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Abstract

The terrorist attacks of 9/11, and subsequent terrorist acts around the world, have alerted social psychologists to the need to examine the antecedents and consequences of terrorist threat perception. In these two studies we examined the predictive power of demographic factors (age, sex, location), individual values and normative influences on threat perception and the consequences of this perception for behavioural change and close relationships. In study 1 ($N = 100$) gender, benevolence values and normative influences were all correlates of threat perception, whilst sense of personal threat was correlated with increased contact with friends and family. In study 2 ($N = 240$) age, sex, location, and the values of Openness to Change and Hedonism, all predicted threat perception, which in turn predicted behavioural change and relationship contact. Such findings point to the important role social psychologists should play in understanding responses to these new terrorist threats.

Terror threat perception and its consequences in contemporary Britain.

The terrorist attacks of September 11th 2001, and subsequent suicide attacks in Africa, Russia, Spain and the Middle East, have alerted Western countries to the new threat posed by large-scale, co-ordinated terror attacks. The increasing global spread of the terrorist threat means that increasing numbers of people, previously remote from conflict areas, are now faced with threats either at home or when travelling or living overseas. However, research on this topic has been largely confined to the discipline of political science or military medicine, and has rarely investigated the part played by psychological factors in predicting threat perception or its consequences (Levant, Barbanel & DeLeon, 2004; Silke, 2003, 2004).

A number of social psychological theories can be employed to help us understand threat perception and its consequences (Moghaddom & Marsella, 2004). However, with the exception of researchers working on Terror Management Theory (TMT), briefly reviewed below, few social psychologists have attempted to integrate and test these in a coherent model of terrorism and its consequences. In this paper we report two studies conducted in a country (Britain) widely regarded as a major terror target but which had not, at the time of writing, suffered from a major terrorist outrage. In doing so, we aimed to bring together several complementary theoretical approaches in an attempt to gain a greater insight into how individuals perceive and cope with this increasing threat.

Perceiving terror

Several individual and wider, group-level factors are likely to underlie how an individual perceives terror threats (Pyszczynski, Solomon, & Greenberg, 2003).

In Study One, we consider the role of values, the influence of others (normative factors) and the role of sex in terror perception. In Study Two we add the influence of location and age as additional predictors of perceived threat.

Values and threat perception. The study of values has re-emerged as a major topic for social psychological investigation in the past decade, with value systems seen as important super-ordinate cognitive structures with considerable implications for individual behaviour (Rohan, 2000; Schwartz & Bilsky, 1990). Research on trauma has suggested that an understanding of core personality and values may better predict variations in trauma symptoms than the actual severity of a trauma (Durodie, 2003). At the same time, traumatic life events can challenge an individual's "assumptive world", undermining implicit but fundamental beliefs and values (Janoff-Bulman, 1989). For example, work using the personality dimension of authoritarianism suggests that an increase in perceptions of the world as a dangerous and threatening place can lead to a desire for security and the development of authoritarian attitudes (Duckitt & Fisher, 2003). In the present research, we considered specific values taken from a widely used model circumplex model of values in assessing the role of values in predicting terror perception (Schwartz, 1992).

Building on Rokeach's conceptualization of values (Rokeach, 1973), Schwartz et al. describe ten, individual-level value types which satisfy biological needs, interactional requirements and institutional and social demands for group welfare and survival (Schwartz & Bilsky, 1987). These values are organized in a quasi-circumplex format, and can be divided along two dimensions (see Table 1). Dimension One compares Openness to Change (which emphasises independent thought and action and change and is represented by values of Self-direction and Stimulation) with Conservation (which stresses submission and self-restriction and includes values of Conformity, Tradition and Security). Dimension Two contrasts a more egalitarian Self-Transcendence (represented by Universalism and Benevolence values) with Self-enhancement (the values of Achievement and Power — values which emphasize the pursuit of success and dominance over others). A tenth value, Hedonism, is related to both Openness to Change and Self-Enhancement (Schwartz, 1994). Those who hold strong Security values emphasise the safety of both their intimate relationships and the wider society. Such individuals might be expected to show the greatest fear of a terror attack in general. In contrast Stimulation values are the values most directly opposed to Security in the Schwartz circumflex model. Stimulation values emphasize a daring, varied life, which might be expected to correlate with behaviors, which involve exposure to, enhanced terrorism risk (e.g. traveling overseas to potentially 'risky' regions). We therefore anticipate a negative correlation between Stimulation values and general threat perception. Finally, Benevolence values concern the preservation of the welfare of intimate others. Previous studies have suggested the development

of relatively strong, 'benevolent' ties following terror incidents (Vertzberger, 1997), and we predict a significant correlation between Benevolence values and threat perception, particularly the *personal* sense of threat that affects the individual or their immediate family. Partial support for these hypotheses was evident from two studies using the Schwartz value scale following actual terror attacks. Frink, Rose, & Canty (2004) reported significant increases in Security values following the Oklahoma terrorist bombing in the US. In a naturally occurring, "quasi-experimental" study, Verkasalo, Goodwin & Bezmenova (in press) compared the values of matched groups of Finnish school children and University students before and after the 9/11 attacks. In their study, Security values rose significantly in the aftermath of the attacks. In contrast, levels of 'Stimulation' were lower following the terrorist incidents.

** Insert table 1 about here **

Normative influences. Perceptions of terror threat do not exist in a 'vacuum', with those around us likely to influence our risk perceptions (Kaniasty & Norris, 2004). Almost seven decades of social psychological research have underlined the importance of group norms in determining the assessment of a situation (Sherif, 1936). Hatfield & Rapson (2004) describe a process of 'emotional contagion', in which people 'catch' other's emotions, mimicking the emotional experiences of others around them. During times of enhanced, shared threat individuals may often seek to 'socially share' with others their anxieties in an attempt to reduce such anxiety, or may feel reassured by significant members of their social networks about the risks posed (Dumont,

Yzerbyt, Wigboldus & Gordijn, 2003). The Theory of Planned Action (Ajzen, 1991) suggests group norms are also likely to be important in forming an intention to respond. We hypothesise a significant positive correlation between an individual's perception of threat of attack and the perception of attack probability reported by his or her friends and family.

Location. Perceptions of threat are likely to be at least partly based on actual risk, with this actual risk likely to vary across locations (Huddy, Feldman, Capleos & Provost, 2002). However, risk perceptions are also likely to be influenced by the difficulties involved in changing everyday behavioural patterns, and the control individuals have over how and where they spend their time. We examined the impact of location on the risk perception of students from a range of locations, a cohort whose workweek gave them some control over their travel schedule. Using a dissonance approach, we suggested that those who live and study in 'high risk' areas will find themselves in a 'dissonant state' where their desire for safety may clash with their potential 'high risk' habitat (Jonas, Greenberg & Frey, 2003). As a result we predicted that this group will downplay the perceived threat. We also predicted that those living outside of London (in our study in Oxford, 65 miles from Central London) would also be less likely to see themselves at risk. In contrast, we predicted that those living in suburban locations – within the boundaries of London but not in a central location – will have neither dissonance, or distance, reasons for downplaying the terror threat. We therefore hypothesise that this group will perceive the highest risk of attack.

Age. Although there is little systematic research on this topic, Thomas (2003) reports relatively high rates of anxiety amongst his middle-aged sample following the September 11th attacks compared to other sample data that has examined reactions to this event. We tentatively suggest that older respondents will exhibit greater anxiety.

Sex. Girls and women have been shown to report greater threat following traumatic events than boys or men (Norris, Friedman, Watson, Bryne, Diaz & Kaniasty, 2002; Raviv, Sadey, Raviv, Silberstein & Diver, 2000), and women have generally been reported to experience higher rates of anxiety than men following a terror threat (Huddy et al., 2002). Examining responses on the Perceived Stress Scale following the 9/11 attacks, Thomas (2003) found the 35-60 year old women in her sample remained distressed, fearful and vigilant some six months after the attacks. We therefore anticipate that women will experience greater anxiety about the possibility of a terror attack than men.

Managing Terror: coping with the terror threats

There are likely to be considerable individual differences in the manner in which individuals cope with terror threats (Silke, 2003). In our studies, we examined a series of possible behavioural changes that might arise from anxiety about an attack, and build on recent advances in Terror Management Theory to examine the way individuals may turn to close others when faced with enhanced anxiety.

Behaviour change. A number of important 'adaptive' behavioural changes may follow an increased terror threat. These include delaying or cancelling air travel plans, restricting destinations for holidays and limiting the use of public transportation or places visited (Huddy et al, 2002). In the weeks following the September 11th attacks, 26% of Huddy et al's American respondents had delayed plans to travel by air, and 18% said they were travelling into Manhattan less frequently. We predict that an increased sense of threat would lead to a reduction in using public transportation, a change in daily routine to avoid places perceived to be of high risk, and a reduction in planned air travel.

Relationship interactions and terror management. As attachment theorists have long since noted, one important way of coping with personal threats to one's safety and mortality is to seek support from others (Bowlby, 1969). Primary support is likely to be derived from romantic partners and friends and family (Lazarus & Folkman, 1984). Clinical studies have demonstrated that such support may be of particular importance during times of war or following the witnessing of a terrorist incident (Applewhite & Dickins, 1997; Kalicanin & Lecic-Tosevski, 1994, Putnik & Lauri, 2004). For example, in their study of those directly affected by bombings in Yugoslavia, Putnik & Lauri (2004) found interpersonal relationships became closer, with respondents reporting the provision and receipt of heightened levels of support. In their study of responses to the WTC attacks, Huddy et al (2002) reported that 31% had made adjustments to their daily routine in order to spend greater time with their families.

Derived from the theories of cultural anthropologist Ernest Becker (e.g. Becker, 1973) and his theory of human motivation and behaviour, Terror Management Theory (TMT) has primarily focused on the ways in which individuals try to boost their self-esteem and cultural worldviews when faced with their own mortality (Greenberg, Solomon & Pyszczynski, 1997). According to this theory, a fear for one's life can lead to paralysing terror and at least a partial "cognitive shutdown". This in turn can promote a striving to maintain or enhance self-esteem and the limiting of information processing, often resulting in an exaggeration of enemy images in order to validate worldviews and help 'simplify the world'. In a series of laboratory experiments, TMT theorists have shown that individuals contemplating their own mortality are more likely to try to reinforce 'mainstream' cultural viewpoints and to reject others who they see as threatening these viewpoints (Greenberg et al, 1997).

Recently the importance of interpersonal support, and in particular the support provided by romantic partners, has been added to the theory (Pyszczynski et al, 2003). For example, Florian, Mikulincer & Hirschberger (2002) have argued that romantic relationships provide a sense of security that allows people to function with relative equanimity during time of personal existential concern. During time of stress, close relationships can act as a fundamental anxiety buffer, providing a "symbolic shield against the awareness of one's finitude" (Mikulincer et al, 2003, p.37). Mikulincer et al (2003) argue that the formation of close relationships during periods of mortality salience functions "side by side and in interaction with other mechanisms" (p. 26). In particular, death awareness leads to a desire for long-term, committed and emotionally-driven relationships with significant

others, and the avoidance of conflict with these others during times of anxiety. Indeed, some TMT theorists have argued that, when made aware of the threat of death, the desire for affiliation may override the need to maintain positive world views or self-esteem (Hirschberger, Florian & Mikulincer, 2003; Mikulincer et al, 2003). We therefore anticipate that the heightened sense of one's own mortality from a terror threat will lead to greater closeness with romantic partners, and greater contact with family members and close friends.

Combined Model and summary of hypotheses

We combine these hypotheses into a model examining both predictors of threat perception and the consequences of that perception for behaviour change and relationship interactions. Because we anticipate that some predictors of threat (e.g. benevolence values), and some outcomes of threat perception (e.g. behavioural changes), would be most strongly related to perception of micro-fears that concern personal threat, we examine threat perception in two ways: (1) the macro-level perception of threat of an attack *in general* (general perception of threat), and (2) a more micro-level perception of threat of an attack *directly affecting you or your family* (personal risk).

Overall, this model suggests that the demographic variables of age, sex, and location, normative factors and individual values are all predictors of threat perception. This threat perception in turn will predict reported behavioural change and relationship closeness. In Study 1 we hypothesised that an individual's sex, individual values and group norms would all predict perceived probability of attack. Female participants, those high on the values of Security and Benevolence, and those whose friends and family perceived a

greater risk, were all expected to perceive a higher risk of attack. In Study 2 we anticipated that older respondents, female participants, those living in the suburbs and those high on the values of Security and Benevolence, but low on Stimulation values, were likely to perceive the highest threat. In both studies we predicted that perception of threat would influence 'adaptive' behaviour change, that personal threat would be most strongly correlated with Benevolence values, and that a personal sense of threat would influence the quality and frequency of relationship interactions with romantic partners and family members.

Study 1

Our initial study sampled representatives from Central London, examining the influence of specific values, sex and normative influences on perception of terror threat, and the relationship of this threat to adaptive behaviors and relationship contact. In this pilot study we focused on two values: Security and Benevolence. Security values are particularly responsive to changes in the immediate social context (Boehnke, 2001), and analyses of value change following terrorist incidents have shown Security values to be those most liable to change (Frink et al, 2004; Verkasalo et al, in press). Security values were therefore anticipated to be positively correlated with macro and micro perceptions of threat. Benevolence concerns the "preservation and enhancement of the welfare of people with whom one is in frequent personal contact". This value was therefore included as the most appropriate correlate of a more micro-level, personal sense of threat.

Method

Participants were 100 employees of the British Library, located in Kings Cross in Central London. Respondents were given an anonymous, structured questionnaire during break times in canteens and coffee rooms located within the Library. 51% of respondents were male, 49% female.

Measures. Respondents completed a short, multi-part questionnaire, which, along with information on participant's sex, included items assessing values, normative influences, perceived threat, behaviour change as a result of threat, relationship quality and contact with friends and family. *Values* were assessed using items from Schwartz's Person Profiles IV Questionnaire, a 21-item inventory originally devised by Schwartz for the European Values Survey. This scale measures the ten values described above on 6-point scales (ranging from *not at all like me* to *very much like me*). In this initial, pilot study, we focused on two values, security and benevolence. *Normative influences* were examined by asking respondents their friends and family's perception of the risk of a terror attack on a three-point scale (from 'very high', to 'quite low'). *General perceived probability of attack* was assessed using the question "How probable do you think a terror attack on Britain is, on a scale of 0% (not at all) to 100% (extremely likely)?" *Personal risk to you/ your family* was assessed asking: "How likely is this attack to directly threaten you or you family, on a scale of 0% (not at all) to 100% (extremely likely)?" Behaviour change was examined using questions adapted from Huddy et al (2002): (1) "Since the recent threat of terrorist attack on Britain have you been using

public transport to get into central London more often (less often, about the same) as before?" (2) "Since the recent threat of terrorist attack on Britain have you driven into Central London more often (less often, about the same) as before?" (3) "Have you been avoiding certain areas of London due to fear of terrorist attack?" (yes or no) and (4) Have you found yourself making changes to your daily routine in general due to the threat of a terror attack? (yes or no). *Relationship change* was assessed by asking (1) "Have you found yourself contacting family and friends more since the threat of terrorist attacks?" (four point scale from *a great deal less* to *a great deal more*) and (2) "Are you in a romantic relationship? " (yes or no) – then, if yes, "do you feel that your romantic relationship has become closer or more distant since the threat of terrorist attacks?" (5 point scale, ranging from *much more distant* to *much closer*).

Results

Table 2 gives the inter-correlation matrix for the variables assessed in this study. Women were more likely to perceive a personal risk than their male counterparts ($t(95) = 5.01, p < .03$). Overall threat of attack was correlated positively with Benevolence ($r(95) = .23, p = .03$) and Benevolence was also correlated with the threat of an attack affecting friends or family ($r(95) = .31, p = .003$). As anticipated, there was a significant correlation between these friends and family's perceptions of risk (normative perceptions) and generalised and personal perceptions of threat (r s of .66 and .44 respectively, p s $< .001$).

The numbers of those who reported they change their behaviours in response to the threat were generally very small. Eight respondents (8%) claimed they changed their behaviours in general, six reported avoiding Central London, seven claimed they use public transport less, six claimed to drive less into Central London. This obviously limited making comparisons between those who did and did not change behaviour. Those who reported changing their behaviour reported higher risk perception (M s of 88% threat vs. 65% threat of terrorist attack), as were those who stated they avoided Central London (M s of 80% vs. 65%), but these differences were not significant (t s of 1.93 and 1.15, p s > .05, for perception of general risk and personal risk, respectively). Similarly, there was no significant differences between risk perception and change in use of public transport (F (2, 94) = 1.52 for general risk, F (2, 92) = .81 for personal risk) or driving into Central London (F (2, 83) = .79 for general risk, F (2, 82) = .56 for personal risk).

When discussing contact with family or friends as a result of the terror threat, 9% reported they did so a great deal more and 65% a little more (compared to 22% a little less and 4% a great deal less). Although there was no significant correlation between friend/ family contact and general terror threat (r (68) = .05), personal terror threat was significantly correlated with friend/ family contact (r (67) = .34, p < .005). Only a minority of those in a relationship (11 out of 48 respondents) reported any change in their behaviour following the terror threat, with all reporting that their relationship was becoming closer. There was a small (non-significant) correlation between terror threat to significant others and reports of the relationship becoming closer (r (47) = .19).

** Insert table 2 about here **

Discussion of Study 1

Study 1 provided partial support for our hypotheses, suggesting that women, those with high benevolence values, and those with concerned friends and family were more likely to perceive a higher terror threat. A personalised sense of terror was correlated with Benevolence values and greater contact with friends and family. However, this first study was constrained by a small sample size, with all participants employed in a single location in central London. The second study increased our sample size, recruited respondents from different locations, expanded our analysis of values and behaviour change, and introduced the variables of age and location into our analysis.

Study 2: Method

Participants. Participants ($N = 240$) were students aged 18 to 61 attending British Universities in London and Oxford. Participants were randomly approached by the second author on their campuses, at different times of day in a range of different venues (e.g. cafeterias, libraries). We asked respondents to indicate where they lived and where they spent the majority of their week. Participants' postcodes (zipcodes) were used to classify respondents into living and spending the majority of their time in one of three locations: Central London (defined as London Underground zones 1 and 2), Suburban London (defined as London Underground zones 3 to 6) and Oxford, a medium sized city of 135,000 people located 65 miles from Central London. 50 participants were from Central London (M age 21.54, SD 2.89, 50%

female), 103 from Suburban London (M age 21.50, SD 2.21, 52% female) and 78 from Oxford (M age 23.40, SD 7.01, 55% female).

Measures. The questionnaire was an expanded version of the one used in study 1. *Values* were assessed using all 21 items in the European Values Survey version of Schwartz's Person Profiles IV Questionnaire, which includes all 10 values described in the Introduction. Because this was one of the first reported full uses of this scale the structure of the scale was independently assessed by Schwartz using SSA analysis to examine our data and was deemed to be generally satisfactory¹ (Shalom Schwartz, personal communication). *General perceived probability of attack* and *Personal threat to you/ your family* were assessed using the same two questions as in study 1: in addition, a further question assessing personal threat asked "How concerned are you personally about you, yourself or a family member being the victim of a future terrorist attack in Britain?", with responses assessed on a four point scale ranging from *very concerned* to *not at all concerned*. In order to conduct our structural equation analysis (reported below), scoring for this combined variable involved the recoding of the percentage scales into quartiles and loading both onto our *Personal risk* factor.

Behaviour change was examined using four questions similar to those Study 1 (1) Have you been avoiding certain areas of London due to fear of terrorist attack? (yes or no), (2) Since the recent threat of terrorist attack on Britain have you been using public transport to get into central London? (more often, about the same, less often) (3) Have you cancelled or delayed any specific plans to travel by air since the threat of attacks? (yes or no) and (4)

Have you found yourself making changes to your daily routine in general due to the threats? (yes or no). *Relationship change* was assessed by asking (1) Have you found yourself adapting your schedule in order to spend more time with your family since the threat of terrorist attacks? (yes, no or unsure) (2) Have you found yourself adapting your schedule in order to spend more time with your friends since the threat of terrorist attacks? (yes, no or unsure) (3) Have you found yourself contacting family and friends more since the threat of terrorist attacks? (yes or no), and (4) “Are you in a romantic relationship?” (yes or no) – if yes “do you feel that your romantic relationship has become closer or more distant since the threat of terrorist attacks?” (5 point scale, ranging from *much more distant* to *much closer*). Questions 1 to 3 were combined to form the contact variable included in the structural equation modelling analyses below.

Study 2: Results

Initial analysis. In our Introduction we hypothesised that older respondents, female participants, those living in the suburbs, respondents high on the values of security and benevolence, and those low on stimulation, were all likely to perceive the highest threat of attack. Correlational analysis demonstrated that age correlated with overall perceived probability of attack ($r(239) = .17, p < .01$), whilst there was a marginal sex effect for fear of being a victim of an attack ($t(236) = 3.80, p = .05$, with women more likely to fear being a victim of an attack than men). In an analysis of variance, co-varying for age, those living in the suburbs were more likely to perceive a greater likelihood of an attack ($F(2, 227) = 5.38, p < .01$). However, the probability of an attack affecting the individual or their family was not differentiated by area ($F(2, 227) = 1.73, p = n.s.$). Controlling for total value scores to allow for individual differences in scale use (Schwartz, 2001), general probability of attack was correlated positively with Security values ($r(228) = .13, p < .05$) as predicted. Also as anticipated the perception of an attack affecting the individual or their family (personal risk) was significantly correlated with Benevolence ($r(228) = .19, p < .01$).

We also anticipated that levels of threat would correlate with particular 'adaptive behaviours': in particular, a reduced use of public transportation in Central London, avoidance of certain 'high risk' areas, and the delaying or cancellation of planned air travel. Greater threat was also expected to correlate with an increased closeness in a romantic relationship. Those who perceived a greater general risk of attack were less likely to use public transport ($r(231) = .14, p < .03$), more likely to avoid certain areas of London ($r(231) = .16, p < .02$), and more likely to change their routines to avoid high

risk areas ($r(230) = .17, p < .01$). Those who thought they or their family were at risk of being a victim of an attack were more likely to avoid certain areas of London ($r(231) = .29, p < .001$), were more likely to have cancelled travel plans ($r(231) = .15, p < .03$), were more likely to have changed their daily routine ($r(230) = .22, p < .001$) and were more likely to restrict their use of public transport to Central London ($r(231) = .22, p < .001$). Whilst 84% of those who had a relationship claimed that the relationship had not changed as a result of the terror threat, the remaining said that the relationship had become closer. There was a positive correlation between rating the relationship as having become closer since the terror threat and estimated general probability of terror threat ($r(145) = .16, p < .05$), and between greater perceived personal threat and increased contact with friends and family ($r(231) = .15, p < .03$).

Structural equation model. We conducted structural equation analyses in a two-step process (see Kline, 1998). First, we conducted a confirmatory factor analysis in which we extracted 10 latent variables from 23 measured variables and generated a factor intercorrelation matrix from the raw data. Second, we conducted a structural equation analysis in which we entered the aforementioned factor intercorrelation matrix as input data to test a model specifying paths among the 10 latent variables. To correct for non-continuous variables before creating the correlation matrix, we used PRELIS 2 to create a correlation matrix that then could then be entered into LISREL 8. We constructed the latent variables of Openness to Change, Self-Enhancement and Hedonism using the value dimensions specified in Table 1.

Results of the confirmatory factor analysis indicated that the hypothesised matrix of factors and factor loadings provided an acceptable fit to the raw data (for the final model, chi-square = 235.83, degrees of freedom = 217, *NS*; chi-square/degrees-of-freedom ratio = 1.09; standardised RMR = .09; RMSEA = .04; adjusted GFI = .87). Moreover, with the exception of the loading of ***FAMFRS *** on the Relationship Change factor, all loadings were significant; and with the exception of the loading of ***FAMFRS *** on the Relationship Change factor, all loadings were in the expected direction.

In the structural equation analysis, path coefficients were assigned as follows: Within the beta coefficient (BE) matrix, (1) paths were freed from the Age, Sex, Location, Openness, Self-Enhancement, and Hedonism dimensions to the General probability, Personal risk, Behaviour Change, and Relationship Change factors; and (2) paths were freed from the General Probability and Personal Risk factors to the Behaviour Change and Relationship Change factors. Within the variance-covariance (PS) matrix, error terms were fixed at 1.00 for the Age, Sex, Location, Openness, Self-Enhancement, and Hedonism dimensions; and error terms for the General Probability, Personal risk, Behaviour Change, and Relationship Change factors were freed and constrained to be equal to each other (given that the aforementioned factor inter-correlation matrix was entered as input data into the structural equation analysis, each factor loading in the subsequent structural equation analysis was fixed at 1.00; and each uncorrelated measurement error term was freed and constrained to be equal). The final model provided an acceptable fit to the raw data (chi-square = 30.48, degrees of freedom = 27, *NS*; chi-square/degrees-of-freedom ratio = 1.13;

standardised RMR = .05; RMSEA = .02; adjusted GFI = .94). The final structural equation model specifying paths among the 10 latent variables is shown in Figure 1.

** Insert Figure 1 about here **

As can be seen from Figure 1, age, location, sex and the values of Openness to Change all predicted perceived generalised probability of an attack, while the value dimension of Openness to Change and Hedonism plus sex predicted personal threat. Older respondents, women, and those living in the suburbs were most likely to perceive a general threat of attack: men, and those higher on openness but lower on hedonism, were less likely to see themselves or their family at personal risk from an attack. A general perceived probability of attack was positively correlated with adaptive behaviour, whilst personal threat was correlated with adaptive behaviour and increased relationship contact.

Discussion of study 2

Our results demonstrated that demographic factors (age, sex and location) and values were all significant predictors of threat perception, with our structural equation model suggesting demographic predictors to be the best predictors of a generalised threat perception. Hedonists were more likely to fear an attack threatening them personally, perhaps reflecting that gratification *for oneself* is central to those strongly holding this value. Both threat perception mediators were significantly related to adaptive behaviours, with

those fearing an attack less likely to use public transport, more likely to cancel air travel, and more likely to avoid certain 'high-risk' areas. Those who perceived the threat to affect them or their loved ones personally also reported a greater effort to make contact with significant others as a result of the terror threat.

General Discussion

Understanding responses to terror attacks is an important topic for social psychological investigation, presenting social researchers with a significant opportunity to study some of the most fundamental aspects of individual stability and change. Largely stimulated by the World Trade Centre and related attacks, social psychologists have recently begun to consider the psychology of terrorism (e.g. Moghaddom & Marsella, 2004; Pyszczynski et al., 2003). However, despite evidence of increasing levels of social anxiety over safety and security in the second half of the twentieth century (Twenge, 2000) – and the (unfortunately increasing) opportunities for such investigations (Raviv et al, 2000) - there has been little work on how individuals perceive terror threats. In the present paper, we found demographic variables (sex, age, location), shared normative perceptions and individual values were significant predictors of two related (but not identical) forms of terror perception: a generalised perception of the probability of attack and a more localised assessment of personal risk or risk to immediate family. These terror perceptions were then found to be predictors of relevant behavioural change and an increased closeness in interactions with significant others. These findings can be seen as contributing to a tradition of research into risk

perception that has, until recently, rarely included estimates of terror risk and their consequences.

Overall, our respondents were relatively fearful of a major terrorist attack. When asked 'how probable is a terror attack on Britain', respondents gave mean ratings of 66% and 46% in studies 1 and 2 respectively, with the direct risks to the individual or their family estimated at approximately half this (34% and 20% for the two studies, respectively). These findings are perhaps not surprising given the timing of our studies: Our studies were conducted in May and September 2003, within two years of the World Trade Center attacks. Terrorist attacks, particularly 'spectaculars' targeting major Western landmarks such as the WTC, attract considerable media attention, with availability heuristics likely to increase perceived personal risk (Pyszczynski et al., 2003; Van der Pligt, 1996). Our studies were also conducted within six months of the US invasion of Iraq that began in March of that year: Given Britain's own involvement in this conflict, this might be viewed as a time of particular security concern within Britain. Our findings on the relationship between values and risk perceptions do however suggest important individual differences in these risk perceptions. Benevolence refers to the maintenance of close positive relationships and was therefore unsurprisingly related most closely to perceived threat to the individual or their family. A strong relationship between Security values and general risk of attack, and a negative relationship between Openness to Change and general risk, was also anticipated and may have important implications: At the cultural level, societies high in insecurity demonstrate a need for order and demonstrate little tolerance for unpredictability (Inglehart, 1997) and research in the US

suggests greater uncertainty avoidance since 9/11 (MacNab, 2005). Societies high on security needs demand strong leaders, and perceived risk may help promote a turn towards 'higher' religious authorities for spiritual guidance (Inglehart, 1997). At the same time, it is important to recognise that core individual values such as Security may be liable to relatively rapid change, dependent on the apparent level of threat (Janoff-Berman, 1989; Verkasalo et al, in press). Raviv et al (2000) suggest that whilst sudden dramatic events might severely shake an individual's values, 'unfreezing' established core beliefs, this may prove to be only a relatively short-lived change. In time, other events in life distract individuals away from the critical terror event, and beliefs, values and attitudes return to 'normal'. Thus as shock and stress wear off the value pendulum "begins to swing back" (Vertzberger, 1997: 870).

Given our respondent's relatively high expectations of an attack, the low levels of behavioural change reported by our respondents might seem puzzling. Our findings are in fact supported by a series of other surveys conducted since the attacks of 9/11. A MORI poll in the UK conducted with a nationally representative quota sample found that only 2% claimed to have cancelled overseas travel because of the fear of terror

(<http://www.mori.com/polls/2003/abta1.shtml>, accessed May 20th 2004).

Although a large number of Americans seem to be conscious of terrorist threats to their food supply, few have changed their food habits since the attacks (Spillman, 2003). Indeed, individuals faced with a terrorist threat typically seem to show relatively high levels of psychological resilience: Silke (2003), in his review of responses to the terror threat provided by the IRA, concludes "research on the impact of terrorism has found that even wide-

spread and long-lasting campaigns of terrorist violence can have a surprisingly limited detrimental impact on the overall psychological health of the society” (p. 200). Some of this is likely to be the result of support from loved ones in the immediate aftermath of a major terrorist incident (such as 9/11), although, as work on other (mainly environmental) disasters has shown, the long-term persistence of such reassurance and support may be less certain (Kaniasty & Norris, 2004).

Our finding, that individuals holding certain values, and living in certain locations, perceive differing levels of threat has potentially important ramifications for the targeting of relevant messages of reassurance (or hazard awareness) to particular audiences. For example, our data suggests that older respondents living in suburban locations may require greater psychological assurance about levels of risk, whilst individuals (or sub-groups) higher on Openness to Change values may be less easy to alert about preparations for a potential attack, or the imminent hazards following a suspected incident (a possible bio-chemical attack). Nevertheless, we recognise that our work represents only a first step, and that the present studies suffered from a number of limitations. Our samples were relatively small, and respondents were primarily young and could not necessarily be seen as representative of the broader British population. Our studies were cross-sectional in design, and future longitudinal work could usefully examine possible feedback loops, for example between increased relationship closeness and continued risk perceptions. This work should pay careful attention to the timing of the research, with longitudinal studies being careful to monitor and record the potential role of significant, relevant external events on terror perception, such

as the beginning of the second Iraq war (see <http://naticent02.uuhost.uu.net/archive/> for a discussion of the importance of event monitoring in the study of values). Our measures were inevitably limited by our survey design, with data collected at a potentially sensitive time in the immediate aftermath of the Iraq conflict, and could be usefully supplemented by experimental work, perhaps assessing reactions to real-life terrorist episodes. Whilst our findings concerning location in study 2 were particularly intriguing, suggesting that dissonance factors may be important in threat perception, further studies should look more systematically at control over location as a variable, including respondents with differing levels of control over their daily routines (Ditzler, 2004).

Work on post-traumatic stress suggests that a number of socio-demographic factors (e.g. socio-economic background) might also influence response to threat (Norris et al, 2002), and the moderating effects of such variables should be considered in expanding the model we present. Culture is likely to be significant in helping frame uncertainty and the avoidance of the threats posed by such uncertainty (e.g. Hofstede, 2001; Pyszczynski et al., 2003). Identity issues (e.g. the extent to which an individual identifies with a victim group, or even associates with a group suspected of terrorist activities) should also be explored in any expanded model (Dumont et al, 2003; Marsella, 2004). Terrorist attacks are likely to involve a wide number of appraisals and emotional reactions (Dumont et al., 2003). A further range of responses to terror – both proximal and distal (Pyszczynski, Greenberg & Solomon, 1999) could be included, incorporating cognitive as well as behavioural outcomes of terror perception (e.g. the persistence of both macro

and micro worries (Boehnke, Schwartz, Stromberg, & Sagiv, 1998) and the different coping responses employed to deal with threat (Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002). Such future research should be conducted in as naturalistic a manner as possible, using a range of participants likely to experience different levels of threat salience (Cozzolino, Staples, Meyers, & Samboceti, 2004).

Whilst terrorist acts may be rare, and the numbers of those caught up or killed in such attacks relatively small, widespread public anxiety and panic over the threat of terrorism can present us with a number of significant social challenges (Bandura, 2004). Unfortunately, it is hard to imagine that psychologists will not have many opportunities to consider reactions to terror threat in the future. As Kashima (2003) has argued, globalisation has served not only to increase our exposure to international terror attacks but has acted as a potential stimulus to cultural groups keen to assert their own cultural identity through terrorist means. Our findings show that particular individual and demographic factors can contribute to perceptions and responses to terror threats. Social psychologists need to consider these factors as an important part of their theoretical arsenal as they seek to understand, and hopefully in time help alleviate, this continuing threat.

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Footnote

¹ Further details of this analysis are available from the first author.

Table 1: The ten values types, by dimension

Dimension 1: Openness to Change vs. Conservation (“Openness to Change” dimension)

Openness to Change

| Value | Value descriptions (items in parentheses indicated examples of actual values measured). |
|---------------------|---|
| Self-direction | Independent thought and action (creativity, freedom, choosing one’s own goals, curiosity, independence). |
| Stimulation | Excitement, novelty, challenge in life (an exciting life, varied life, daring). |
| <i>Conservation</i> | |
| Conformity | Restraint of actions, inclinations and impulses likely to upset or harm others and violate social expectations/norms (obedience, self-discipline, politeness, honouring of parents and elders). |
| Tradition | Respect, commitment and acceptance of customs and ideas that traditional cultures or religion provide (respect for authority, moderation, humility, acceptance of one’s own portion in life, devoutness). |
| Security | Safety, harmony, stability of society, of relationships, of self (social order, family security, national security, reciprocation of favours, cleanliness). |

Dimension 2: Self-Transcendence vs. Self-Enhancement (“Self-Enhancement” dimension).

Self-Transcendence

| | |
|--------------|--|
| Universalism | Understanding, appreciation, tolerance and protection of the welfare of all people and of nature (broad-minded, social justice, equality, a world of peace, a world of beauty, unity with nature, wisdom, protection of the environment) |
| Benevolence | Preservation and enhancement of the welfare of people with whom one is in frequent personal contact (loyalty, honesty, helpfulness, responsibility, forgiveness). |

Self-Enhancement

| | |
|-------------|---|
| Achievement | Personal success through demonstrating competence according to social standards (ambition, success, capability, influence). |
| Power | Social status and prestige, dominance over people and resources (social power, wealth, authority). |

Hedonism

| | |
|----------|--|
| Hedonism | Pleasure and sensuous gratification for oneself (pleasure, enjoyment of life, self-indulgement). |
|----------|--|

Note: Adapted from the table provided by S. Schwartz (2001) Workshop on Values”. International Association for Cross-Cultural Psychology, Winchester, England. July

Table 2: Inter-correlation matrix for study 1

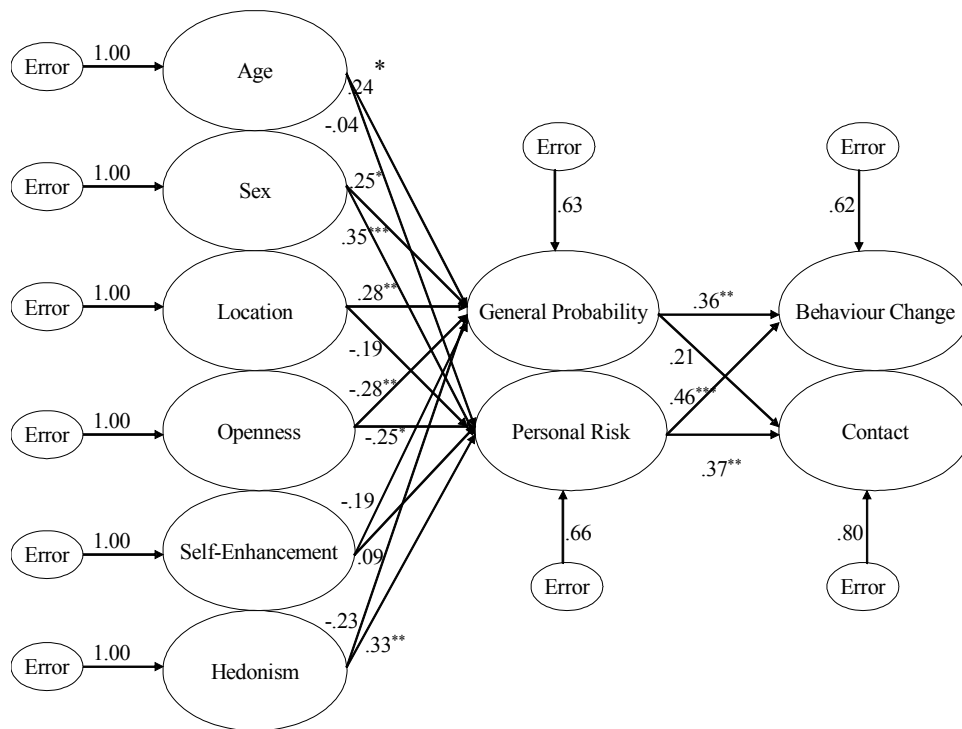
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------------------------|--------|-------|------|------|------|------|------|-----|-------|-----|------|----|
| 1. Sex | 1 | | | | | | | | | | | |
| 2. Security | -27** | 1 | | | | | | | | | | |
| 3. Benevolence | -19 | 44*** | 1 | | | | | | | | | |
| 4. Norms | -01 | 29* | 29* | 1 | | | | | | | | |
| 5. General threat | -06 | 06 | 23* | 66** | 1 | | | | | | | |
| 6. Personal threat | -33*** | 16 | 31** | 44** | 31** | 1 | | | | | | |
| 7. Public transport use | -00 | -08 | -03 | 16 | 14 | -06 | 1 | | | | | |
| 8. Driving into town | 15 | -19 | -11 | 14 | -03 | -12 | 20 | 1 | | | | |
| 9. Avoiding areas | 09 | 04 | -07 | 04 | 12 | 11 | 23* | -18 | 1 | | | |
| 10. Changing routines | 15 | -07 | -07 | 15 | 22* | 07 | 30** | 11 | 55*** | 1 | | |
| 11. Family contact | -27 | 35** | 30* | 18 | 05 | 34** | 08 | 04 | -00 | 19 | 1 | |
| 12. Relational change | -31 | 13 | -14 | -04 | -10 | 19 | 21 | 34* | -21 | -13 | 55** | 1 |

Notes

All correlations coefficients are multiplied by 100. * p< .05; ** p< .01; *** p< .001

Figure Caption

Figure 1: Final Structural Equation Model, Study 2



Notes

Only paths significant at $p < .05$ are included. *** $p < .001$; ** $p < .01$; * $p < .05$