

## Stress reactions of the general population after the terrorist attacks of S11, 2001 (USA) and M11, 2004 (Madrid, Spain): Myths and realities

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### ABSTRACT

This paper deals with a critical review of the research done on the psychological reactions to the attacks of S11, 2001 in USA and M11, 2004 in Madrid. Although mental health professionals and public health policy makers expressed many alarming warnings, the psychopathological effects of these events on the general population have been relatively scarce, and, besides, for the great majority of the people, have been transient. It is probable that this difference between the expectations and the concrete results is caused by the prevalence of explanatory models of Psychology, which are based more on prejudices about the vulnerability of human beings to adversity, thus ignoring that *resilience* is probably the most common response. While many studies have found relatively high immediate stress rates following those events in the general populations, it is probable that these rates are overestimated and that they have little clinical significance. In this connection, his paper the serious methodological and conceptual limitations in the measurement and evaluation of human responses to traumatic situations are discussed, as well as the conceptual limitations of the definition of the current classification systems DSM and ICD. Finally, the consequences of these limitations in the design of the surveys on the reactions to traumatic experiences and in the planning of prevention and intervention procedures for future similar situations are analysed.

*Key words:* terrorism, S11, M11, trauma, posttraumatic stress, vulnerability, resiliencia, psychopathology

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“..the reframing of normal distress as psychological disturbance is a serious distortion which may increase people's sense of themselves as passive victims rather than active survivors and ignores their own strengths and priorities”  
(Derek Summerfield, 2001, p.234)

“To seem strong may only conceal a rickety scaffolding of denial, but to be vulnerable is to be invincible. Complaint gives you power-even when it's only the power of emotional bribery, of creating previously unnoticed levels of social guilt”  
(Robert Hughes, 1993, p. 19)

On September 11, 2001, at 8:46 a.m. two planes crashed successively on the World Trade Centre (WTC) in New York. A few minutes later, a third plane crash crashed on the Pentagon in Washington, D.C. and another plane collided in Shanksville, Philadelphia. It is estimated that a total number of 2,992 people died because of these four attacks. Exactly 30 months later, on March 11, 2004, an unprecedented terrorist attack

occurred in Spain. At 7:40 a.m. on that day, a series of bombs exploded all but simultaneously in three different train stations of the Metropolitan Area of Madrid, thus killing 191 people and injuring more than 1,500.

The importance of these events for Psychology lies, among other reasons, on the fact that a few days following both attacks several epidemiological studies; specifically designed to evaluate the magnitude of the immediate psychological impact on the general population were conducted. In former similar events, such as the brutal bombing on a governmental building in Oklahoma City (USA) on April 19, 1995, in which 168 people died, the largest amount of the collected data was focused on the direct victims or on the people directly exposed to trauma (North, Nixon, Shariat *et al.*, 1999). Nevertheless, there was little knowledge about the immediate reactions of the general population, the larger part of which was not directly exposed to the traumatic event. The epidemiological research promoted by these miserable events, in spite of the difficulties arising from the difficult and urgent circumstances under which they are conducted, (see North and Pfefferbaum, 2002) have opened, in a certain way, an unique framework to

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evaluate the effects of those material and psychologically potentially devastating situations.

In the following sections, a critical review of these studies will be made, and we shall try to evidence available about the M11 and S11 attacks shows that the psychopathological effects on the general population are very low, and, when they are present, they are of a transient nature. Nevertheless, this critical analysis does not undermine the importance that should be given to provide a dignifying and efficacious treatment to the actual victims of those events. (Echeburúa, 2004; Lillo, Muñoz, Parada *et al.*, 2004). The aim of this research is focused, mainly, on the examination of the empirical data existing about the impact of those events on the general population, which, in our opinion, have been overestimated and alarming.

Before we start, we deem it necessary to make a comment on the changes of the definition of “trauma” and the consequences of these new definitions in the epidemiological research related to the psychological consequences of coping with traumatic situations.

## 1. TRAUMA AND POSTTRAUMATIC STRESS: CONCEPTS UNDER SUSPICION

The concept of trauma has always been under suspicion, and even today, it is a concept subject to many academic and professional discussions (McNally, 2003a,b; Brewin, McNally, & Taylor, 2004) as from 1892, when the German physician Hermann Oppenheim proposed the term “traumatic neurosis” to designate the results of traumatic working accidents that provoked in the affected person psychological intense symptoms caused by a “brain commotion”. In a review of the transformations of the concept of trauma, Brunner (2002) has showed that the interest in the traumatic reactions has been historically connected to forensic complaints and litigations, to file complaints before Courts (e.g., soldiers, workers, victims of public transportation, etc.) rather than to a scientific interest. Contrary to those that, like Oppenheim, defended the actual existence traumatic psychological syndromes, many others proposed that those symptoms were simulated by soldiers or workers that sought to receive pensions and benefits.

Recent history shows that the tension between the opposed parties is still present. In 1980 the Diagnostic and Statistical Manual introduced, in its third edition (DSM-III, APA 1980), a new condition (the posttraumatic stress disorder, PTSD) that, with some substantial modifications introduced in 1994 (DSM-IV, APA 1994), has continued in the present nosologies (APA, 2000). It is well known that the PTSD was introduced by the pressure of the Vietnam War veterans that sought a nosologic framework that could be fit for some of the psychological sequelae of war, and, last but not least, who wanted to receive the medical and social benefits arising from the diagnosis of a “mental condition” (Vázquez, 1990; Young, 1995). As it also happened in the XIX century with the beginning of the concept of “traumatic neurosis”, also in this case the pressure of the affected people, the lobby groups, etc., together with the guilty conscience of a society that had sent to war a generation of young men (Scott, 1990) helped to create a new disease, in which the social reasons were stronger than the scientific evidence for its creation. Shortly after, the PTSD was applied not only to veterans but also to other

people who had suffered from other kind of experiences: rapes, natural catastrophes, physical life-threatening diseases, etc. Therefore, we should not forget the historical origin of PTSD and the thin line that separates clinical research from legal, economical, social or other interests that might be confusing and misleading. The PTSD is a fertile ground for mystifications, deceptions, and for those who need legal or social recognition of several conditions. In this relation, it is interesting to appreciate how in these last two decades, there has been a truly insane fever to find signs of sexual abuse in childhood, where lots of psychologists, lawyers, and mass-media communicators have created the idea that the trauma (in this case, sexual) has affected millions of citizens in the country (see Brewin, McNally, & Taylor, 2004). As it is pointed out by the art critic Robert Hughes in one of the quotes that opens this paper, to be a trauma victim, has turned out to be a socially desired and wished condition by the people of the modern societies, and, as we add, Psychiatry and Psychology might, in a certain way, dangerously cater to these desires.

### 1.1. Changing definitions of “trauma” and “posttraumatic stress”

The DSM and the ICD are systems based on constellations of symptoms and the diagnostic criteria are quite erratic (e.g., in some cases a minimum duration of the symptoms is indicated, in other conditions a determined frequency is required, in other ones, there is no indication at all). Therefore, both systems cannot be properly qualified as true taxonomies. Mental conditions associated to traumatic experiences are a good example of this lack of a uniform criterion.

The really distinctive characteristic of trauma-related problems, mainly the Posttraumatic Stress Disorder (PTSD) and the Acute Stress Disorder (ASD), is that they are an exception to all the mental conditions diagnosed in the DSM-IV because an etiologic criterion is used for its definition (see Criteria A1 and A2 in Table 1). In fact, PTSD is defined as a condition caused or triggered by a specific cause (i.e., a trauma) that is defined as something concrete and explicit that comes from the exterior and to which the origin of the suffering is attributed. This “externalisation” of the cause undoubtedly contributes to the assumption, as expressed by Brunner (2002, p. 183) that “..the discourse of trauma is always also a moral discourse on an event that entails violence and victimhood”. This places the reactions related to the trauma in a field of continuous tension between the strive for scientific objectiveness and the recognition of the rights of the affected people, and reveals the complex historic and psychosocial nature of this framework (see also McNally, 2004).

But, how is trauma defined? This is not a simple or historically stable matter. As we have already said, it was in the DSM-III (APA, 1980) where for the first time a definition of trauma and PTSD was stated. In this first version, trauma the nature of the qualifying event was constrained as being outside the range of usual human experience and due to “[e]xistence of a recognizable stressor that would evoke significant symptoms of distress in almost everyone” (APA, 1980, p. 238).

POSTTRAUMATIC STRESS DISORDER (PTSD)	ACUTE STRESS DISORDER (ASD)
<p>Criterion A1. Exposed to a traumatic event that involved physical threat and,</p> <p>Criterion A2. Subjective reactions of fear, helplessness or horror</p> <p>Criterion B. Reexperiencing the event (1 out of 5 symptoms):</p> <ol style="list-style-type: none"> <li>1. Intrusive recollections.</li> <li>2. Distressing dreams</li> <li>3. Reacting or feeling again the event</li> <li>4. Distress at exposure</li> <li>5. Physiological reactivity on exposure</li> </ol> <p>Criterion C. Persistent avoidance (3 out of 7):</p> <ol style="list-style-type: none"> <li>1. Efforts to avoid thoughts, feelings,...</li> <li>2. Efforts to avoid reminding activities</li> <li>3. Inability to recall aspects of trauma</li> <li>4. Diminished interest to participate in activities</li> <li>5. Feelings of detachment from others</li> <li>6. Restricted range of affect</li> <li>7. Sense of foreshortened future</li> </ol> <p>Criterion D. Hyperarousal (1 de 5):</p> <ol style="list-style-type: none"> <li>1. Insomnia.</li> <li>2. Irritability or outbursts of anger</li> <li>3. Difficulty concentrating</li> <li>4. Hypervigilance.</li> <li>5. Exaggerated startling response</li> </ol> <p>Criterion E. Duration of symptoms (B, C, and D): &gt;1 month</p> <p>Criterion F: Significant distress or social impairment</p>	<p>Criterion A1. Exposed to a traumatic event that involved physical threat and,</p> <p>Criterion A2. Subjective reactions of fear, helplessness or horror</p> <p>Criterion B. Dissociative symptoms while or after the event (3 out of 5 symptoms):</p> <ol style="list-style-type: none"> <li>1. Feelings of numbing, detachment, or absence of emotionality.</li> <li>2. Reduction of awareness of his/her surroundings</li> <li>3. Derealization</li> <li>4. Depersonalization</li> <li>5. Dissociative amnesia</li> </ol> <p>Criterion C. At least 1 reexperiencing symptom</p> <p>Criterion D. Marked avoidance</p> <p>Criterion E. Marked symptoms of anxiety or increased arousal</p> <p>Criterion F: Significant distress or social impairment</p> <p>Criterion G. Duration of symptoms (B, C, D and E): between 2 days and 4 weeks within 4 weeks of the traumatic event</p> <p>Criterion H. Not due to the direct physiological effects of a substance or a general medical condition, and not better accounted by other mental conditions</p>

Table 1. Outline of the DSM-IV-TR diagnostic criteria for PTSD and ASD (APA, 2000).

In the first place, it is expressed that trauma is not any experience (e.g., to loose a job) but that it constitutes a unique experience in which the nature of the event would be overwhelming and psychologically disturbing (remember that the authors of the DSM had in mind the experiences of the war veterans). In the second place, and even more important, it is a protective definition for the victims because it indicates that almost everybody would show that response if confronted to the same situation. Therefore, no elements of psychological vulnerability should be sought, that could indirectly incriminate the victim because of certain weaknesses, even psychological ones, but that the response should be simply explained by the extraordinary magnitude of the event. It could be said that this vision of the trauma and its effects answered to a simple hypothesis of a direct relationship dose-response (McNally, 2004).

Nevertheless, in the eighties, and in the beginning of the nineties, several epidemiological studies were performed in the general population, that questioned this simple tough well-intentioned idea. It was observed that, contrary to this underlying universalist conception in the DSM-III, in fact, the great majority of the people that suffer from traumatic experiences do not develop PTSD or clinically significant stress responses. For example, in a nationwide study in which more than 6,000 people were interviewed about traumatic experiences, Kessler *et al.* (1994, 1995) it was demonstrated that the lifetime prevalence rates of PTSD in the general American population are situated around 5%, although practically half of the adult Americans seem to have suffered a traumatic experience, according to the definition of the DSM-IV (see Table 2). In other words, the probability to develop PTSD after a traumatic experience is lower than what the authors of the DSM-III likely expected.

	Lifetime Prevalence (%)	
	Men	Women
Exposure to traumatic events	60.7*	51.2
Number of traumatic events		
1	26.5	26.3
2	14.5	13.5
3	9.5*	5.0
4 or more	10.2*	6.4

\* Significant  $p < 0.05$

Table 2. Frequency of traumatic experiences in the U.S. National Comorbidity Study, according to the DSM-IV definition of "trauma" (Kessler *et al.*, 1995).

Based on this type of data, that reflected the unexpected *resilience* of the human beings to the adversity (see Vázquez and Pérez-Sales, 2003), the authors of the DSM-IV (APA, 1996) introduced substantial amendments to the definition of "trauma" which effects on our way of focusing the research and producing clinical and epidemiological outcomes which are yet to be evaluated. In this new version, the definitive context of the trauma is rephrased in the following terms: The person experienced, witnessed o, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others. The person's response involved intense fear, hepleness, or horror.

From this new perspective, it is not required to have "lived" a borderline experience, but it is enough to have been a witness of the event. But, unfortunately,

the DSM-IV (APA, 1996) does not provide clear guidelines for the meaning of “exposure” to the traumatic event. Even if, nowadays, there is a possibility of a diagnosis related to trauma based both on a direct and indirect exposure, it is not clear what should be considered as indirect exposure (to watch the events on TV? If one “could have been there” and be a potential victim?, to have been told about the events?). We do not even know, up to what extent, and in which manner, the indirect ways of exposure that is proposed now in the DSM-IV or in the DSM-IV-TR are enough to provoke traumatic reactions in the witnesses (Pfefferbaum *et al.* 2002). In a certain way, the definition of DSM-IV has opened a Pandora box on the potentially abusive use of the labels of “mental conditions” whose consequences are unpredictable.

In the concrete case of the events of S11 and of M11, the available data on the impact on witnesses has shown that there is a significant association between the physical proximity to the events and the probability of developing a PTSD (Galea, Ahern, Resnick *et al.*, 2002; Vázquez, Pérez-Sales and Matt, 2005). But in line with the definition of DSM-IV, watching TV images and the seriousness of the posttraumatic stress symptoms is also statistically related to the magnitude of the psychopathological response (Schlenger *et al.*, 2002; Schuster *et al.*, 2001; Vázquez, Pérez-Sales and Matt, 2005). Yet, these studies included both directly affected people and distant witnesses. Ahern *et al.* (2002) have demonstrated that the impact on distant witnesses of these tragedies might not be so indiscriminate, because watching TV on the days of the S11 attack had an impact on PTSD and depression symptoms, almost exclusively on people who had a direct traumatic experience connected with the event (e.g. direct witnesses of the event or those who had a deceased friend or relative as a consequence of the event). So, it seems that the mass media might have a re-exposure and re-traumatization effect only in some individuals, provided that they were –or not- directly exposed to the traumatic event.

In conclusion, although TV images might be considered morbid and disrespectful, it is quite not probable than they have a traumatizing effect so as to maintain PTSD responses in the general population. If this kind of results is confirmed, the actual criteria of the DSM for the PTSD should be reviewed, so as to limit much better the concept of indirect exposure and to exclude the distant witness of the traumatic effects exposed by the means of communication (Pfefferbaum, Pfefferbaum, North, & Neas, 2002).

The second new element of the trauma definition of the DSM-IV, that is also taken for granted, is the kind of reaction that the victim should necessarily sustain. The DSM proposes a definition focused on the subjective reaction of the affected people, and, therefore, it requires that the traumatic event might have provoked a response of extreme fear, horror, or helplessness. This proposal might also be too risky. Although it is true that the majority of the people that developed a PTSD had an initial reaction of this kind (see Brewin, Andrews and Rose, 2000a), the DSM fails to mention that there are many other reactions typically associated to traumatic experiences (as the feelings of shame, humiliation, anger, guilt, or sadness) –e.g., Echeburúa, de Corral, and Amor (1998). In a study

conducted by our team on the impact of the terrorist attack of M-11 in Madrid, we proved that the reactions such as anger or fear that some relative could have been affected can be so intense (see Table 3) as the ones described in the DSM-IV. Taking into account these reactions, so different as the ones described by the DSM, especially in the case of human-induced traumas, might be of an immense relevance to understand the psychological impact of the traumas and to coordinate effective therapeutic interventions. (Echeburúa and Corral, 2001; Pérez-Sales and Vázquez, 2003 a,b).

Initial reaction (0-10 scale)	M	SD
Fear	6.0	3.1
Horror	7.3	2.9
Helplessness	7.5	2.6
Fear that someone known could be affected	7.3	2.8
Bodily symptoms	3.2	3.2
Upset	6.8	2.8
Anger	6.8	2.9
Duration of that reaction (hours)	1.9	1.0

Table 3. Initial reactions to the attack in Madrid M11 (N=503) –Vázquez, Pérez-Sales and Matt (2005).

### 1.2. Neglected reactions in the DSM: Diagnostic limitations

An astounding characteristic of the current diagnostic systems is that they do not make conceptual distinction between human-induced traumas (for example: violence, robbery, assault, or political violence) and the rest of the traumas (e.g.: natural catastrophes or accidents). In fact, many reactions that are not even considered by the DSM, such as the humiliation, are often present in people who are confronted with a traumatic experience caused by humans and specially when intentionality is suspected. Although there are many studies indicating that the initial response pattern might be very similar in both types of traumas (Burkle, 1996), the effects of human-induced traumas might have a more long-lasting effect than, for example, those provoked by natural catastrophes and that might even prevent the individual from recovering his “normal” functioning (Green & Lindy, 1994).

Therefore, it is probable that the human-induced traumas might have even more pervasive consequences than the ones induced by natural catastrophes, even when there is no intentionality. In one of the longest follow-up studies available, carried out after the breakdown of the Buffalo Creek dam in USA, Grace *et al.* (1993) demonstrated that after 14 years the survivors had fewer symptoms, as expected, but even 28% of those who remained in the study, showed symptoms compatible with a PTSD diagnosis (Grace *et al.*, 1993). Something similar was observed after the accident in the nuclear plant of Three Mile Island in USA. After 5 years, the population of the area still showed remarkable psychological and physical symptoms (Davidson, Fleming & Baum, 1986).

Study	Time of assessment	Sample	Assesment	Instrument	Measures	Results
<i>Schuster et al, (2001), RAND</i>	3-5 days after September 11 2001 (Wave 1)	Nationally representative (N=560 adults)	Telephone interview	PCL (5 ítem selected after Norris <i>et al.</i> , 1999)	Substantial Stress <sup>a</sup>	44% at least 1 substantial stress symptom 90% experienced at least one symptom "a little bit"
<i>Stein et al, (2004), RAND</i>	2-3 months after S11 (Wave 2)	Follow-up of Schuster <i>et al.</i> (2001) sample (N=395 adults)	Telephone interview	PCL (5 ítem selected after Norris <i>et al.</i> , 1999)	Substantial Stress <sup>a</sup>	21% still reported at least 1 substantial stress symptom
<i>Rasinski et al, (2002), NORC</i>	4-6 months after S11	National sample and NYC sample (N=1101 adults)	Telephone interview	PCL (fulfilment of DSM-IV symptom criteria)		PTSD: 15% NYC; 8% rest of the country
<i>Schlenger et al, (2002)</i>	1-2 months after S11	Nationally representative (N=2273 adults, NY and Washington oversampled)	Telephone interview	PCL, framed to S11 events >50)	Probable PTSD (cut-off score >50) Nonspecific distress	Probable PTSD: 11.2% in NYC; 2.7% in Washington, DC; 3.6% major metropolitan areas, and 4.0% rest of the country More than 60% of NYC with children reported 1 or more children upset by attacks.
<i>Silver et al, (2002)</i>	9-23 days after S11 - Wave 1 (W1) 2 months after S11 (W2): 6 months after S11 (W3):	Web panel, nationally representative adults: (W1: N=2729) (W2: N= 933, non NY residents) (W3: N=787)	Self-report	Stanford Acute Stress Reaction Questionnaire (SASRQ)-W1 Impact of events Scale-R, framed to S11 events (W2 and W3)	ASD symptoms (W1) PTDS symptoms (W2 and W3)	ASD: 12.4% PTDS symptoms (W2): 17% PTDS symptoms (W3): 5.8%
<i>Galea et al, (2002; 2003)</i>	5-9 weeks after S11 (W1) 4-5 months after S11 (W2) 6-9 months after S11 (W3)	Telephoned Manhattan adult residents, oversampling those living south of 110 <sup>th</sup> St: W1: N=998 adults W2: N=2,001 adults W3: N=1,570 adults	Telephone interview	DIS, framed to S11 events	PTSD (DSM-IV criteria)	PTSD (W1): 7.5% (Manhattan); 20% if living south Canal St. (i.e., World Trade Ctr. area) PTSD (W2): 1.7% PTSD (W3): 0.6%
<i>Murphy et al, (2003)</i>	2-3 days after S11	African-American undergraduates, St. Louis, MO (N=219)	Self-report	PCL-C	Probable PTSD (cut-off score >50)	Probable PTSD: 5%
<i>Blanchard et al, (2004)</i>	6-10 weeks after S11	Undergraduates (Albany, NY =507; Augusta, GA =336; Fargo, ND= 526)	Self-report	PTSD (PCL, S11-framed) Acute stress (ASD) in 2 weeks after S11	Probable PTSD (cut-off score >40) Probable ASD	Probable PTSD: 11.3% in Albany, 7.4% in Augusta and 3.4% in Fargo. Probable ASD: 28% in Albany, 19% in Augusta and 9.7% in Fargo.
<i>Matt y Vázquez (2005)</i>	6-10 weeks after S11	2000-2002 multiple cohorts of San Diego undergraduates (Total N= 2411)	Self-report	PCL-C	Substantial Stress <sup>a</sup> Probable PTSD (cut-off score >50)	Substantial Stress: 38% Probable PTSD: 8.4% (Spring 2000, N=771), 9.8% (Spring 2002, N=694), 6.7% (Fall 2002, N=946)
<i>Muñoz et al, (2004)</i>	2-3 weeks after March 11, 2004	Madrid general population sample (N= 1179)	Self-report	Acute Stress Disorder Scale (ASDS)	ASD symptoms	47% symptoms related to ASD.
<i>Vázquez, Pérez-Sales y Matt (2005)</i>	3-4 weeks after M11	Madrid general population sample (N=503)	Self-report	PCL-C and item covering the PTSD DSM-IV criteria	Substantial Stress Probable PTSD by using multiple criteria: 1) cut-off score >44 2) cut-off score >50 3) DSM-IV criteria	Substantial Stress: 59.2% Probable PTSD: 1) 13.3 % cut-off score >50 2) 3.4 % cut-off score >44 3) 1.9 % DSM-IV criteria

ASD: Acute Stress Disorder; PCL-C: Posttraumatic Stress Disorder Checklist-Civilian; PTSD: Posttraumatic Stress Disorder

<sup>a</sup> "Substantial stress" is defined when respondents endorse a degree of severity of 4 (quite a bit) or 5 (extremely) to any of five selected items from the PCL-C (see text).

Table 4. Studies on the psychopathological impact on stress-related responses (ASD y PTSD) in the general population after the attacks of September 11, 2001 (USA) and March 11, 2004 (Madrid, Spain).

Therefore, the human induced disasters (e.g. terrorist actions) might have larger long-lasting and devastating effects than other events, especially if it is deemed that there has been a malignant intention in such cases (Echeburúa *et al.*, 1998). None of this, unfortunately, is considered in the diagnostic systems that are so devotedly used nowadays (refer to Table 1 again). It is very probable that, at least partially, those more prolonged, intense effects, that affect a range of psychological elements of a broader scope than the symptoms described in the definition of the PTSD, are related to the loss of confidence in the others, the loss of values, or feelings of despair about the human race or the justice (Janoff-Bulman, 1992). If such beliefs are deteriorated (e.g., some affected people, after a traumatic event, abandon their political or religious beliefs that were previously essential for them) an element that is hardly psychologically retrievable is depleted. (Blanco and Díaz, 2004; Pérez-Sales and Vázquez, 2003 a, b). The fundamental texts of authors like Primo Levi (1988, 2000) or Semprún (1995) highlight especially how the preservation of the personal dignity, even under conditions designed to destroy it, is vital for survival.

The great majority of the studies on the consequences of the S11 and of the M11 have been focused on the aspects related to the typical symptoms and the responses described in the DSM-IV and no attention was paid to the extent to which those events had affected the people's core conceptions of the world (Smith, Rasinski and Toce, 2001; Rasinski, Berkold, Smith, and Albertson, 2002). Given the lack of data on those other psychologically essential aspects, therefore, the results that we will discuss in this paper shall be focused on this more clinical perspective.

## 2. PSYCHOLOGICAL REACTIONS AFTER S11 AND M11

As we said in the beginning of this paper, the studies on S11 opened, in a certain way, a new trend of analysis by addressing the immediate reactions to trauma in the general population. The studies carried out shortly after the attacks, were conducted 2-3 days after the event (Murphy, Wismar, & Freeman, 2003; Schuster *et al.*, 2001) and something similar happened in Madrid (Muñoz *et al.*, 2004; Vázquez, Pérez-Sales, and Matt, 2005). Although, as it can be seen in Table 4, some studies have focused on the most extreme responses, as the development of a full posttraumatic stress (e.g., Galea *et al.*, 2002), the majority has used a more dimensional approach, including symptom scales that reflect different degrees of reaction (e.g., Schuster *et al.*, 2001; Schlenger *et al.*, 2002; Silver *et al.*, 2002; Murphy *et al.*, 2003; Blanchard *et al.*, 2004; Vázquez, Pérez-Sales, and Matt, 2005).

The studies on the immediate effects of this terrorist attacks on the population have caused interesting and, in some cases, unexpected results. In the first place, the psychological impact of the attacks within the first weeks or months was in some cases, intense, but did not amount, by no means, to the impact predicted by the health authorities, and, in some cases by the authors of the studies. In the second place, as I will try to demonstrate hereafter, those reactions might have been of a certain importance within the following hours, days, or weeks after the event, but disappeared in a relatively fast and spontaneous manner. In the third

place, and this is of a great methodological and conceptual importance, the kind and magnitude of reaction depends closely on the measurement methods and the more or less strict criteria used. The analysis of the epidemiological figures should be very careful and critical with the definition of the object to be measured and to the methods to be employed, and it is very usual that the authors of the papers do not pay attention to those vital issues.

Generally, when stress symptoms are evaluated instead of diagnostic categories, there is a risk in overestimating the probable cases of mental conditions in the population (see Vázquez, Pérez-Sales, and Matt, 2005). This possible bias affects all the studies conducted on posttraumatic reactions and should be taken carefully into consideration in order to explain the great variability of the results. Although there has been a great amount of studies reporting PTSD after disasters, prevalence rates have been so variable that they range from 0% to 100%. This variability may be attributed to type of trauma, sample selection and use of different assessment tools which typically range from clinical interviews to standardised assessment instruments, and self-report measures (Bryant & Harvey, 2000; Norris, Byrne, Diaz and Kaniasty, 2001).

### 2.1. Immediate psychological responses: Substantial Stress?

One month after the attacks of September 11, 2001, the University of Michigan published the results of a study conducted by its prestigious *Institute for Social Research* (Institute for Social Research, 2001). Although this study is of a more anecdotic nature, because clinically validated tools were not used, its results probably reflect some stereotyped ideas about the reaction of the people to events of this nature. The study found that 66% of the nationally representative sample of 668 American adults surveyed between September 15 and October 7, 2001, reported at least some trouble concentrating; 52% said they felt depressed and nearly 62% reported restless sleep at least some of the time in the weeks after the incidents. Only 21% said they often felt hopeful about the future, compared with 68% answering that same question in a national survey in 1990 (Institute for Social Research, 2001).

A similar study, though more related to the concept of PTSD and with a solid scientific background, was carried out by scientists of the RAND Corporation by measuring between 3 to 5 days after the attack to the World Trade Centre the psychological reactions in a representative sample of the nation (see Table 4). This paper was published on November, 15, 2001, in *The New England Journal of Medicine*, one of the publications with a higher index impact in Medicine (Schuster *et al.*, 2001). The study that had a widespread repercussion, pointed out that 90% of the interviewed subjects experienced at least moderate levels of stress symptoms and 44% of the total sample (even in different rates depending on the proximity to New York city) reported that they have experienced at least one symptom of "substantial stress" of a list of five symptoms related to PTSD. In a second part of the same study, done two months after the attack, though it was published some years later (Stein, Elliot, Jaycox *et al.*, 2004) found that 16% of those who had a

substantial stress level in September 2001 still had that reaction in November of the same year. But this result, as well as the others that we will refer to (see Figure 1), require a critical analysis.

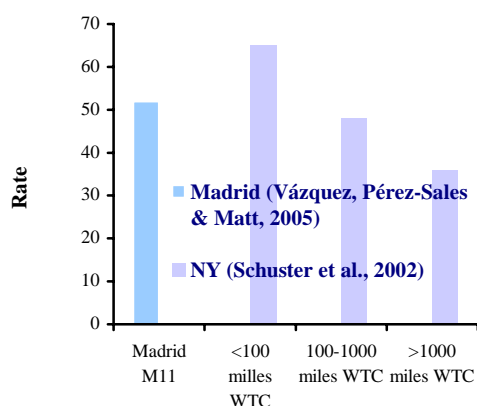


Figure 1. Reactions of "Substantial stress" in the general population, in Madrid and in a representative sample of the USA, at different distances from the WTC, evaluated with items selected from the PCL-C (see text).

The conclusions of these studies were certainly alarming and suggested the need for a soon psychological intervention given that "by intervening as soon as symptoms appear, physicians, psychologists and other clinicians may be able to help people to identify normal reactions and take steps to cope effectively" (Schuster *et al.*, 2001, p. 1511). Likewise, they predicted "the psychological effects of the recent terrorism are unlikely to disappear soon".

But, what is meant by suffering from "substantial stress"? According to the authors' definition, anyone of the interviewed subject might be suffering from that condition, provided that he/she states that he suffers from at least 1 of the 5 items of a questionnaire of symptoms, all of them collected from the DSM-IV, with a seriousness of 4 ("quite a bit") or 5 ("Extremely") in a 1 to 5 scale. Those five items were selected from the ones reported by 50% or more of the survivors of the bombing attack in Oklahoma City (North, Nixon, Shariat *et al.*, 1999)<sup>1</sup>. Therefore, anyone interviewed between September 13-16, would feel "quite a bit" upset when something reminded him/her of the attacks that took place on September 11, would be deemed to be a person with "substantial stress". In the case of the analysis of Madrid (Vázquez, Pérez-Sales, and Matt, 2005), conducted between 2 to 3 weeks after the attacks of M11 2004, 59.2% showed a "substantial stress level". This figure is very similar to the subsample of the e USA citizens living closer to the WTC of the study of Schuster *et al.* (2001) who showed more significant rates of substantial stress of 61% (Figure 1).

Nevertheless, it is less probable that this kind of data that reflect disproportionate stress reactions, although they may have an immediate repercussion in

the mass media and even in scientific publications, would have any clinical or epidemiological significance. Being upset or having 'substantial stress' does not mean having a clinical disorder (Wessely, 2004). Studies trying to identify subthreshold levels of traumatic responses, such as the studies of Schuster *et al.* (2001) or of Stein *et al.*, (2004) based in simple definitions of stress (e.g., "substantial stress") may induce public alarm and confusion (Southwick and Charney, 2004; Shalev, 2004).

## 2.2 Acute Stress Disorder: confounding normality with pathology

Something similar, though more diagnostically relevant, occurs with the so-called Acute Stress Disorder (ASD). This is a much controverted new category that was first introduced in the DSM-IV (APA, 1996) (see the systematic critic of Marshall, Spitzer and Liebowitz, 1999). The DSM-III (APA, 1980) created the category of PTSD, and the DSM-III-R (APA, 1987) introduced the requisite that the symptoms should be present at least for 30 days. The inclusion in 1987 of this temporal criterion was very important because it implied the reduction of the false positive diagnoses that could be effected by using the criteria extracted from the DSM-III (APA, 1980) because they did not require a minimum duration of the symptoms and, nevertheless, it had been observed that in many victims those symptoms disappeared in few days or weeks (Riggs *et al.*, 1995). But, with the introduction of this temporal requisite created a different problem: there were many people who could have an acute pathological stress reaction that needed assistance or at least clinical monitoring. In such a way, the DSM-IV (APA, 1996) a new category of the ASD (Blank, 1993) was created.

Nevertheless, the ASD is a disorder of an imprecise and somewhat confusing definition. Although it was created as a category similar to the PTSD, and shares many of its symptoms, as it can be seen in Table 1, it requires the presence of a series of dissociation symptoms (Criterion B) that, besides, the scientific literature has not demonstrated that they are more important PTSD predictors than other characteristics (e.g., neuroticism, personality traces, story of previous mental conditions, etc.) – Cardeña *et al.*, 1996; Vázquez and Pérez-Sales, 2003. This probably excessive relevance of the dissociative symptoms, leaving aside the diagnostic precision of avoidance and hyperarousal symptoms (as it can be seen in Table 1 that the requisites are less strict than for the PTSD) it creates complicated diagnostic situations. For example, as indicated by Marshall *et al.* (1999), many people with a high reaction to initial stress in the presence of highly traumatic events cannot receive even a ASD diagnosis, because they do not show the 3 dissociative symptoms required by the DSM-IV, neither a PTSD diagnosis, because the 30-day period after the event had not been completed yet. Besides, the ASD category had been strongly criticized, because it paves the way for the pathologizing in psychiatric categories what, in most part of the case, are but human normal reactions, of an often transient nature, an without major psychopathologic complications (McNally, Bryant & Ehlers, 2003).

It can be misleading to give ASD a diagnostic importance, because, even if it is true that a high rate of

<sup>1</sup> These items are: 1) Feeling very upset when something reminds you of what happened?; 2) Repeated, disturbing memories, thoughts, or dreams about what happened?; 3) having difficulty concentrating?; 4) Trouble falling or staying asleep?; 5) Feeling irritable or having angry outbursts?

people who suffer from ASD turn out to develop PTSD –see, for example, the study of Harvey and Bryant (1998) with survivors of motorcycle accidents– the contrary is not true. In an analysis of the 12 prospective studies published that have evaluated if the ASD is a PTSD predictor, McNally, Bryant & Ehlers (2003) have demonstrated that a relatively high rate of the people who suffer from ASD develops PTSD (65.7%) but the rate of people with a PTSD that has previously presented a ASD is quite lower (45.8%). Therefore, ASD is a relatively good predictor of PTSD but there are many people in which PTSD is not preceded by ASD.

There are still few studies in which ASD following traumatic events was analysed and its results show a significant variation according the measurement tools. The ASD rate ranges from 7% in a sample of typhoons' survivors (Stabb *et al.*, 1996) to a 33% in people close to a mass shooting (Classen *et al.*, 1998) and, perhaps, because of the requisite of the presence of additional dissociative symptoms, the prevalence of ASD is surprisingly lower than the PTSD rates that were reported in the most acute phases of the trauma (New South Wales Institute of Psychiatry, 2000).

Because it is a new and controversial category, ASD has not been so widely studied as the PTSD within the context of the traumatic events of the S11 and of the M11. Silver *et al.* (2002) in a national representative sample found that 12.4% of the subject at wave 1 (9-23 days after September 11) showed had high levels of symptoms suggesting a probable Acute Stress Disorder<sup>2</sup>. In a study conducted in Madrid 2-3 weeks after the event, Muñoz *et al.* (2004) found that in a representative sample of the general population that the 47% of the subjects showed “significant symptoms of acute stress” (confusion, emotional estrangement, nightmares, or pervasive image, avoidance of situations or places that remind of the event, irritableness, nervousness...) Nevertheless, any of both studies used diagnostic strategies to evaluate the existence of ASD following the diagnostic DSM-IV (APA, 1996) criteria. As far as we know, only the study of e Blanchard *et al.* (2004) has evaluated the presence of probable cases of ASD, although it was based only in scorings of a questionnaire (see Table 4). In this study, in which three subsample of university students participated after S11 in different areas of the USA, the results showed that the students of Albany (New York State) had a higher prevalence of probable ASD cases (28.0%) that those who were more geographically distant, such as those who lived in Fargo (North Dakota) – 9.7%. Nevertheless, in our opinion, it seems to be a rather overestimated figure, that a third part of a university sample of students living in Albany (a hundred miles from Manhattan) might correspond to cases of a diagnosed mental disorder (i.e., ASD).

Briefly, all these data about “substantial stress” or about “symptoms of acute stress”, indicate that the immediate reactions of the general population might be elevated, although this cannot be generalized. But, above all, the data seem to indicate an overestimation of the clinical cases. It does not seem

that these figures, even if they are significant, do correspond to a need for psychological intervention or with clinical significant conditions, especially in the case of studies in which remarkably low diagnostic thresholds are used, and are simply based in self-report tools (North and Pfefferbaum, 2002).

### 2.3 PTSD: Prevalence figures and diagnostic strategies

The most extreme reaction to a stressor is defined by the concept of PTSD. The studies on the S11 and of M11 have used different strategies to assess the presence of PTSD cases and the results substantially differ according to the used sampling (e.g., directly or not directly exposed subjects) the methods used (e.g., structured interviews or self-report tools), and even the strategies used to conduct the diagnosis (e.g., the use of different cut-off scores) –see Table 4.

As it was expected, only a minor part of the general population showed problems that suggested the presence of a PTSD. But, even in that case, the relatively low figures found when DSM type diagnostic criteria were used are very noteworthy. Perhaps the studies of Galea and his group are a paradigm in this sense, because, by using structured telephone interviews related to DSM-IV (APA, 1996) criteria, in a sample of Manhattan citizens, it was found that in the 5-9 weeks after September 11 only 7.5% of those who had a direct exposure presented a probable PTSD condition and among those who were not directly exposed, only 4.2% presented PTSD. In any case, the prevalence rate of PTSD in New York, as a whole, was of 7.5% a figure that, although it is twice as high as the one found in the American population before September 11 (i.e., 3.6%; Blazer, Kessler, McGonagle *et al.*, 1994), it does not seem extraordinarily high given the magnitude of the event.

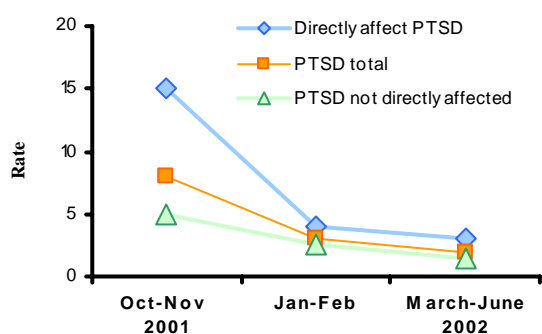


Figure 2. Prevalence of PTSD (DSM-IV/DIS) in Manhattan residents in three successive periods as from S11 (Galea *et al.*, 2003).

Besides the use of diagnostic criteria using structured interviews, many investigations have been carried using symptom questionnaires and cut-off scores to assess the presence of a probable (Figure 2). In fact, in terms of probable PTSD diagnoses based on the PCL-C scores (Weathers *et al.*, 1993), Schlenger *et al.* (2002) using the instrument framed to the September 11 events, in a nationally representative survey, found that among their 2,273 adults, interviewed 1-2 months after September 11, the overall rates of probable PTSD using the cut-off score of 50 were 11.2 in NYC, 2.7% in Washington, D.C., 3.6% in major metropolitan areas,

<sup>2</sup> The study of Silver *et al.* (2002) only assessed symptoms belonging to the ASD category of the I DSM-IV but not the rest of the diagnostic criteria, therefore it cannot be clearly stated if they were probable ASD cases.



and 4% in the rest of the country. Using a cut-off score of 40 in the PCL-C, Blanchard *et al.* have found that the prevalence of probable PTSD for their samples from Albany, Augusta, and North Dakota were, respectively, 11.3%, 7.4% and 3.4%. Again, all these figures should be compared with prevalence rates in the general population (3.6% in the United States).

The resulting data from the use of such strategy in different parts of the general population indicate that, to a great extent, the results depend on the strategy used by the researchers. In order to highlight this limitation, Vázquez, Pérez-Sales, and Matt (2005) have used the PCL-C (perhaps the most used tool in research on the S11) in a sample of Madrid citizens by using different cut-off scores that was previously used in publications on the effects on the S11 (see Table 4). The use of a more restrictive cut-off score, such as the one suggested by Ruggiero, Del Ben, Scotti, & Rabalais (2004), as compared to the lower cut-off scores used by Blanchard *et al.* (2004), Matt and Vázquez (2005) or Schlenger *et al.* (2002) might decrease 4 times the probability to present PTSD (3.4% vs. 13.3%). If we also add an additional restriction to confirm that there are not only increased symptoms (Criteria B, C and D of the DSM-IV), but also an increased level of an initial subjective response (Criterion A2) and significant problems in the daily functioning (Criteria F), the figures of probable PTSD may decrease to 1.9% (seven times less than is the widely used cut-off score of 40 in the PCL is used) –see Figure 3.

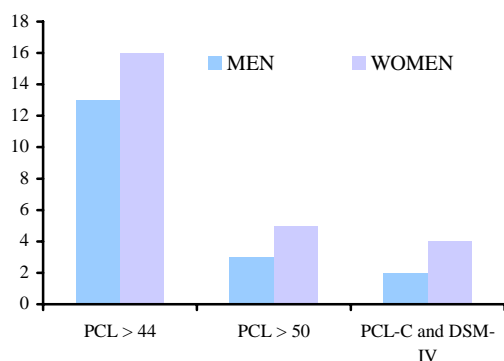


Figura 3. Diagnóstico probable de TEPT empleando diferentes estrategias y puntos de corte en el cuestionario de síntomas PCL-C (Vázquez, Pérez-Sales y Matt, 2005).

Therefore, the epidemiological estimates should be carefully examined, and with a careful awareness of these variations, sometimes less apparent, in diagnostic cut-off scores and strategies might have very important effects on the resulting estimates. Researchers and policy makers should pay attention to these variations in probable prevalence rates, which depend upon the use of different diagnostic and threshold criteria (North and Pfefferbaum, 2002), for an adequate and sensible planning of health services (Southwick and Charney, 2004).

A more indirect way of the epidemiological impact of the S11 and, let's hope that we can rely on similar data with respect to Madrid in further research, is related to the consumption of medicines and figures of incidence (i.e., new cases of PTSD) diagnosed in relation to the S11 in the services of health assistance. This kind of indirect data is very interesting because

they do not depend in biased responses or in biases indirectly introduced by previous ideas of the researchers. The existing data point out that, in fact, this event did not have epidemiological consequences for the USA population, not even for the New York City. The data from large managed behavioural health organizations have shown a pattern of no significant increases in prescription of psychotropic medications between September 2001 and January 2002 (McCarter and Goldman, 2002). Besides, the hospital statistics of treated or diagnosed cases from September 2001, have demonstrated that, unexpectedly, there had not been significantly increases in the incidence of PTSD or other mental disorders in the New York Veteran Hospitals network or in the rest of the country (Boscarino, Galea, Ahern, Resnick, & Vlahov, 2002; Rosenheck & Fontana, 2003).

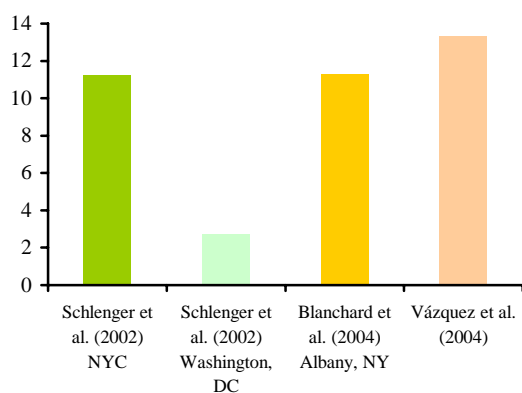
#### 2.4 Transientness of the responses

The temporal course of the reactions to stress is one of the most important and controversial elements in the diagnosis of disorders such as the ASD or the PTSD. As we have previously stated, from the DSM-III to DSM-IV-TR several changes have taken place in the approach of the duration issue of these symptoms. This is an essential issue, because if no temporal limits are established, transient normal reactions could be easily labelled as pathologic. But the problem is not well resolved, because we do not yet know which is the normal course or history of human reactions to stress. For example DSM-IV considers that more than 30 days of posttraumatic symptoms constitute the limit borderline that indicates if those initial stress responses are normal or can be considered a disorder. Nevertheless, clinical and experimental Psychology has not determined yet if what we consider as "symptoms" (e.g., *flashbacks*) are but normal responses to a normal recovery process (Jones *et al.*, 2003) or if these responses should necessarily have a fast resolution prior to the 30-day period (see Pérez-Sales and Vázquez, 2003a). It is possible that many psychological reactions that we carelessly label as "symptoms", following lists of diagnostic classifications, are in fact elements of recovery and resistance which adaptive meaning and temporal course is not yet well known.

Apart from this rather conceptual reflection, there are not many longitudinal studies on the temporal course of the symptoms but it deserves an analysis of the existing main data. Riggs, Rothbaum & Foa (1995), in a prospective study of 84 victims of criminal attacks, reported that 71% of the women and 50% of the men that had been attacked had been diagnosed with PTSD after an average period of 19 days after the trauma. Nevertheless, 4 months after, the PTSD rate had decreased to 21% for women and 0% for men. Similarly, Rothbaum, Foa, Riggs, Murdock & Walsh (1992) reported that 94% of rape victims interviewed after an average period of 2 weeks after the trauma met the criteria of the PTSD, 64% of the sample met such criteria 3 weeks after and 47% 11 weeks after. In other words, by merely taking into account the temporal course, and always in mind the other diagnostic criteria, the PTSD figures decrease to one half after 3 months of the rape. In a study with traffic accidents' victims, Blanchard, Hickling, Barton *et al.* (1996) observed that the figures of the participants with PTSD was reduced

to one half after 6 months and only one third remained with PTSD after 12 months (New South Wales Institute of Psychiatry, 2000). In the *National Comorbidity Study* (which is so far the most complete epidemiological study in the general population, that includes longitudinal but retrospective data) it was found that the PTSD rate decreases at a relatively constant rate within the 12 first months, with a gradual decrease in the 6 following years (Kessler *et al.*, 1995). When the DSM-IV criteria of PTSD is considered, it is noticeable that a 3-month duration of a condition is labelled as “chronic course”. This undoubtedly seems a diagnostic excess, because, as we have seen, the existing data about the course of the condition might seem to indicate a significant and spontaneous decrease of the initial symptoms, although with very idiosyncratic differences that are not yet well known – see Avia and Vázquez, 1998.

As regards the actual case of the terrorist attacks of September 2001, even if the initial symptoms might have been elevated in a part of the population and, although there is an increase of conditions such as PTSD –which are by no means overwhelming– there is no doubt that, in general, they were transient conditions for most of the subjects<sup>3</sup>. Schlenger *et al.* (2002) found that 2 months after 11, 2001, the overall distress in the U.S. were within normal ranges, including New York City and Washington, D.C. Besides, Silver *et al.*, (2002) found that 17% of their nationwide sample of adults residing outside NY City reported posttraumatic stress symptoms at 2 months but only 6% reported symptoms at 6 months.



Note: Schlenger *et al.* (2002), *JAMA* (PCL>50); Blanchard *et al.* (2004), *Behav. Res. Therapy* (PCL>40); Vázquez, Pérez-Sales, Matt (2005) (PCL>44)

Figure 4. Probable diagnosis of PTSD, in general population samples, after the attacks of S11 and of M11, according to different cut-off scores in the PCL-C questionnaire of symptoms.

But, probably, the most conclusive reasoning on the transientness of the responses and even of the conditions that might have needed assistance is provided by the study of Galea, Vlahov, Resnick *et al.*

<sup>3</sup> Obviously, there are more directly affected people, with posttraumatic stress symptoms or syndromes or other conditions provoked by those traumatic experiences, but this is not the aim of this study, which is more focused on the analysis of the effects on the *general population*.

(2003) that we have already commented (Figure 4). Those authors analysed the prevalence of PTSD in the general population of New York City in three telephonic interviews conducted after one month, four months, and six months after September 11, 2001 (see technical specifications in Table 4). Following the DSM-IV criteria, the prevalence of a probable PTSD specifically related to the attacks had declined from 7.5% to 0.6% six months after the incident. As it can also be seen in 3, even if the difference between the directly exposed and the indirectly exposed was relatively high within the month following the S11 attacks, after 3 months of the attacks, the rates of prevalence were very similar and even lower than the rate of 3.6% observed in the studies of the general American population before S11 and according to the same diagnostic criteria (Kessler *et al.*, 1995).

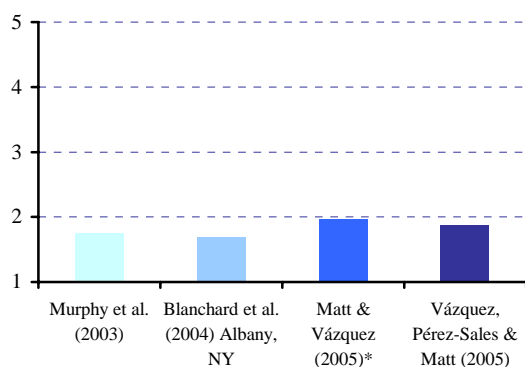
In sum, whereas people who have been directly exposed may present high rates of psychological disorders (North *et al.*, 1999) there is mounting evidence that acute responses to trauma in general population are limited in scope and quickly return to normal levels. Thus, this pattern of acute stress reactions after trauma in the hours, days or even weeks after a traumatic event occurs, should be taken into account when the rates corresponding to the immediate reactions provoked by a stressing event are interpreted (North and Pfefferbaum, 2002; Kilpatrick, Resnick, Freedy *et al.*, 1998). The transitory nature of traumatic stress responses found in the majority of the general population suggests that acute emotional distress should not be mistaken for direct indicators of PTSD. As McNally, Bryant, & Ehlers (2003) and Silver *et al.* (2002) have argued, these initial emotional responses may be part of the natural recovery, improving without the assistance of professional help in the presence of supportive environments. The natural recovery using the existing support resources in personal and community networks are generally sufficient to successfully cope with the tragedy (Silver *et al.*, 2002). These rates are obviously contrary to the alarming warnings that were previously expressed about the potential outreach of the catastrophe in terms of mental health (Herman, Felton and Susser, 2002). Naturally, it is possible that the limited reactions to S11 and to M11 in the population are caused, among other circumstances, because these events took place in rich societies in which the impact of these catastrophes does not entail a chain of stressors (displacements, irretrievable economic losses, etc.) but, anyway, the resulting figures clearly indicate an absence of a generalized impact.

### 2.5. Magnitude of the posttraumatic responses: A neglected issue

Although a certain amount of people might meet certain response criteria of elevated stress (for example, having one or more symptoms that surpass a determined threshold of seriousness), if we evaluate the absolute magnitude of the observable stress responses, the scene offers and unexpected view, which is often neglected by the authors of the papers. In fact, in many cases they do not even provide figures to analyse their results by pondering the magnitude of the response.

For example, in the study of Blanchard *et al.* (2004) with American university students, the global average of seriousness of the PCL-C items (remember

that it is an inventory that assesses in a 1-to-5 scale the seriousness of the 17 symptoms that meet the B, C, and D criteria of the DSM-IV) was of 1.68. A 1-to-5 scale means that, in average; the overall symptoms did not even reach the seriousness level of 2 (i.e., "A little bit") and the scores were even lower for the other two samples of students who lived at distant places from New York<sup>4</sup>. In a sample of African-American students in Louisiana (New Orleans), Murphy *et al.* (2003) found that the average in the PCL-C was of 1.75. Also, in university students, in this occasion in San Diego (CA), Matt and Vázquez (2005) found that the average magnitude of the distant witnesses response to the S11, measured with the same instrument, was very low (1.96). Finally, for the general population in Madrid, 2-3 weeks following the M11 2004, the average value of the response to the PCL-C was also a very low average (1.88). This low intensity or seriousness of the average response has also been reported in a study of DeLisi *et al.* (2003) in a sample of New Yorkers. Using an instrument similar to the PCL-C (i.e., the *Davidson Trauma Scale*, a 17-item scale of symptoms in which the seriousness of each item is evaluated from 0 to 4), the most elevated scored items were 'Painful memories' and 'Reminders of painful memories' with an average value of 1.0. Figure 4 expresses accurately the scarce magnitude of the average global response to posttraumatic stress, which is contrary to the catastrophic and victimizing discourses of the mass media and policy makers after those tragedies (Herman, Felton and Susser, 2002; Sampedro, 2004). The fact that, on the average, in a scale that ranges from "Not at all" to "extremely", the average global scoring does not even amount, in any study, to the threshold of discomfort of "A little bit", should be taken as a point of discussion concerning the limited impact of the supposed collective traumatizations in such cases as M11 and S11.



\*Note: Only the 5-symptom scale of PCL-C was used (see Schuster *et al.*, 2001): 5, extremely; 4, quite a bit; 3, moderately; 2, a little bit; 1, not at all.

Figure 5. Overall average intensity of the PTSD symptoms, evaluated with the PCL-C, in different samples of general population within the days or weeks immediately after S11-2001 and M11-2004.

<sup>4</sup> Averages based upon total scores provided by Blanchard's *et al.* (2004, Table 1).

### 3. EPIDEMIOLOGY AND EPISTEMOLOGY OF THE PSYCHOPATHOLOGY: A PROPOS DE PTSD

The growing expansion of the DSM, with a growing quantity of diagnostic categories (Vázquez, 2000) and the proliferation of alarming epidemiological figures about the prevalence of mental conditions (Mechanic, 2003) may be explained, in part, by the existence of serious conceptual problems about the nature of a mental disorder. Obviously, this is not a simple or settled discussion (Wakefield, 1992) and it is highly probable that there is a certain uncritical surrender to such a medicalizing and active front (Vázquez, 2000). The immense majority of the studies on psychopathology, and, especially on PTSD, are based on lists of symptoms and diagnostic criteria in which little attention is paid to the psychosocial functioning of the people. After all, one of the fundamental criteria to know if a mental condition is a disorder or not, is if it really affects the life of the people and, this is seldom evaluated in the epidemiological studies. It is not only necessary to display a series of symptoms, as it is well described in the DSM criteria, but a clearly significant discomfort and/or an inadequate functioning is required. A relevant example of the implications of focusing not only on the symptoms is provided by the study of Narrow *et al.* (2002) who have demonstrated that the epidemiological figures of the classic Epidemiological Catchment Area or the National Comorbidity Study (that were aimed at evaluating the epidemiology of mental conditions in the American population) are reduced 17% and a 32%, respectively, only if we consider such cases where the subject had to indicate -apart from the symptoms- if he had "used medication" or told a professional about his/her problems?

Although this perspective might also seem questionable (Wakefield and Spitzer, 2002) it undoubtedly opens the discussion about the diagnostic and epidemiological inflation of mental conditions that we are experiencing lately. The data of the studies of Silver *et al.* (2002) after the S11 and of Muñoz *et al.* (2004) after the M11 are very interesting in this sense. For example, in the study of Muñoz *et al.* (2004), the authors point out that, even though 47% of the interviewed subjects showed significant acute symptoms of stress following the first weeks after the attack, the figure was reduced to 15% when it was asked if the symptoms had affected the daily functioning during, at least, two days. Similar results have also been observed in another study performed in the population of Madrid (Vázquez, Pérez-Sales and Matt, 2005), which indicates that is necessary to take seriously into account the impact on the functioning as well as the seriousness of the mere symptoms.

### 4. TRAUMA, VULNERABILITY AND RESILIENCE

To assume that human populations are basically vulnerable to adversity and trauma is scientifically untrue and would have serious effects by misleading the prevention and intervention Programs. In this relation, Summerfield (1999a, b, 2001) has expressed severe objections to the humanitarian aid programs of governmental and non-governmental agencies that are based on wrong -and sometimes biased- assumptions about a psychopathologizing view

of the populations to whom such programs are addressed. A view of the pathology that is based on lists of symptoms and that neglects those aspects which are more related to the functioning and psychological integrity, might lead to the mistaken conclusion that the human being requires help to cope with almost any difficulty (see also a criticism to this idea in Blanco and Díez, 2004) and, besides, as it was appropriately pointed out by Derek Summerfield in the quote that opens this paper, such a pathologizing view might victimize even more the affected people by considering them passive and definitely fragile subjects.

The data on the limited and transient impact of the terrorist attacks of S11 and M11 may be better understood from the viewpoint of *resilience* to cope with adversity. Studies of the general population indicate that whereas “traumatic events”, as defined in DSM-IV, may affect more than 50% of the general population in the course of their lives (Breslau, Davis, & Andreski, 1995), only 1-3% (5-15%, if the less severe forms are included) will show PTSD –Kessler, (2000). It is evident that research must pay much more attention to the mechanisms that prevent the majority of the population exposed to traumatic events to develop clinically significant trauma responses.

The effects of the attacks of S11 and of M11, which have a significant resemblance, in many aspects, had a lower effect in the population than the predicted outcome. Why is there an expectation of extended damage in the populations? It is probable that the wrong idea that the human beings are vulnerable to adversity (Seligman, 1998; Bonnano, 2004) would originate this prejudice. As we have largely discussed on other occasions (Avia and Vázquez, 1998; Vázquez and Pérez-Sales, 2003; Pérez-Sales and Vázquez, 2003 a,b; Vázquez, Cervellón, Pérez-Sales *et al.* 2005) human beings are basically resilient to adversity, which is achieved by a complex network of mediational, cognitive and motivational processes (Lyubomirsky, 2001). One of the implied factors is the presence of positive emotions during and after the trauma, which might have a buffering effect on the impact of the trauma (Wortman & Silver, 1989; Linley, 2003). For example, in a recent study we have shown that positive emotions and cognitions are very frequent in a sample of refugees in camps after an earthquake in El Salvador in 2001 (Vázquez, Cervellón, Pérez-Sales *et al.*, 2005). Likewise, in the case of the S11 events, it was observed that many people experienced positive emotions (e.g., feeling of solidarity, community cohesion, etc.) and it is possible that, because of these traumatic events, the basic beliefs pointed out by Janoff-Bulman (1992) have not been affected. In the case of the September 11 events, a series of polls from the *National Organization for Research at the University of Chicago* (NORC) found substantial evidence that people in NYC and in other parts of the country felt deeply interconnected, still had a general positive view of the nature of human beings, and also showed a significant increase of feeling proud about the nation (Smith, Rasinski and Toce, 2001).

It is likely that this complex mixture of negative and positive emotions played as a powerful buffer against the development of PTSD and other disorders in the general population. As Brewin, Andrews and Valentine (2000) found in their metaanalysis of the risk factors for PTSD, subsequent

adverse life events as well as lack of social support following trauma are the strongest predictors of the development of that disorder. Thus, the common experience of sharing of emotions in those dramatic days could be another important buffering factor. As Zech *et al.* (in press) have shown, the ability to use adequate interpersonal connections is crucial to effectively regulate people’s affect in the aftermath of overwhelming events. It seems that all these social conditions were present, from the very beginning of the catastrophe, in the traumatic scenario of the September 11 attacks on the American soil and later in the Madrid March 11 events. According to Zech and his colleagues, “social sharing may well provide help in meeting two fundamental human needs: affiliation and social consensus...[leading]... to a partial restoration of a belief in a just world, and to a decrease of loneliness”.

In the case of the Madrid attack, a number of unique political circumstances created a complex social scenario where positive and negative emotions were particularly mixed during the first days after the tragedy. One of the next steps of our research team will be to analyse the role of these negative and positive emotions that, according to some other previous research (e.g., Fredrickson, Tugade, Waugh, and Larkin, 2003; Vázquez and Pérez-Sales, 2005), seem to play an important role in the development and/or maintenance of post-traumatic symptoms.

## 5. CONCLUSIONS

In October 2001, the *New York State Office of Mental Health* and the *Department of Epidemiology of the Mailman School of Public Health of Columbia University* conducted a rapid assessment of the nature and magnitude of mental health needs in the state resulting from the September 11th terrorist attacks on the World Trade Centre. This effort was carried out during a period of great turmoil and uncertainty as New Yorkers responded to the shocking events of this unprecedented disaster. Using the limited data available at the time, we estimated that over 520,000 persons in New York City and the surrounding counties would experience posttraumatic stress disorder resulting from exposure to the attacks, and that more than 129,000 would seek treatment for this disorder during 2002. Thus, health policymakers predicted a major mental health crisis among New York citizens and expected a substantial increase of PTSD (Herman, Felton, & Susser, 2002; Stephenson, 2001). A similar scenario was predicted in Madrid by governmental authorities (Sampedro, 2004). Yet, the subsequent epidemiological studies conducted in New York (e.g., Galea *et al.*, 2002, 2003) and in other US cities (Schlenger *et al.*, 2002) showed, in fact, that prevalence rates of PTSD disorders in the general population were not disproportionate relative to pre-September 11 attacks rates and significantly dropped after the first few months after the tragedy.

With these catastrophic predictions, the *Project Liberty* was designed, which aim was to provide free counselling to New Yorkers (Kadet, 2000). In spite of the great response to the Program, this accounted only for the fourth part of the expected number of participants, as predicted by the authors of the Project; and of the \$131 million allocated in the budget for therapies for the benefit of the New Yorkers, there were still \$90 million to be disbursed (see

McNally, Bryant and Ehlers, 2003). One of the lessons of the aftermaths of the September 11 attacks in the American Territory is that the resources should be allocated to selected targets (especially, directly affected victims) and that validated procedures should be employed. Although, it is true that a better formation is required as well as a rapid response of the mental health professionals (Hamaoka, Shigemura, Hall, & Ursano, 2004), it is also necessary to avoid unnecessary alarming warnings, no matter if they are well-intentioned or if they are induced by strategies of professional and union interests, because they would anticipate problems that would not be present and, thus, the efforts that should be directed to other directions would be deviated.

What we learnt from these catastrophes has also conceptual and methodological consequences. On one hand, it seems clear that *resilience* is the common rule of the general population (including the directly exposed people) and, besides, it is less probable that the vicarious witnesses of a trauma would develop clinically significant posttraumatic reactions, that, in any case, are transient for the majority of the supposedly affected. It seems clear that the broad concept of "trauma" expressed in the DSM-IV requires review and refining. Another important lesson is related to the extent of the trauma and the stress-related reactions. The use of tools or cut-off scores with a very low psychopathologic detection threshold may prove to be inadequate to detect clinically significant reactions in the general population. Although its use is widely extended, it seems clear that they generate disproportionately high figures of affected people, which creates a psychopathologizing environment and an unnecessary social alarm.

Another lesson derived from these national tragedies is that the assessment of the effects of terrorist attacks on the general population should focus not only on symptoms (e.g., Schuster *et al.*, 2001; Stein *et al.*, 2004; Blanchard *et al.*, 2004) but also on the impact on functioning (see North and Pfefferbaum, 2002) as this could be one of the most relevant criteria for seeking help in victims of trauma (Shalev, 2004). In fact, the results of some of our studies on the effect of the M11 attacks on Madrid (Vázquez, Pérez-Sales and Matt, 2005) support the idea that both the presence of avoidance behaviours and a deficit in psychosocial functioning are critical to lower the estimations of PTSD prevalence (see also Brewin, Andrews and Rose, 2000).

The social responsibility of scientists should be to generate knowledge based on the available evidence, and to strive to be, as much as possible, faithful witnesses of reality, which, as we have seen at these times, taking into account the research done on M11 and S11, might be probably subject to interests of a less noble nature, or, at least, with a minor background of concrete scientific data.

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