.
<i>Do you have any relative directly affected by the attacks?</i>	Yes	32	37.5	13.2		32.5	8.8	
	No	471	31.5	9.9	-2.5 [*]	31.6	8.3	-0.6 ns.

Note: PCL-C: Posttraumatic Stress Disorder Checklist-Civilian; WBSI: White Bear Suppression Inventory.

^a This analysis was made with non-parametric statistics (i.e., Mann-Whitney's *U*).

p* < .05. ** *p* < .01. * *p* < .001.

Table 3

Correlations between coping behaviors, thought suppression, and PTSD symptoms

Coping behaviors	WBSI	PCL-C
Talk with other people about their thoughts or feelings about what happened	.02	.20***
Focus on religion, praying, or spiritual feelings	.20***	.26***
Take part in social or public activities as recognition of what happened	-.13**	.10*
Try to do something to help victims	-.07	.10*
Give support or comfort to people who were close to me	-.01	.29***
Try to recover my daily routine as soon as possible, to normalize my life	.03	-.03
Try to do things to avoid thinking about what happened	.28***	.42***
Avoid activities, like watching TV that would remind me of what happened	.17***	.30***

Note: PCL-C: Posttraumatic Stress Disorder Checklist-Civilian; WBSI: White Bear Suppression Inventory.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4
Correlations between initial reactions, coping responses, and thought suppression

	Initial reaction					
	Fear	Somatic	Horror	Distress	Anger	Helplessness
Thought suppression	.21***	.22*	.13**	.10*	.15**	.14**
Talk with other people about their thoughts or feelings about what happened	.17***	.16***	.20***	.21***	.12**	.15**
Focus on religion, praying, or spiritual feelings	.08	.20***	.13**	.13**	.06	.09
Take part in social or public activities as recognition of what happened	.15**	.08	.09*	.16***	.04	.07
Try to do something to help victims	.16***	.13**	.07	.10*	.01	-.02
Give support or comfort to people who were close to me	.24***	.24***	.16***	.21***	.06	.12**
Try to recover my daily routine as soon as possible, to normalize my life	.05	.06	.04	.11*	.03	-.02
Try to do things to avoid thinking about what happened	.17***	.29***	.22***	.28***	.17***	.19***
Avoid activities like watching TV that would remind me of what happened	.05	.19***	.13**	.17***	-.01	.11**

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

Hierarchical regression analysis: prediction of PTSD symptomatology, assessed with the PCL-C, by demographic variables, initial reactions, and coping behaviors

	β	T and R ² change
Step 1		
Sex	.14	3.01**
		$\Delta R^2 = .020^{**}$
Step 2		
Fear	-.01	-.11, ns.
Horror	.04	.79, ns.
Anger	.06	1.34, ns.
Helplessness	.09	2.05*
Distress	.21	3.98***
Somatic symptoms	.37	8.1***
		$\Delta R^2 = .262^{***}$
Step 3		
Thought suppression	.12	3.18**
Talk to other people about the event	.08	2.38*
Focus on religion	.11	2.94**
Participate in social activities related to the event	.02	.55, ns.
Try to do something for the victims	-.03	-.84, ns.
Recover routines	-.14	-4.0***
Avoid related activities	.08	2.31*
Do things to avoid thinking	.19	4.7***
		$\Delta R^2 = .104^{***}$

Note: Criterion variable: PCL-C: Posttraumatic Stress Disorder Checklist-Civilian.

* $p < .05$. ** $p < .01$. *** $p < .001$.