# Psychological distress and prejudice following terror attacks in France

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## ABSTRACT

Terrorist attacks have the capacity to threaten our beliefs about the world, cause distress across populations and promote discrimination towards particular groups. We examined the impact of two different types of attacks in the same city and same year on psychological distress and probable posttraumatic stress symptoms, and the moderating effects of religion or media use on distress/posttraumatic symptoms and inter-group relations. Two panel surveys four weeks after the January 2015 Charlie Hebdo attack (N = 1981) and the November 2015 Bataclan concert hall/restaurant attacks (N = 1878), measured intrinsic religiosity, social and traditional media use, psychological distress (K6), probable posttraumatic stress symptoms (proposed ICD-11), symbolic racism and willingness to interact with Muslims by non-Muslims. Prevalence of serious mental illness (K6 score > 18) was higher after November 2015 attacks (7.0% after the first attack, 10.2% the second, $\chi2$ (1) = 5.67, p < 0.02), as were probable posttraumatic stress symptoms (11.9% vs. 14.1%; $\chi2$ (1) = 4.15, p < 0.04). In structural equation analyses, sex, age, geographic proximity, media use and religiosity were associated with distress, as was the interaction between event and religiosity. Distress was then associated with racism symbolism and willingness to interact with Muslims. Implications are considered for managing psychological trauma across populations, and protecting inter-group harmony.

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## 1. Introduction

France suffered two major terrorist attacks during 2015, both attributed to Islamist groups. The first, in January, targeted the Paris-based satirical magazine Charlie Hebdo, killing 12 people, and was claimed as a response to the publication of satirical cartoons. In the second, November attack, marauding gunmen and suicide bombers attacked the Bataclan concert hall and restaurants in the multicultural central district of Paris and its northern suburb St. Denis, killing 130. There are different possible outcomes of these events for psychological well-being and intergroup relations. From an inoculation approach, the first attack hardened French citizens against further terror events, weakening the impact of a second terror event (Bleich et al., 2003). An alternative, dose-response approach suggests the larger, apparently 'motiveless' second attack challenged an "assumptive" view of the world as a safe, benevolent place (Janoff-Bulman, 1992), and had more severe psychological consequences. Further factors may have moderated stress responses. Those living closer to the attack may be more affected (Canetti-Nisim et al., 2009); indirect exposure via the media may also amplify distress (Goodwin et al., 2015), while individual religiosity may help individuals cope with mortality threat (Fischer, 2006). Distress in turn has been associated with increased prejudice and exclusionist attitudes (Canetti-Nisim et al., 2009). We tested relationships between the event, location, media exposure and religiosity and distress, and associations between distress, racism and social interaction following each attack.

## 2. Materials and methods

We employed similar survey and sampling methods following each study (January 2015 – study 1, November 2015 – study 2). A major survey company was asked to collect data during a 7-day period four weeks after each attack, drawing on an established

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internet panel of almost half a million participants across France. For each event samples were selected from an existing panel using random stratified sampling methods, using weights for key demographic elements (age, sex) that were compared with French census information to create a reliable approximation of a representative sample. All respondents were aged over 18. The median age of our sample was 43 (Mean 41.2), versus a national population median of 41.2 in 2015 (Statista, n.d) 52.8% of our sample was female, compared to 51.5% of the national population in 2016 (INSEE, 2016).

The Charlie Hebdo shootings and associated attacks took place from 7–9th January 2015. In study 1, during the week of 8th February 2015, 6059 survey panel members were sent a web-link of which 2421 clicked through to the survey. 1981 (82%) of these passed a validation question and responded fully. A month after the November mass attacks 2015 (week of December 13, 2015) 2612 panel members were sent the web link, of whom 1878 passed a validation question and participated fully (response rate 72%). There were no significant differences between the two samples in terms of age (Ms 41.16 vs. 41.14, t (3858) = 0.05 p = 0.96), sex (52% vs. 54% female, $\chi^2$ (1) = 0.75 (0.40)), or percentage Muslim (2.9% vs. 3.7%, $\chi^2$ (1) = 2.07 (0.17)), although there was deliberate over-sampling within Paris in the first sample compared to the second (33.7% vs. 17.8% were from Paris: $\chi^2$ (1) = 126.4 (0.001)). Ethical approval was obtained from the Ariel University School of Social Work Ethics Committee (Study 1) and Ariel University and the University of Warwick (Study 2). Following a description of the study the first question of the survey provided an item requiring informed consent, prior to continuation.

## 3. Measures

Psychological distress was assessed by two measures: the six item Kessler Psychological Distress Scale (K6) (Kessler et al., 2008) (5-point scale; Study 1 α = 0.91; Study 2 α = 0.91) and the proposed ICD-11 PTSD criteria (6 items on a 5-point scale, Study 1 α = 0.93; Study 2 α = 0.91) to measure probable posttraumatic stress symptoms (Cloitre et al., 2013). Consistent with other studies of terrorism (Canetti-Nisim et al., 2009) psychological distress was measured primarily using total scale scores. Questions for both measures specifically asked 'how often you have felt this since the attacks'. Media use was indicated by six items requesting the sources used to learn about each attack (divided into traditional media (TV, radio, newspapers) and social media (Facebook, Twitter, YouTube)). For each of the six items, respondents indicated whether or not this media was a major source of information about each attack (yes or no). Summed scores then formed indices of multiple use of traditional/social media. Intrinsic religiosity was assessed using the three intrinsic religiosity items from the Duke Religiosity scale (Koenig and Büssing, 2010: e.g. 'My religious beliefs lie behind my whole approach to life'; 5-point scale, study 1 α = 0.90; study 2 α = 0.91). Willingness to interact with Muslims by non-Muslims was measured using a modified Social Distance scale (Bogardus, 1925), indicating readiness to interact with Muslims in six theoretical relationships (as occasional contact, business partner, guest to the home, close friend, boyfriend/girlfriend, or marital partner) (5-point scale from'1' not at all to '5' very much; Study 1 α = 0.94; Study 2 α = 0.95). Racism towards Muslims by non-Muslims was examined through seven modified items of the Symbolic Racism scale (Henry and Sears, 2002) (e.g. "if Muslims would only try harder they could be just as well off as Christians (4-point scale, strongly disagree to strongly agree) (Study 1 α = 0.76; Study 2 α = 0.72)).

### 3.1. Analytic strategy

A validity question to test those paying attention led to the removal of 1.2% respondents in the first survey, 1.3% in the second. For analyses concerning racism and willingness to associate with Muslims we removed Muslim respondents from the analyses (3.3% of the total samples). Preliminary statistical analyses (t-tests, correlations) to compare waves and the impact of demographics on distress, racism and willingness to interact with Muslims were conducted using SPSS, v. 20 (IBM). We used Mplus (v. 7) to test two mediational models using structural equation analysis (one with K6, the other ICD-11 as mediators measuring distress). In these models we included the independent variables of event, location, media use (traditional and social media) and religiosity, the interactions between event and each of the other four IVs, the mediator variable (distress), and the outcome variables of racism and willingness to interact with Muslims.

## 4. Results

### 4.1. Preliminary analyses

Although scores on Kessler k6 and ICD-11 were strongly correlated (r = 0.70) for completeness we report associations with both measures in the relevant analyses. Risk of serious mental illness (SMI: K6 > 18; Quine et al., 2008) was higher after the second attack (7% after the first attack, 10.2% the second, $\chi2$ (1) = 5.67, p < 0.02); prevalence of probable posttraumatic stress symptoms (at least one symptom from each of the 3 scale clusters) was also significantly higher after the second attack (11.9% then 14.1%, $\chi2$ (1) = 4.15, p < 0.04). Female respondents were higher on both indicators of distress (K6 Ms 12.48 vs. 11.03, t (3858) = 8.98, p < 0.0001; ICD-11 Ms 10.11 vs. 9.28, t (3858) = 5.27, p < 0.001). Age was negatively associated with both assessments of distress (K6: r (3860) = -0.03, p = 0.04; ICD-11 r (3860) = -0.07, p < 0.0001).

Respondents were more willing to engage in superficial relationships or friendships with Muslims than accept them as relationship partners (Ms 3.66 (SD 1.32) vs. 2.72 (SD 1.56), t (3665) = 48.36 p<. 001). Older respondents were less willing to engage socially with Muslims (r (3666) = -0.10, p < 0.0001), and expressed higher levels of racism (r (3666) = 0.16, p < 0.0001); sex was not associated with social distance (t (3664) = 1.06, p = 0.29) although there was a small association between sex and racism, with men higher on this indicator (t (3664) = 2.03, p = 0.04). Respondents living outside of Paris were overall less willing to interact with Muslims than residents of Paris (t (3664) = 2.45, p = 0.01), although there was a significant interaction between event and location on willingness to engage with Muslims (F (1, 3662) = 6.28, p = 0.01: Supp Fig. 1). This lesser willingness to engage with Muslims following the second attack was most evident for intimate relationships (close friends and romantic partners) (Supplementary Figs. 2a–e). There were no significant differences for location on racism (t (3664) = 0.40, p = 0.69), or interaction between event and location on racism.

### 4.2. Structural model

A summary model of the association between event, location, media use and religiosity and distress, and distress and racism and willingness to engage with Muslims, is reported in Fig. 1. Distress was greater following the second (Bataclan) attack, amongst those living in Paris, for both traditional and social media users, and amongst those who were more intrinsically religious. There was also an interaction between event and religiosity, with the less religious significantly more distressed in the aftermath of the