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PTSD 6 and 18 months after terrorist attacks

Post-traumatic stress disorder among civilians 6 and 18 months after the January 2015 terrorist attacks in the Paris region

Vincent Charline*^a, Philippe Pirard^b, Yvon Motreff^b, Leticia Bertuzzi^a, Vandentorren
Stéphanie*^{c,d}, Vuillermoz Cécile*^a

a: INSERM, Sorbonne Université, Institut Pierre Louis d'Epidémiologie et de Santé Publique (IPLESP), Department of social epidemiology, F75012 Paris, France

b: Santé publique France, Direction des maladies non transmissibles et traumatismes, F94415 Saint-Maurice, France

c: Santé publique France, Direction scientifique et internationale, F94415 Saint-Maurice, France

d: University of Bordeaux, INSERM, Bordeaux Population Health Research Center, U1219, F-33000 Bordeaux, France.

*: co-last authors

Information about the author

Charline VINCENT

Email address: charlinevincent4@gmail.com

Address: INSERM, Sorbonne University - Faculty of Medicine

Pierre Louis Institute of Epidemiology and Public Health

Saint-Antoine site - UMR-S 1136

27 rue Chaligny, 75012 PARIS

Phone number: +33 (0)7 68 94 94 20

Corresponding Authors

Philippe Pirard: philippe.pirard@santepubliquefrance.fr

Yvon Motreff: yvon.motreff@santepubliquefrance.fr

Leticia Bertuzzi: leticia.bertuzzi@iplesp.upmc.fr

Vandentorren Stéphanie: stephanie.vandentorren@santepubliquefrance.fr

Vuillermoz Cécile: cecile.vuillermoz@inserm.fr

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Abstract

In the literature, the association between medium- and long-term PTSD (post-traumatic stress disorder) after terrorist attack has rarely been described. The objective of our study was to identify the factors associated with PTSD in the medium and longer term among people exposed to a terrorist attack in France.

We used data from a longitudinal survey of 123 terror-exposed people interviewed 6-10 (medium term) and 18-22 (long term) months after. Mental health was assessed by the Mini Neuropsychiatric Interview.

PTSD in the medium term was associated with history of traumatic events, low levels of social support and severe peri-traumatic reactions, which were in turn associated with high levels of terror exposure. PTSD in the medium term was linked in turn to the presence of anxiety and depressive disorders, which was also linked to PTSD in the longer term.

The factors leading to PTSD are different in the medium and long term. In order to improve future support for people exposed to distressing events, it is important to follow up people with intense peri-traumatic reactions, high levels of anxiety and depression and to measure reactions.

Keywords: post-traumatic stress disorder, January 2015 terrorist attacks in France, exposure, longitudinal study, structural equation model.

1. INTRODUCTION

The terrorist attacks perpetrated on January 7, 8 and 9, 2015 in the Paris region caused the death of 17 people and physically injured 20. The literature has shown that an exposed population can suffer from PTSD, anxiety disorders and depression (Bonanno et al., 2010). For intentional traumatic events, the prevalence of PTSD is thought to decrease more slowly than for unintentional events (Santiago et al., 2013). According to a 2013 literature review of 35 studies on trauma survivors, the prevalence of PTSD ranged from 28.8% at 1 month to 17.0% at 12 months (Santiago et al., 2013).

In studies on terrorist attacks, authors have suggested that the type of exposure (being a witness, being close to the perpetrators, or being injured) is a factor that could be associated with the occurrence of PTSD (Brewin et al., 2000; Glad et al., 2016; Ozer et al., 2003). Several authors have observed that the intensity of the experience of the event is associated with the occurrence of PTSD and it depends in particular on the peri-traumatic reactions, mostly in the form of a disconnection from reality during the events (Brewin et al., 2000; Rouillon et al., 2001). The onset of PTSD can also be associated with a history of mental health disorder (Brewin et al., 2000; Ozer et al., 2003; Perlman et al., 2011), the use of psychotropic drugs in the past and life difficulties in the year preceding the events (Brewin et al., 2000; Ozer et al., 2003) as well as the perceived absence of social support after the event (Brewin et al., 2000; Dyb et al., 2014; Ozer et al., 2003; Silver et al., 2002; Simard, 2018). The aforementioned studies have only focused on factors associated with a single disorder. However, approximately 80% of people with PTSD are reported to have concomitant psychiatric disorders (Jolly, 2000). Anxiety disorders and depression are risk factors for the development of post-traumatic stress disorder (Adams et al., 2019; Bugge et al., 2017; Vázquez et al., 2006; Vlahov et al., 2002).

In the literature, most studies that have been conducted on mental health at the time of terror attacks are cross-sectional and use simple regression models to identify factors associated with mental health disorders. However, these designs and models do not enable the complex relationships between the different disorders to be studied, nor do they enable assessment of the evolution of mental health over time.

Considering the various aspects mentioned above, the aim of this study was to identify factors associated with post-traumatic stress disorder among civilians, 6 to 18 months after the January 2015 attacks in France, using structural equation modelling in order to take the complex relationships between these factors into account and to assess the evolution of mental health over time.

2. MATERIALS AND METHODS

2.1. Participants and procedure

The study was based on data collected from the IMPACTS survey (Investigation of Post-Attack Traumatic Manifestations and Therapeutic and Supportive Care), led by Santé Publique France (the French national public health agency), the Ile-de-France Regional Health Agency and INSERM (National Institute of Health and Medical Research). The survey population consisted of people who had been exposed to the January 2015 terrorist attacks perpetrated in the Paris region. The people exposed to the attacks were defined in the IMPACTS survey as those who had been exposed according to "criterion A" of the DSM-V definition of post-traumatic stress disorder. They included the following: physically wounded individuals, hostages, witnesses directly threatened or physically present at the scene of the events (directly threatened subjects); people who had to take shelter during the terrorist attacks and whose lives were indirectly threatened (indirectly threatened subjects); and family members and close relatives of the

victims, people living or working in the immediate proximity of the scene of the events and present at the time of the attacks (indirect witnesses).

The aims of the IMPACTS survey were to study the impact of these terrorist attacks on civilians' and rescue workers' mental health and social functioning, as well as to assess perceived social support and mental health care received in medium and long-term care. The first round of the investigation was conducted from June to October 2015 (medium term), and the second round from June to October 2016 (long term). Details of the survey design and sampling process have been provided in another article (Vandentorren et al., 2018; Vuillermoz et al., 2020). In this study, we considered the 123 civilians that were interviewed 6-10 (medium term) and 18-22 months (long term) after the attacks.

2.2.Measures

The survey questionnaires were administered face-to-face by investigators trained in trauma management, and the following were collected: socio-demographic characteristics, the level of exposure, peri-traumatic reactions, perceived social support received after the events, psychological support received after the events, history of medical and psychological care, history of potentially traumatic situations and mental health.

2.3.Structural equation modelling

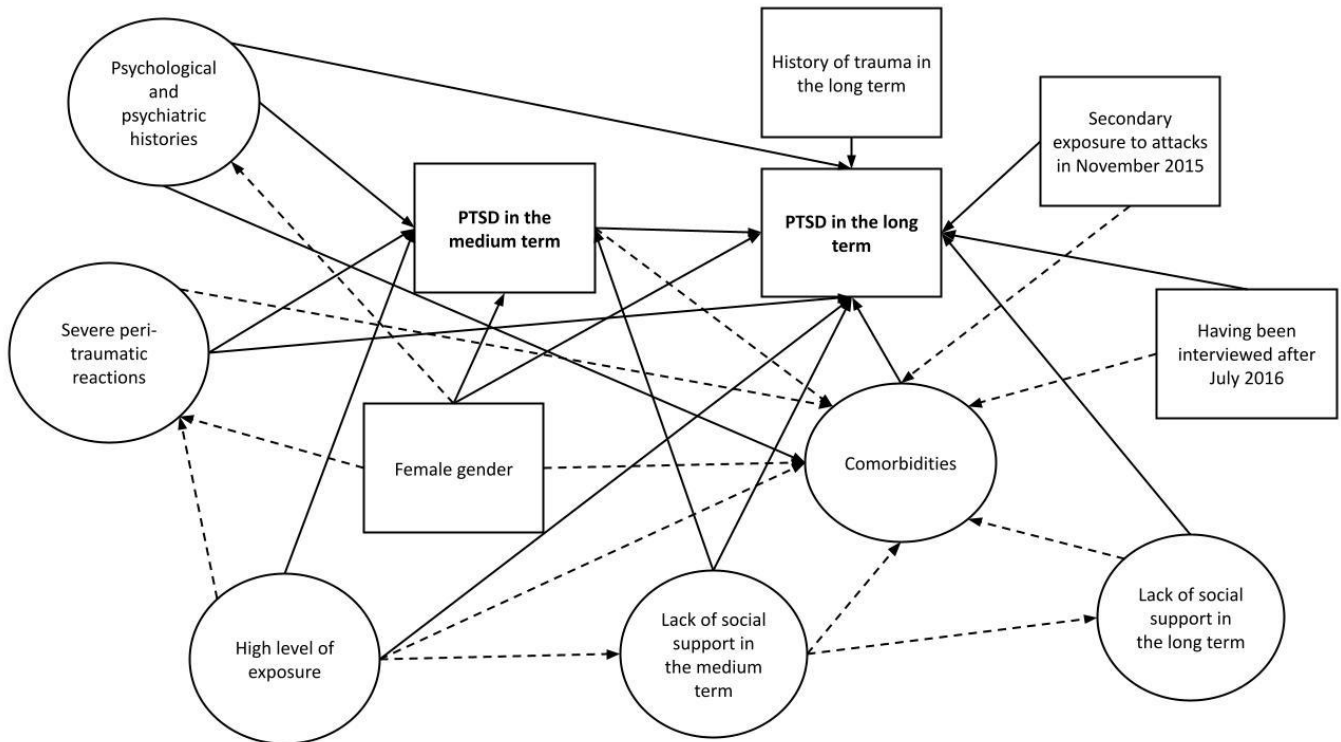
In the context of the complex relationships between PTSD, anxiety disorders, depression and factors associated with these disorders, we considered that Structural Equation Modelling (*SEM*) models were the best suited to studying these relationships (Bachet, 1999; Mansiaux, 2014).

2.3.1. The hypothesised measurement models

In view of the literature and the data collected from the IMPACTS survey, we made assumptions that were placed in four categories (*Fig 1*).

Fig 1: Hypothesised model for relationships between latent and observed variables and post-traumatic stress disorder in the medium and the long term after the attacks, IMPACTS 2015

2016 survey. Circles: latent variables; Boxes: observed variables



Firstly, we hypothesised that PTSD in the medium term was related more to the situation before the attacks (i.e. psychological and psychiatric history) (Ozer et al., 2003; Perlman et al., 2011) and especially to a high level of exposure to the attacks (i.e. directly or indirectly threatened) (Glad et al., 2016; Monfort & Afzali, 2017; Ozer et al., 2003) and to severe peri-traumatic reactions experienced around the event (Ozer et al., 2003; Rouillon et al., 2001). We also thought that female gender (Carragher et al., 2016; Olf et al., 2007) and the absence of social support in the medium term (Motreff et al., 2020) would be associated with PTSD in the medium term.

Secondly, we hypothesised that PTSD in the longer term would be mainly linked to the presence of PTSD in the medium term and the presence of comorbidities (depressive episode or anxiety disorders) between the two rounds of the survey (Adams et al., 2019; Simard, 2018), which

would otherwise have led to chronic PTSD or increased the symptoms. Furthermore, we hypothesised that secondary exposure to the attacks in November 2015 and having been interviewed in the second round of the survey before the July 2016 attacks in Nice (Amoretti, 2018; Solla et al., 2018) could be linked to the presence of PTSD in the longer term. As for the medium term, we hypothesised that PTSD in the long term would also be related to female gender, a history of trauma, psychological et psychiatric history, severe peri-traumatic reactions, high level of exposure to the attacks and the absence of perceived social support in the medium and long term.

Thirdly, we hypothesised that long-term co-morbidities would be linked to the presence of PTSD in the medium term (Bugge et al., 2017; Vázquez et al., 2008), to a high level of exposure during the attack (Glad et al., 2016; Monfort & Afzali, 2017; Vázquez et al., 2008) to severe peri-traumatic reactions experienced around the attack (Henriksen et al., 2010), to the absence of perceived social support in the medium and long term (Fekih-Romdhane et al., 2017; Wood et al., 2013), to psychological and psychiatric histories, to female gender (Dyb et al., 2014; Hales et al., 2014; Salguero et al., 2011) and secondary exposure to the attacks in November 2015. As the second round of the IMPACTS survey was conducted from June to October 2016, people participated in the survey both before and after the attacks in Nice in 2016. We hypothesised that among people who were interviewed after the Nice 2016 attacks, PTSD would be more frequent as a result of a potential effect of secondary exposure to trauma.

Fourthly, we made some hypotheses concerning explanatory factors. One of them was that gender would be linked to peri-traumatic reactions experienced after the event (Elhai et al., 2006; Hamama-Raz et al., 2015; Maguen et al., 2012) and the presence of psychological and traumatic history. In fact, according to the literature, women face more violence than men and therefore have a potentially more traumatic life history (Morin et al., 2013). We also hypothesised that the level of exposure (being close to the aggression, being directly threatened)

could have influenced the perceptions of social support, and that the most exposed people had the strongest peri-traumatic reactions.

2.3.2. *Variables used*

Outcomes. The two variables of interest in our study, the presence of PTSD in the medium (6-10 months) and in the long term (18-22 months), were constructed from the presence of PTSD in the last month measured in each round (T1 and T2) of the survey using the MINI (*Mini-International Neuropsychiatric Interview v6 DSM IV*, (Sheehan et al., 1998)). The MINI is a structured interview developed jointly by psychiatrists and clinicians in the United States and Europe, for the diagnosis of 17 psychiatric disorders administered in face-to-face by non-specialised interviewer, it is a validated gold standard (Spont et al., 2013).

These variables were binary (1 in presence of PTSD and 0 in absence of PTSD).

Latent variables. All other variables used in this model were ordinal and categorical; they were all recoded to go in the same direction as a latent variable to reflect the same concept. Comorbidities were constructed using the two items: (i) the presence of major depressive episode in the last two weeks in the medium and long term (at least once at T1 or T2/neither in T1 nor T2) measured with the MINI and (ii) the presence of at least one of these anxiety disorders: generalised anxiety, panic disorder, agoraphobia and social phobia, in the medium and long term (at least once at T1 or T2/ neither in T1 nor T2) measured with the MINI (Pettersson et al., 2018).

A high level of exposure was constructed using three items: (i) a high subjective exposure score (a score >5 indicated high exposure), (ii) the type of exposure (which was constructed using 20 questions that defined whether people had been directly threatened, indirectly threatened or had indirectly witnessed) and (iii) physical proximity with the perpetrators (where

the person was during the event: within 10 meters of the terrorists/very close to the event site, in an adjacent room/in a nearby building or on an adjacent street/elsewhere). We have therefore considered three types of physical proximity: immediate proximity, distant from the scene of the event and having lost a loved one.

The variable for severe peri-traumatic reactions around the event was constructed using two items : (i) acute peri-traumatic stress measured by the STRS score (*Shortness of breath, Tremulousness, Racing heart, and Sweating*) (Bracha et al., 2004) which provided information on the adrenergic reaction (high STRS score >24, we chose the median as the cut-off in the absence of indications in the literature) and (ii) marked experience of peritraumatic dissociation, i.e. a high level of exposure felt during the attack (*Peritraumatic Dissociative Experience Questionnaire*) (Birmes et al., 2005)(high PDEQ score, >15, we chose a cut-off of 15 on the basis of the literature (Marmar et al., 1996; Zambaldi et al., 2011)).

The presence of psychological and psychiatric histories in the medium term was constructed using four items: (i) the presence of psychological support in the past (yes/no), (ii) the presence of life difficulties experienced in 2014 (yes/no), (iii) the presence of a history of trauma before the first round of data collection (yes/no) and (iv) taking sleeping pills in the past (yes/no).

The perception of lack of social support at T1 and T2 was constructed from the three perceived social support items (Melrose et al., 2015; Robert et al., 2017) collected in the medium and long term after the events: (i) not feeling supported financially (being able to count on someone to help in case of financial or material need: yes/no), (ii) not feeling supported in daily life (being able to count on someone to help in daily life : yes/no) and (iii) not feeling supported (being able to count on someone to provide moral or emotional support: yes/no).

Other indicators. We introduced four other variables into the model that were directly measured in the survey questionnaire and maintained as solely observed variables because they did not

enable the construction of latent variables: (i) gender (male/female), (ii) presence of a history of trauma since the first round of data collection (yes/no), (iii) presence of exposure to the November 2015 attacks (yes/no) and (iv) having responded to the questionnaire in the second round of the survey, that is to say after the attacks in July 2016 (yes/no).

2.4.Data analyses

The characteristics of the population were described and the proportions and medians were calculated with 95% confidence intervals.

First of all, we tested the measurement model. We estimated the correlations between the different observed variables for the same latent variable using Spearman's correlation coefficient (non-parametric). We then considered there was a correlation if $\rho > 0.3$ (Falissard, 2011). Secondly, we checked the uni-dimensionality of each latent variable using scree-plots. Thirdly, we estimated the measurement model using CFA (Confirmatory Factor Analysis) to check that the measured variables contributed significantly to the constructed latent variables. We used the WLSMV (Weighted Least Squares Means and Variance) estimator adapted to the use of ordinal categorical variables (Newsom, 2018). Finally, we estimated the structural equation model with standardised regression coefficients (-1 to 1). Using a descending stepwise procedure, the least significant relationships were removed one after the other. The goodness-of-fit of the CFA and structural model was checked using goodness-of-fit indexes for the categorical variables (Hutchinson & Olmos, 1998) : the Root Mean Square Error of Approximation (RMSEA) (>0.08), the Comparative Fit Index (CFI) (<0.95) and the Tucker-Lewis Index (TLI) (<0.95). In order to estimate the statistical power of the model, we used Preacher's method (Preacher & Coffman, 2006), which requires the number of degrees of freedom to be known (Rigdon, 1994) : $ddl = \frac{m(m+1)}{2} - 2m - \frac{e(e-1)}{2}$, where m is the number of observed variables and e the number of latent variables.

All analyses were conducted using R software (version 4.0.2), with the "lavaan" package for estimation of SEM.

3. RESULTS

3.1. Population

A total of 190 people responded in T1. The participation rate in T2 was 64.7% with 123 participants. Among the participants in T2, the majority were women (61%) and born in France (95.9%) (*Table 1*). The median age was 42 years at T1. Concerning the type of exposure, 32 (26%) people were indirect witnesses, 55 (44.7%) people were indirectly threatened and 36 (29.3%) were directly threatened. Concerning their physical proximity with the perpetrators, 13 (10.6%) people were had lost a loved one, but not at the scene, 55 (44.7%) people were in the immediate vicinity and 55 (44.7%) people were some distance from the street where the attack took place. Finally, concerning subjective exposure, 29 (24.2%) people reported low exposure and 91 (75.8%) high exposure.

In the medium term, 16.3% presented PTSD, 32% had at least one anxiety disorder and 42.3% had current depression. In the long term, 14.6% had PTSD, 43.1% had anxiety disorders and 30.9% had depressive disorders.

3.2. Validation of latent constructs

The correlations across the observed variables of the latent variables ranged from -0.03 to 0.59. Some observed variables of the latent variable "Psychological and psychiatric history at T1" were not correlated with each other, so the latent variable was not retained. For this latent construct, in the model we retained the observed variable: having experienced at least one trauma in the medium term after the events. The observed variable "subjective exposure" was removed from the latent variable "High level of exposure" because it was not correlated with the other observed variables. For latent variables with more than 3 observed variables, the uni-dimensionality was validated.

3.3.Measurement models

A factor analysis was run with five latent variables in the hypothetical model. The estimated standardised loadings were statistically significant (p-value<0.001) and their values were greater than 0.5, which meant a robust relationship between the observed variables and their latent variable. This model enabled close agreement with the data and the proposed dimensional structure was therefore not rejected: TLI = 0.936, RMSEA = 0.031[0.000-0.072], CFI = 0.958. The measurement model thus contained 19 measured variables and 5 latent variables. On the basis of the Preacher's method presented in "statistical analyses", we estimated the number of degrees of freedom: $ddl = \frac{18(18+1)}{2} - 2 \times 18 - \frac{5(5-1)}{2} = 125$. The estimated statistical power for a sample of 123 individuals, an RMSEA between 0.05 and 0.08, a first species risk at 0.05 and a number of degrees of freedom at 125, was 84% (Sideridis et al., 2014).

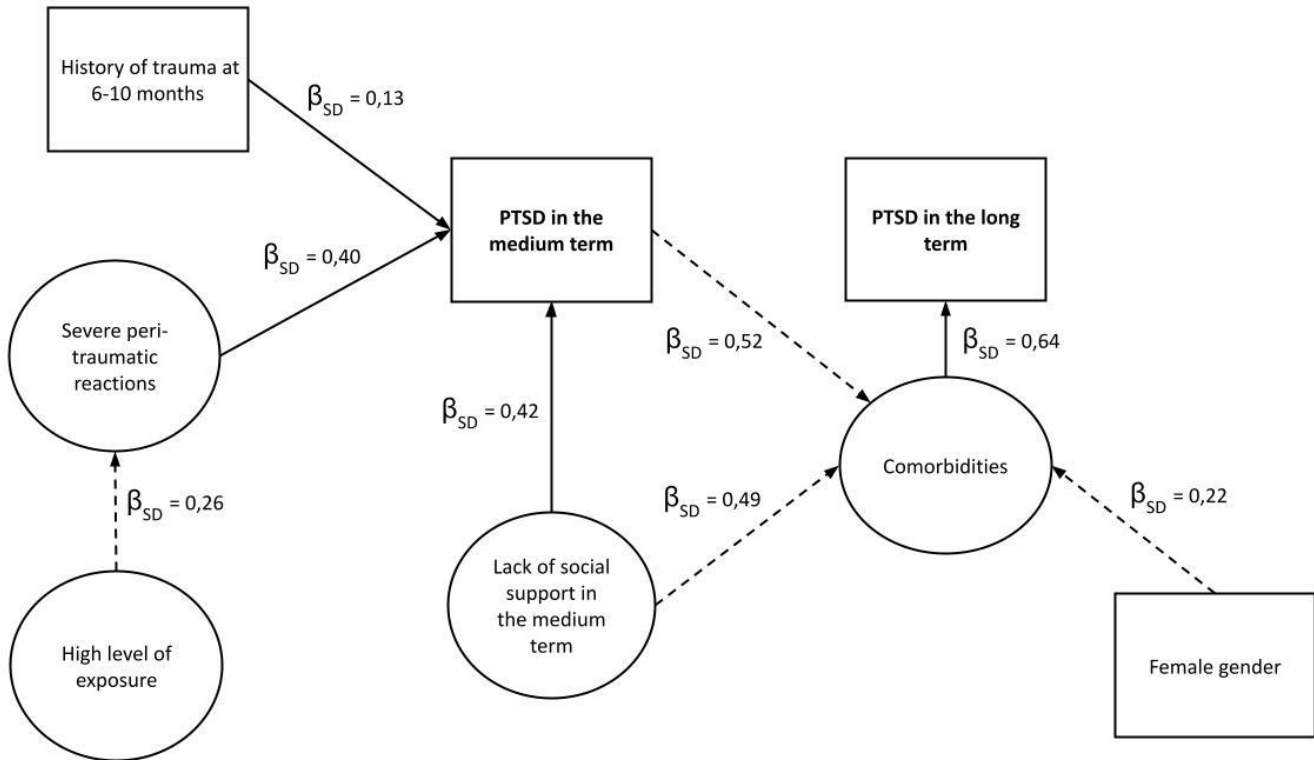
3.4.Final model

The final model is shown in *Fig 2*. PTSD in the medium term (6-10 months) was linked to the presence of a history of trauma in the medium term ($\beta_{SD} = 0.13$ [95% CI: 0.04-0.40]) as well as to severe peri-traumatic reactions experienced during the attacks ($\beta_{SD} = 0.40$, [95% CI: 0.30-0.74]) and to the absence of perceived social support in the medium term ($\beta_{SD} = 0.42$, [95% CI: 0.02-0.56]).

Long-term (18-22 months) PTSD was associated with the presence of comorbidities ($\beta_{SD} = 0.64$, [95% CI: 0.31-0.70]). The presence of comorbidities was linked to female gender ($\beta_{SD} = 0.22$, [95% CI: 0.17-0.63]), PTSD at 6-10 months ($\beta_{SD} = 0.52$, [95% CI: 0.32-0.86]) and lack of social support in the medium term ($\beta_{SD} = 0.49$, [95% CI: 0.16-0.61]). Severe peri-traumatic reactions were linked to a high level of exposure ($\beta_{SD} = 0.26$, [95% CI: 0.07-0.62]). The adjustment indices of the structural model were satisfactory, the RMSEA was 0.00[0.00-0.03], the CFI was 1.00, and the TLI was 1.05.

Fig 2: Final model of relationships between PTSD and the various latent and observed variables, in the medium and long term after the attacks, IMPACTS 2015-2016 survey.

Circles: latent variables; Boxes: observed variables



4. DISCUSSION

This study shows that the prevalence of PTSD was 16.3% at 6-10 months and 14.6% at 18-22 months after the attacks. An online survey of a nationally representative panel 1 month after these events showed a prevalence of PTSD of 7.6% (Ben-Ezra et al., 2015). Among people exposed to the 1996 tube train attacks in France, 41% had PTSD at 6 months and 34% at 18

months (Jehel et al., 1999). Among civilians exposed to the November 2015 Paris terror attacks, 48% presented PTSD at 8-11 months of the events (Pirard et al., 2018).

Following the 11 September 2001 attacks in the USA, 17% of residents and workers enrolled in the World Trade Center Health Registry presented PTSD 2 to 3 years after the events (Welch et al., 2016). The prevalence of PTSD in our study was lower than the values found in the literature, which could be explained by the difference in the diagnostic scales used, since the prevalence of PTSD is more restrictive when measured using the MINI than when measured with the DTS (Davidson Trauma Scale¹) (Vázquez et al., 2006).

We found a relationship between medium-term PTSD and severe peri-traumatic reactions to the attacks, which is consistent with the literature (Brewin et al., 2000; Ozer et al., 2003). However, SEM showed that peri-traumatic reactions were linked to a high level of exposure. Our results also highlight a relationship between a history of trauma and PTSD in the medium term, as others studies (Delahanty & Nugent, 2006; Gilbar et al., 2020; Scharff et al., 2021). Finally, our results suggest that the lower was the person's perceived social support, the more likely were these individuals to develop post-traumatic stress disorder. In the literature, social support, when perceived as positive by the individual, has a positive influence on his or her mental health (Dyb et al., 2014; Harandi et al., 2017), as well as helping the person to adapt to a stressful event (Folkman, 2013).

Our results suggest an indirect relationship between PTSD in the medium term and in the long term, depending on the presence of comorbidities, a finding that is consistent with the results of other studies. On the one hand, we know PTSD in the medium term is linked to the presence of comorbidities (Bugge et al., 2017; Vlahov et al., 2002) - symptoms that usually develop over the medium to long term. On the other hand, the presence of co-morbidities has been reported to contribute to PTSD (Adams et al., 2019; Vázquez et al., 2006). Furthermore, our results

¹The DTS is a 17-item self-report measure that assesses the 17 DSM-IV symptoms of PTSD

indicate the influence of gender on the presence of comorbidities, as reported in the literature (Hales et al., 2014; Salguero et al., 2011).

We found an association between social support and medium-term PTSD and comorbidities. However, we did not find any association between social support and PTSD in the long term. We therefore hypothesise that the absence of social support indirectly influences PTSD in the long term, but that this relationship is mediated by PTSD in the medium term and the presence of comorbidities in the long term.

Nor did we find a relationship between a history of trauma and PTSD in the long term. We therefore hypothesise that a history of trauma is more likely to influence medium-term PTSD, as suggested by our results.

We also initially hypothesised that secondary exposure to the attacks in November 2015 attacks would be linked to PTSD in the long term as well as to the presence of comorbidities. This relationship was not however found, so we suppose that the small number of people exposed secondarily ($n = 23$) did not enable us to highlight this relationship. Similarly, we do not find an association between PTSD in the long term and having been interviewed after July 2016 at T2 probably in relation to the geographical distance of this event, which did not cause reactivation of PTSD among these people.

Finally, we did not find a relationship between gender and peri-traumatic reactions, or a history of psychological and psychiatric disturbances. Some authors consider that it is the over-activation of neural networks in the processing of fear that could explain gender differences in the prevalence of PTSD (Olf et al., 2007). It can be assumed from our results that gender is linked to trauma in the medium term (with men experiencing fewer traumatic events than women) and to peritraumatic reactions (with men having a lesser need to process fear than women) and thus indirectly PTSD.

5. LIMITATIONS

This study has several limitations. Firstly, recruitment was carried out on a voluntary basis, it is therefore possible that there was a selection bias in the initial participation (at T1): the least exposed, those who were doing well, may have felt that they did not qualify to participate or, conversely, the most exposed, those who were doing worst, were not in a state to participate. Secondly, the small sample size probably did not enable us to find certain relationships, for instance between secondary exposure to the November 2015 attacks and PTSD. Thirdly, we could not infer causal relationships because we were not able to measure the state of mental health before the attack, but we do have proxy variables measuring the existence of treatment or psychological follow-up before the attack and some characteristics could have changed between measurement times (social support, etc.). Finally, our study certainly presents biases. We admit a potential memory bias concerning issues relating to peritraumatic reactions and the level of perceived exposure, which were collected 6-10 months after the event.

Nevertheless, our study has several strengths. Firstly, the study was carried out very soon after the event, and recruitment aiming to reach as many exposed people as possible was a demanding process. Secondly, mental health outcomes and peri-traumatic reactions were measured using reliable, standardised diagnostic tools. Thirdly, a study conducted as part of the IMPACTS survey (Vuillermoz et al., 2020) indicated that attrition in the long term was not associated with exposure or mental health disorders in the medium term. Thus, it is unlikely that there was an attrition bias between the two rounds of surveys (for instance those who were the most exposed or the least disturbed). Fourthly, the statistical power of the model (84%) and the fit indices were very satisfactory (Asparouhov & Muthen, 2010). However, we found a TLI adjustment index value slightly higher than 1, which indicates that the indices were probably slightly overestimated. This can be the case when categorical variables are used (Savalei, 2020; Xia & Yang, 2019). Fifthly, this survey enabled the study of the phenomenon of secondary exposure

of some participants to other attacks that occurred in France (the November 2015 attacks in Paris and the Nice attack of July 13, 2016 took place during the second round of the survey).

6. CONCLUSION

Our study confirms the role of social support on mental health in the context of mass traumatic events, or of gender on the presence of comorbidities. It suggests that it is not medium-term PTSD directly that influences the presence of long-term PTSD but that medium-term PTSD leads to comorbidities which in turn influence the presence of long-term PTSD. Also, that it is not having a high level of exposure that influences PTSD but the presence of peri-traumatic reactions (itself influenced by a high level of exposure).

This implies for research that these variables/relationships should be taken into account in the analyses, for public health, this article suggests the importance of providing "early" social support in preventing the presence of PTSD, anxiety and depressive disorders. In the case of future mass traumatic events there is a need (i) to screen more for peri-traumatic reactions during the attack, (ii) to take into account the "feeling" of exposure rather than the categories of exposure, (iii) to raise awareness in the entourage of those exposed about the importance of their support and (iv) to screen for anxiety and depressive disorders and PTSD at an early stage. It would be interesting to test this model on another population exposed to mass trauma in order to clarify, and validate or invalidate our hypotheses.

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Availability of data and materials

The data that support the findings of this study are available from The French Public Health Agency (Santé Publique France), but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of The French Public Health Agency.

Ethics approval and consent to participate

The IMPACTS survey received approval from the Committee of Ethics and Deontology (CED) of Santé Publique France in 2015, and from CNIL (the French National Commission on Informatics and Liberties, notice No. 915262), CPP (the French ethical research committee, notice No. 3283) and CCTIRS (the French Advisory Committee on Information Processing in

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Consent for publication

Not applicable.

Declaration of interest: none

Category of proposed article: Article with an empirical dimension

References

- Adams, S. W., Allwood, M. A., & Bowler, R. M. (2019). Posttraumatic Stress Trajectories in World Trade Center Tower Survivors: Hyperarousal and Emotional Numbing Predict Symptom Change. *Journal of Traumatic Stress, 32*(1), 67–77. <https://doi.org/10.1002/jts.22357>
- Amoretti, N. (2018). Terrorist Attack in Nice, France, in July 2016: Massive Influx of Patients to a Radiology Department. *Radiology, 288*(1), 2–3. <https://doi.org/10.1148/radiol.2018172915>
- Asparouhov, T., & Muthen, B. (2010). *Weighted Least Squares Estimation with Missing Data* (Mplus technical appendix). <https://www.statmodel.com/download/GstrucMissingRevision.pdf>
- Bachet, F. (1999). L'utilisation des modèles dans l'analyse des structures de covariance. *L'année psychologique, 99*(1), 99–122. <https://doi.org/10.3406/psy.1999.28549>
- Ben-Ezra, M., Leshem, E., & Goodwin, R. (2015). In the Wake of National Trauma: Psychological Reactions Following the Charlie Hebdo Terror Attack. *American Journal of Psychiatry, 172*(8), 795–796. <https://doi.org/10.1176/appi.ajp.2015.15020239>

- Birmes, P., Brunet, A., Benoit, M., Defer, S., Hatton, L., Sztulman, H., & Schmitt, L. (2005). Validation of the Peritraumatic Dissociative Experiences Questionnaire self-report version in two samples of French-speaking individuals exposed to trauma. *European Psychiatry: The Journal of the Association of European Psychiatrists*, *20*(2), 145–151. <https://doi.org/10.1016/j.eurpsy.2004.06.033>
- Bonanno, G. A., Brewin, C. R., Kaniasty, K., & Greca, A. M. L. (2010). Weighing the Costs of Disaster: Consequences, Risks, and Resilience in Individuals, Families, and Communities. *Psychological Science in the Public Interest*, *11*(1), 1–49. <https://doi.org/10.1177/1529100610387086>
- Bracha, H. S., Williams, A. E., Haynes, S. N., Kubany, E. S., Ralston, T. C., & Yamashita, J. M. (2004). The STRS (shortness of breath, tremulousness, racing heart, and sweating): A brief checklist for acute distress with panic-like autonomic indicators; development and factor structure. *Annals of General Hospital Psychiatry*, *3*(1), 8. <https://doi.org/10.1186/1475-2832-3-8>
- Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology*, *68*(5), 748–766. <https://doi.org/10.1037//0022-006x.68.5.748>
- Bugge, I., Dyb, G., Stensland, S. Ø., Ekeberg, Ø., Wentzel-Larsen, T., & Diseth, T. H. (2017). Physical Injury and Somatic Complaints: The Mediating Role of Posttraumatic Stress Symptoms in Young Survivors of a Terror Attack. *Journal of Traumatic Stress*, *30*(3), 229–236. <https://doi.org/10.1002/jts.22191>
- Carragher, N., Sunderland, M., Batterham, P. J., Callear, A. L., Elhai, J. D., Chapman, C., & Mills, K. (2016). Discriminant validity and gender differences in DSM-5 posttraumatic stress disorder symptoms. *Journal of Affective Disorders*, *190*, 56–67. <https://doi.org/10.1016/j.jad.2015.09.071>

- Delahanty, D. L., & Nugent, N. R. (2006). Predicting PTSD prospectively based on prior trauma history and immediate biological responses. *Annals of the New York Academy of Sciences*, 1071, 27–40. <https://doi.org/10.1196/annals.1364.003>
- Dyb, G., Jensen, T., Glad, K. A., Nygaard, E., & Thoresen, S. (2014). Early outreach to survivors of the shootings in Norway on the 22nd of July 2011. *European Journal of Psychotraumatology*, 5. <https://doi.org/10.3402/ejpt.v5.23523>
- Elhai, J. D., Patrick, S. L., Anderson, S., Simons, J. S., & Frueh, B. C. (2006). Gender- and trauma-related predictors of use of mental health treatment services among primary care patients. *Psychiatric Services (Washington, D.C.)*, 57(10), 1505–1509. <https://doi.org/10.1176/ps.2006.57.10.1505>
- Falissard, B. (2011). *Analysis of Questionnaire Data with R*. Chapman and Hall/CRC. <https://doi.org/10.1201/b11190>
- Fekih-Romdhane, F., Chennoufi, L., & Cheour, M. (2017). PTSD and Depression Among Museum Workers After the March 18 Bardo Museum Terrorist Attack. *Community Mental Health Journal*, 53(7), 852–858. <https://doi.org/10.1007/s10597-017-0085-z>
- Folkman, S. (2013). Stress: Appraisal and Coping. In M. D. Gellman & J. R. Turner (Eds.), *Encyclopedia of Behavioral Medicine* (pp. 1913–1915). Springer New York. https://doi.org/10.1007/978-1-4419-1005-9_215
- Gilbar, O., Taft, C., & Dekel, R. (2020). Male intimate partner violence: Examining the roles of childhood trauma, PTSD symptoms, and dominance. *Journal of Family Psychology: JFP: Journal of the Division of Family Psychology of the American Psychological Association (Division 43)*, 34(8), 1004–1013. <https://doi.org/10.1037/fam0000669>
- Glad, K. A., Jensen, T. K., Hafstad, G. S., & Dyb, G. (2016). Posttraumatic stress disorder and exposure to trauma reminders after a terrorist attack. *Journal of Trauma & Dissociation*:

- The Official Journal of the International Society for the Study of Dissociation (ISSD)*, 17(4), 435–447. <https://doi.org/10.1080/15299732.2015.1126777>
- Hales, R. E., Yudofsky, S. C., MA, L. W. R. M., & Kupfer, D. J. (2014). *The American Psychiatric Publishing Textbook of Psychiatry* (6th Revised edition). American Psychiatric Association Publishing. <https://doi.org/10.1176/appi.books.9781615372980>
- Hamama-Raz, Y., Palgi, Y., Shrira, A., Goodwin, R., Kaniasty, K., & Ben-Ezra, M. (2015). Gender differences in psychological reactions to Hurricane Sandy among New York Metropolitan Area residents. *The Psychiatric Quarterly*, 86(2), 285–296. <https://doi.org/10.1007/s11126-014-9333-3>
- Harandi, T. F., Taghinasab, M. M., & Nayeri, T. D. (2017). The correlation of social support with mental health: A meta-analysis. *Electronic Physician*, 9(9), 5212–5222. <https://doi.org/10.19082/5212>
- Henriksen, C. A., Bolton, J. M., & Sareen, J. (2010). The psychological impact of terrorist attacks: Examining a dose-response relationship between exposure to 9/11 and Axis I mental disorders. *Depression and Anxiety*, 27(11), 993–1000. <https://doi.org/10.1002/da.20742>
- Hutchinson, S., & Olmos, A. (1998). Behavior of Descriptive Fit Indexes in Confirmatory Factor Analysis Using Ordered Categorical Data. *Structural Equation Modeling-a Multidisciplinary Journal - STRUCT EQU MODELING*, 5, 344–364. <https://doi.org/10.1080/10705519809540111>
- Jehel, L., Duchet, C., Paterniti, S., Louville, P., & Carli, P. (1999). Évaluation des troubles psychotraumatiques des victimes d'un attentat terroriste. Une étude prospective. *Médecine de Catastrophe - Urgences Collectives*, 2, 132–138.

- Jolly, A. (2000). Événements traumatiques et état de stress post-traumatique. Une revue de la littérature épidémiologique. *Annales Médico-Psychologiques, Revue Psychiatrique*, 158(5), 370–378.
- Maguen, S., Luxton, D. D., Skopp, N. A., & Madden, E. (2012). Gender differences in traumatic experiences and mental health in active duty soldiers redeployed from Iraq and Afghanistan. *Journal of Psychiatric Research*, 46(3), 311–316. <https://doi.org/10.1016/j.jpsychires.2011.11.007>
- Mansiaux, Y. (2014). *Analyse d'un grand jeu de données en épidémiologie: Problématiques et perspectives méthodologiques* [Phdthesis, Université Pierre et Marie Curie - Paris VI]. theses.fr. <https://tel.archives-ouvertes.fr/tel-01089321>
- Marmar, C. R., Weiss, D. S., Metzler, T. J., Ronfeldt, H. M., & Foreman, C. (1996). Stress responses of emergency services personnel to the loma prieta earthquake interstate 880 freeway collapse and control traumatic incidents. *Journal of Traumatic Stress*, 9(1), 63–85. <https://doi.org/10.1002/jts.2490090107>
- Melrose, K., Brown, G., & Wood, A. (2015). When is received social support related to perceived support and well-being? When it is needed. *Personality and Individual Differences*, 77, 97–105. <https://doi.org/10.1016/j.paid.2014.12.047>
- Monfort, E., & Afzali, M. H. (2017). Traumatic stress symptoms after the November 13th 2015 Terrorist Attacks among Young Adults: The relation to media and emotion regulation. *Comprehensive Psychiatry*, 75, 68–74. <https://doi.org/10.1016/j.comppsy.2017.02.015>
- Morin, T., Jaluzot, L., & Picard, S. (2013, November). Femmes et hommes face à la violence— Insee Première. *INSEE PREMIÈRE*, 1–4.
- Motreff, Y., Baubet, T., Pirard, P., Rabet, G., Petitclerc, M., Stene, L. E., Vuillermoz, C., Chauvin, P., & Vandentorren, S. (2020). Factors associated with PTSD and partial

- PTSD among first responders following the Paris terror attacks in November 2015. *Journal of Psychiatric Research*, 121, 143–150. <https://doi.org/10.1016/j.jpsychires.2019.11.018>
- Newsom, J. (2018). *Practical Approaches to Dealing with Nonnormal and Categorical Variables*. Psychiatry. http://web.pdx.edu/~newsomj/semclass/ho_estimate2.pdf
- Olf, M., Langeland, W., Draijer, N., & Gersons, B. P. R. (2007). Gender differences in posttraumatic stress disorder. *Psychological Bulletin*, 133(2), 183–204. <https://doi.org/10.1037/0033-2909.133.2.183>
- Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, 129(1), 52–73.
- Perlman, S. E., Friedman, S., Galea, S., Nair, H. P., Erős-Sarnyai, M., Stellman, S. D., Hon, J., & Greene, C. M. (2011). Short-term and medium-term health effects of 9/11. *The Lancet*, 378(9794), 925–934. [https://doi.org/10.1016/S0140-6736\(11\)60967-7](https://doi.org/10.1016/S0140-6736(11)60967-7)
- Pettersson, A., Modin, S., Wahlström, R., af Winklerfelt Hammarberg, S., & Krakau, I. (2018). The Mini-International Neuropsychiatric Interview is useful and well accepted as part of the clinical assessment for depression and anxiety in primary care: A mixed-methods study. *BMC Family Practice*, 19(1), 19. <https://doi.org/10.1186/s12875-017-0674-5>
- Pirard, P., Motreff, Y., Lavalette, C., Vandentorren, S., Baubet, T., & Messiah, A. (2018). Mental health impact and health care use of the bereaved persons 8-11 months after the November 2015 Paris terror attacks. *European Journal of Public Health*, 28(suppl_4), cky213.635. <https://doi.org/10.1093/eurpub/cky213.635>
- Preacher, K. J., & Coffman, D. L. (2006, May). *Power and Sample Size using RMSEA*. Quantpsy.Org. <http://quantpsy.org/rmse/rmse.htm>

- Rigdon, E. E. (1994). Calculating degrees of freedom for a structural equation model. *Structural Equation Modeling: A Multidisciplinary Journal*, 1(3), 274–278. <https://doi.org/10.1080/10705519409539979>
- Robert, S., Lesieur, S., Chastang, J., Kergoat, V., Dutertre, J., & Chauvin, P. (2017). [Health and access to health care of 18-25 years old people not in employment, education or training (NEETs) attending the French 'missions locales']. *Revue D'épidémiologie Et De Santé Publique*, 65(4), 265–276. <https://doi.org/10.1016/j.respe.2017.01.120>
- Rouillon, F., Barrier, G., Baruffol, E., Benayoun, S., Chambon, E., Evrard, M., Groult, J., Lamping, D., Lebigot, F., Lert, F., Rondet, P., & Verger, P. (2001, January 31). *Présentation de l'étude épidémiologique des conséquences sanitaires des attentats (ECSAT)*. S.O.S. Attentats, France.
- Salguero, J. M., Fernández-Berrocal, P., Iruarrizaga, I., Cano-Vindel, A., & Galea, S. (2011). Major depressive disorder following terrorist attacks: A systematic review of prevalence, course and correlates. *BMC Psychiatry*, 11(1), 96. <https://doi.org/10.1186/1471-244X-11-96>
- Santiago, P. N., Ursano, R. J., Gray, C. L., Pynoos, R. S., Spiegel, D., Lewis-Fernandez, R., Friedman, M. J., & Fullerton, C. S. (2013). A systematic review of PTSD prevalence and trajectories in DSM-5 defined trauma exposed populations: Intentional and non-intentional traumatic events. *PloS One*, 8(4), e59236–e59236. PubMed. <https://doi.org/10.1371/journal.pone.0059236>
- Savalei, V. (2020). Improving Fit Indices in Structural Equation Modeling with Categorical Data. *Multivariate Behavioral Research*, 0(0), 1–18. <https://doi.org/10.1080/00273171.2020.1717922>
- Scharff, A., Ortiz, S. N., Forrest, L. N., & Smith, A. R. (2021). Comparing the clinical presentation of eating disorder patients with and without trauma history and/or

- comorbid PTSD. *Eating Disorders*, 29(1), 88–102.
<https://doi.org/10.1080/10640266.2019.1642035>
- Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., Hergueta, T., Baker, R., & Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *The Journal of Clinical Psychiatry*, 59 Suppl 20, 22-33;quiz 34-57.
- Sideridis, G., Simos, P., Papanicolaou, A., & Fletcher, J. (2014). Using Structural Equation Modeling to Assess Functional Connectivity in the Brain: Power and Sample Size Considerations. *Educational and Psychological Measurement*, 74(5), 733–758.
<https://doi.org/10.1177/0013164414525397>
- Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *JAMA*, 288(10), 1235–1244.
- Simard, C. (2018). *Conception et validation d'un modèle théorique de la résilience auprès des étudiants universitaires* (<http://hdl.handle.net/20.500.11794/28371>) [Doctorat en Mesure et évaluation Philosophiæ Doctor (Ph. D.), Québec].
<https://corpus.ulaval.ca/entities/publication/89d1728e-af59-45c1-b44b-6fb1d724172f>
- Solla, F., Carboni, J., Bréaud, J., Babe, P., Brézac, G., Chivoret, N., Dupont, A., & Fernandez, A. (2018). July 14, 2016, Terror Attack in Nice, France. *Academic Pediatrics*, 18(4), 361–363. <https://doi.org/10.1016/j.acap.2018.01.004>
- Spoont, M., Arbisi, P., Fu, S., Greer, N., Kehle-Forbes, S., Meis, L., Rutks, I., & Wilt, T. (2013). *Screening for Post-Traumatic Stress Disorder (PTSD) in Primary Care: A Systematic Review* (Washington (DC): Department of Veterans Affairs (US)).
<https://www.ncbi.nlm.nih.gov/books/NBK126691/>

- Vandentorren, Pirard, Sanna, Aubert, Motreff, Dantchev, N., Lesieur, S., Chauvin, P., & Baubet, T. (2018). Healthcare provision and the psychological, somatic and social impact on people involved in the terror attacks in January 2015 in Paris: Cohort study. *British Journal of Psychiatry*, *212*(4), 207–214. <https://doi.org/10.1192/bjp.2017.63>
- Vázquez, C., Hervás, G., & Pérez-Sales, P. (2008). Chronic thought suppression and posttraumatic symptoms: Data from the Madrid March 11, 2004 terrorist attack. *Journal of Anxiety Disorders*, *22*(8), 1326–1336. <https://doi.org/10.1016/j.janxdis.2008.01.014>
- Vázquez, C., Pérez-Sales, P., & Matt, G. (2006). Post-traumatic stress reactions following the March 11, 2004 terrorist attacks in a Madrid community sample: A cautionary note about the measurement of psychological trauma. *The Spanish Journal of Psychology*, *9*(1), 61–74. <https://doi.org/10.1017/s1138741600005989>
- Vlahov, D., Galea, S., Resnick, H., Ahern, J., Boscarino, J. A., Bucuvalas, M., Gold, J., & Kilpatrick, D. (2002). Increased use of cigarettes, alcohol, and marijuana among Manhattan, New York, residents after the September 11th terrorist attacks. *American Journal of Epidemiology*, *155*(11), 988–996.
- Vuillermoz, C., Stene, L. E., Aubert, L., Motreff, Y., Pirard, P., Baubet, T., Lesieur, S., Chauvin, P., & Vandentorren, S. (2020). Non-participation and attrition in a longitudinal study of civilians exposed to the January 2015 terrorist attacks in Paris, France. *BMC Medical Research Methodology*, *20*(1), 63. <https://doi.org/10.1186/s12874-020-00943-x>
- Welch, A. E., Caramanica, K., Maslow, C. B., Brackbill, R. M., Stellman, S. D., & Farfel, M. R. (2016). Trajectories of PTSD Among Lower Manhattan Residents and Area Workers Following the 2001 World Trade Center Disaster, 2003–2012. *Journal of Traumatic Stress*, *29*(2), 158–166. <https://doi.org/10.1002/jts.22090>

- Wood, C. M., Salguero, J. M., Cano-Vindel, A., & Galea, S. (2013). Perievent panic attacks and panic disorder after mass trauma: A 12-month longitudinal study. *Journal of Traumatic Stress, 26*(3), 338–344. <https://doi.org/10.1002/jts.21810>
- Xia, Y., & Yang, Y. (2019). RMSEA, CFI, and TLI in structural equation modeling with ordered categorical data: The story they tell depends on the estimation methods. *Behavior Research Methods, 51*(1), 409–428. <https://doi.org/10.3758/s13428-018-1055-2>
- Zambaldi, C. F., Cantilino, A., Farias, J. A., Moraes, G. P., & Sougey, E. B. (2011). Dissociative experience during childbirth. *Journal of Psychosomatic Obstetrics and Gynaecology, 32*(4), 204–209. <https://doi.org/10.3109/0167482X.2011.626092>

Table

Table 1: Descriptive Table of Characteristics of IMPACTS study participants

	Participants at 6-10 months n = 123	Participants at 18-22 months n = 123
	N (%)	N (%)
Female	75 (61.0)	
Median age [min - max]	42 [23 - 79]	43 [24 - 80]
Marital status		
<i>Single</i>	43 (35)	47 (38.2)
<i>Divorced</i>	11 (8.9)	9 (7.3)
<i>Married</i>	69 (56.1)	67 (54.5)
Educational level		
<i>Third-level education</i>	89 (73)	
<i>High-school diploma or less</i>	33 (27)	
Born in France	118 (95.9)	
Type of exposure		
<i>Indirect witnesses</i>	32 (26)	
<i>Indirectly threatened</i>	55 (44.7)	
<i>Directly threatened</i>	36 (29.3)	
Physical proximity with the perpetrators		
<i>Having lost a loved one</i>	13 (10.6)	
<i>Immediate proximity</i>	55 (44.7)	
<i>Distant from the scene of the event</i>	55 (44.7)	
Median STRS score [min - max]	24 [0 - 52]	
High PDEQ score (>15)	66 (54.5)	
High level of perceived terror exposure	91 (75.8)	
No everyday-support in life	14 (11.4)	14 (11.4)
No financial support	26 (21.1)	24 (19.5)
Social isolation	20 (16.3)	27 (22)
Pre-event psychological follow-up	37 (30.1)	
Difficult life event the previous year	46 (38)	

History of trauma	68 (55.3)	51 (41.5)
Psychological follow-up in the past	26 (21.1)	
Secondary exposure in the November 2015 attacks		23 (18.7)
Having been interviewed at T2 before the terrorist attack in Nice in 2016		49 (39.8)
PTSD in the last month	20 (16.3)	18 (14.6)
At least one anxiety disorder	39 (32)	53 (43.1)
Current depression	52 (42.3)	38 (30.9)