

PREDICTORS OF ANALOGUE POST-TRAUMATIC INTRUSIVE COGNITIONS

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Abstract. Previous research on vulnerability to Post-Traumatic Stress Disorder (PTSD) has been restricted by the absence of prospective studies that measure individual differences prior to traumatization. This study investigated the predictors of analogue post-traumatic intrusive cognitions using a fully prospective design. Non-patient participants completed a range of predictor measures before being exposed to a film about a traumatic fire. Film-induced changes in negative mood were also assessed. Subsequent intrusions were measured both within the experimental session and for a further seven days. The hypothesized predictors were: neuroticism, trait anxiety, extraversion, depression, a general tendency to suppress unpleasant thoughts, beliefs about being “at risk” from fire, mental imagery, self-rated proneness to intrusions and negative mood changes. The results showed that intrusions were predicted by film-induced increases in negative mood, thought suppression tendencies, beliefs about vulnerability to fire and self-rated proneness to intrusive cognitions. The findings are discussed in relation to the literature on thought suppression and cognitive processes in PTSD.

Keywords: PTSD, predictors, intrusive cognition, mood, thought suppression.

Introduction

The features of Post-Traumatic Stress Disorder (PTSD) include the re-experiencing of a traumatic event, efforts to avoid associated stimuli, a numbing of general responsiveness and symptoms of increased arousal (American Psychiatric Association, 1994). One of the key issues in research on PTSD is the question of individual differences in the development of the disorder. Why do some, but not all traumatized victims exhibit the persistent symptoms of PTSD (e.g., Jones & Barlow, 1990)? It has been suggested that this is partly due to vulnerability factors which people possess prior to the trauma which interact with the traumatic experience itself (e.g., Foa & Riggs, 1993). A number of clinical studies have been conducted in an attempt to isolate such vulnerability factors. However, these have mostly tended to rely on retrospective measures of predisposition or have started a prospective analysis after the traumatic event. The interpretation of the findings from these studies is complicated by the absence of detailed information about pre-trauma individual differences.

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Factors that have so far been shown to predict post-traumatic symptoms and/or their persistence in either retrospective studies or in prospective studies which started after the trauma include: a history of psychiatric disorder (McFarlane, 1989), retrospectively rated neuroticism (McFarlane, 1989), greater appraisals of threat during the event (e.g., March, 1993; Solomon, Mikulincer, & Benbenishty, 1989), mental defeat during the traumatic event (Dunmore, Clark, & Ehlers, 1997; Ehlers, Clark, et al., 1998; Ehlers, Maercker, & Boos, 1998), negative appraisal of one's actions during the event (Dunmore et al., 1997), high levels of initial distress after the traumatic event (Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992), negative appraisal of initial PTSD symptoms (Ehlers & Steil, 1995; Dumore et al., 1997; Ehlers, Mayou, & Bryant, 1998), an avoidant coping style (Bryant & Harvey, 1995), high levels of initial avoidance (Lawrence, Fauerbach, & Munster, 1996), and efforts to suppress traumatic memories (Ehlers, Mayou, & Bryant, 1998).

It should be emphasized that intrusive thoughts and images are a normal response to traumatic events (Horowitz, 1976). However, in PTSD this response is more frequent and prolonged. Indeed, the persistent re-experiencing of the trauma has been regarded as the hallmark of PTSD (Jones & Barlow, 1990). A better understanding of the factors that make certain people more vulnerable to recurrent intrusions may therefore inform our knowledge of the processes operating in PTSD. Rachman (1980) conceptualized intrusive cognitions as being one of the indicators of the failure of emotional processing. He proposed that a number of factors could predispose some individuals to emotional processing difficulties. These include dysphoria, high neuroticism, low extraversion and "the need to suppress the appropriate emotional expression". The literature on the effects of thought suppression suggests that attempts "not to think about" particular thoughts can lead to an increase in their frequency (Salkovskis & Campbell, 1994; Wegner, Schneider, Carter, & White, 1987). Such an effect has recently also been reported in experimental investigations of the suppression of trauma-relevant material (Davies & Clark, 1998a, b; Harvey & Bryant, 1998a, b). Habitual use of thought suppression strategies may therefore predict higher levels of intrusion after a stressful event. Cognitive models have emphasized the interaction between pre-existing beliefs and critical incidents in the development of emotional problems (e.g., Beck, 1976). When specifically applied to traumatic incidents, it has been suggested that beliefs about personal invulnerability (Janoff-Bulman, 1985) or vulnerability (Foa & Riggs, 1993) may predispose some individuals to particularly adverse reactions. Another potential predictor of intrusive cognitions is the extent to which people are able to form mental images. Clinical reports suggest that many post-traumatic memories have a strong imaginal component. It may be that people who find it easier to use mental imagery are more likely to be affected by post-traumatic intrusive images.

A paradigm for the investigation of stress-induced intrusive cognitions has been reported by Horowitz (1975). It involves exposing normal individuals to a distressing film and subsequently monitoring the resultant intrusions. The present study utilized Horowitz's methodology to investigate potential predictors of analogue post-traumatic intrusions. The following variables were expected to predict higher levels of intrusion: (1) Measures of emotional vulnerability and/or psychopathology (higher levels of neuroticism, trait anxiety and depression); (2) Lower levels of extraversion, as suggested by Rachman (1980); (3) A general tendency to suppress unpleasant thoughts; (4) Stronger

beliefs in being vulnerable or “at risk” from particular stressful events; (5) A greater ability to form anxious mental imagery; (6) Larger changes in negative mood states as induced by the laboratory stressor (a distressing film); (7) Higher self-rated proneness to intrusive cognitions. The last prediction was made owing to the expectation that individuals could probably be relatively accurate at assessing their own proneness to intrusions. This measure could therefore provide a benchmark against which to evaluate the amount of variance predicted by other variables as well as a means of cross-validating the dependent measures.

Method

Participants and design

Ninety participants (53 female) were recruited from local colleges and from amongst the staff of the Oxford hospitals (mean age = 28.6 years). They were informed that they would watch a film about a major fire, complete questionnaires and perform some straightforward tasks. Exclusion criteria were: (1) previous treatment for a mental health problem and (2) a score of two or more on the suicide item (item 9) of the Beck Depression Inventory. Participants received a small payment for their participation. A correlational design was used in which a number of independent variables were used to predict several different measures of intrusive cognitions.

Apparatus

Intrusive thoughts were induced using an extract from a fire safety film. This was of an actual office block fire in which several people are seen to die. A film about polar bears in their natural environment was presented before the fire film and used as part of a practice task. Each film lasted approximately 3 minutes and included background music and narration. The films were shown on a 40 cm colour television screen. A BBC microcomputer with a Zenith ZVM-1230-EA monitor was used to run the task which recorded short term intrusive thoughts.

Dependent measures (intrusive cognitions)

Three measures of intrusive cognitions were used, one short term and two longer term. The short term measure consisted of a 4 minute computer task designed to record intrusions about the fire film whilst participants engaged in a standardized activity (verbalizing numbers). A fixed sequence of randomly generated 2-figure numbers was presented on the computer screen. Each number appeared for 1 second with an interval of 3 seconds between numbers. The participant's task was to say the numbers out loud whilst recording intrusions by pressing the space bar on the keyboard. Total number of bar presses was taken as the short-term intrusion measure. A 2 minute practice version of the same task was also used. This followed the polar bear film and asked the participant to record polar bear film-related thoughts. Data from the latter task were not collected.

A diary of intrusions was completed for 7 days after viewing the fire film. This consisted of eight columns divided into one hour periods (between 6 a.m. and 12 a.m.) with an extra section for the intervening hours. The diary was kept for a complete 7 day period starting from the end of the laboratory session. Participants were instructed to record the time at which they had “an unpleasant thought or image related to the fire film” by placing a tick in the appropriate section. The diary provided two measures of intrusions: the total number of intrusions (ticks) and the number of days on which intrusions were present.

As it was expected that the level of compliance with the diary might be related to the number of intrusions reported, participants completed a Diary Compliance Scale (DCS) at the end of the 7 day period. Participants rated the extent to which the statement “I have often been unable (or have forgotten) to record my unpleasant thoughts and images in the tick diary” was true of them (0 = not at all true of me, 10 = extremely true of me).

Independent measures (predictors)

Standardized questionnaires included the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979), the State Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970), and the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975). The Mental Imagery Ratings Questionnaire (MIRQ) is an unpublished 56-item self-report inventory designed by Maryanne Martin. It assesses participants' abilities to arouse mood-related mental images and contains subscales for anxious, depressed, elated and neutral imagery. The present study analysed data only from the anxious imagery subscale, the scores on which range between 14 and 98, with higher scores indicating a greater ease of bringing an anxious image to mind. The Thought Suppression Scale (TSS) is a single item scale designed for this study. Participants are asked: “When something unpleasant has happened in your life, to what extent is the following statement true of you? . . . I make an effort not to think about it”. The statement is given a rating between 0 (not at all true of me) and 10 (completely true of me). The Fire Belief Questionnaire (FBQ) is an 10-item self-report inventory designed for the study. The questionnaire measures the extent to which participants believe themselves to be vulnerable or “at risk” from fire. Statements (e.g., “I believe that my home has a high risk of fire” and “I believe that I would be unable to control the early stages of a fire”) are rated using a 5-point Likert scale anchored at “strongly disagree” and “strongly agree”. Possible scores range between 10 and 50 with greater scores indicating higher beliefs in being “at risk”. The Proneness to Intrusive Cognitions Scale (PICS) is a single item scale also designed for the present study. The aim was to assess how well participants' own ratings of their proneness to intrusions after unpleasant films would predict the actual pattern. Participants were asked: “After you have seen something unpleasant on the television or at the cinema, do you find that it comes back into your mind without you wanting it to?” The responses ranged between 0 (not at all) and 10 (always).

The four moods of “happy”, “anxious”, “depressed” and “angry” were assessed using visual analogue scales. Participants were asked to rate how they felt “at this

moment” on scales ranging between 0 (not at all X) to 100 (extremely X). The amount of change in each mood induced by viewing the fire film was used to predict intrusions.

Procedure

Participants were tested individually and began the experiment by completing the “predictor” questionnaires. They then completed a modified Stroop task.¹ The polar bear film was shown in a darkened room with participants being asked to imagine themselves seeing the polar bear “in real life”. This film was followed by the task that familiarized participants with the recording of their thoughts. They were instructed that there was “no need to make any special effort to either think about or not to think about the polar bear film” but to record any thoughts that came to mind. The experimenter left the room during the viewing of each film and the administration of each computer task. Participants next viewed the fire film in a darkened room and were asked to imagine themselves as “a bystander at the scene of the fire”. The measures of mood were completed immediately before and after seeing this film. A second modified Stroop task was administered followed by the computer task, which measured short term intrusions about the fire film. The following instructions were given:

This task is similar to the one you did previously. It involves you saying out loud the 2-figure numbers which will be flashed onto the computer screen. But this time, I'd like you to press the space bar whenever an unpleasant thought or image related to the fire film comes to mind. Once again, there is no need to make any special effort to either think about or not to think about the fire film.

Participants were then given the diary of intrusions and instructed regarding its completion. Any immediate questions were answered and an appointment was arranged for one week later.

A third modified Stroop task was administered at the start of the second part of the experiment. The Diary Compliance Scale was completed and the diary was collected and checked. Participants were then fully debriefed, thanked and paid. Finally, participants were given the opportunity to contact the experimenter again if they felt affected by what they had seen on the fire film but no participant made contact.

Statistical analyses

There were several stages to the analyses. The relationship between all variables was first explored using Pearson correlations. Separate stepwise multiple regression (MR) analyses were then conducted for each measure of intrusion. In certain cases, the interactions between significant variables were also evaluated within a hierarchical regression. Multiple regression was carried out using SPSS for Windows with default settings.

¹The modified Stroop task was a card version consisting of fire-trauma, neutral and positive words. The Stroop was administered three times during the experiment with the number of cards (including practice cards) being five, three and four respectively. Stroop performance was not found to be related to intrusions or the emotional response to the film (see Davies, 1995).

Table 1. Means and standard deviations (*SD*) of the predictor and intrusion measures

Variable	Mean	<i>SD</i>
Neuroticism	11.8	5.1
Extraversion	14.7	4.5
Trait anxiety	39.2	8.7
Depression	6.5	5.4
Mental imagery	46.1	14.2
Thought suppression	4.5	3.0
Fire beliefs	28.7	6.5
Intrusion proneness	4.5	2.7
Happiness change	-35.4	24.2
Anxiety change	17.3	29.3
Depression change	29.9	30.2
Anger change	37.4	33.0
Intrusions – Short term	19.9	18.6
Intrusions – Diary total	24.8	30.2
Intrusions – Diary days	4.5	2.1

Results

Four participants failed to attend the second experimental session, which resulted in missing data for the DCS. However, the diary data was complete as these participants posted their diaries to the experimenter.

Descriptive data

The means and standard deviations (*SD*) for the predictor variables and the measures of intrusion are shown in Table 1. As can be seen, the film was successful in inducing intrusions both in the short term and in the week after exposure to the film.

The results of the standard questionnaires were as expected in a non-clinical sample (e.g., the BDI score was in the “none or minimal depression” range (Beck et al., 1979) and the trait anxiety score was very close to the reported norms for college students (Spielberger et al., 1970).

Analyses of variance comparing mood state before viewing the fire film with that after seeing the film indicated differences for all four moods: happiness ($F(1,89)=192.66$, $p<.001$); anxiety ($F(1,89)=31.43$, $p<.001$); depression ($F(1,89)=88.0$, $p<.001$); and anger ($F(1,89)=115.89$, $p<.001$). Viewing the fire film therefore produced highly significant increases in negative moods and a decrease in positive mood. Table 1 shows the changes in mood.

Correlations between measures of intrusion

All three measures of intrusion were significantly positively inter-correlated. Short term intrusions were associated with diary ticks ($r=0.32$, $p<.01$) and the number of days

with intrusions ($r = 0.40, p < .01$). Diary ticks were correlated with the number of days ($r = 0.53, p < .01$). This suggested that a similar phenomenon was being measured using the different methods.

Correlations between predictors

The relationships between the predictor variables were also explored. Not surprisingly, neuroticism was associated with a number of the other predictor variables: trait anxiety ($r = 0.78, p < .01$); BDI ($r = 0.55, p < .01$); FBQ ($r = 0.26, p < .05$); PICS ($r = 0.29, p < .01$) and MIRQ ($r = 0.35, p < .05$). Similarly, trait anxiety was positively correlated with the BDI ($r = 0.66, p < .01$), FBQ ($r = 0.28, p < .01$), PICS ($r = 0.23, p < .05$), MIRQ ($r = 0.40, p < .01$) and was negatively correlated with extraversion ($r = -0.25, p < .05$). The BDI was associated with the FBQ ($r = 0.22, p < .05$) and the MIRQ ($r = 0.26, p < .05$). No other pairings reached significance.

The changes in all four of the mood states were closely related. Thus, change in happiness was negatively correlated with change in anxiety ($r = -0.46, p < .01$), change in depression ($r = -0.57, p < .01$) and change in anger ($r = -0.59, p < .01$). Change in anxiety was correlated with change in depression ($r = 0.50, p < .01$) and change in anger ($r = 0.42, p < .01$). Change in depression was correlated with change in anger ($r = 0.57, p < .01$).

Two correlations between questionnaire measures and mood-change measures reached significance. The FBQ was correlated with change in anxiety ($r = 0.21, p < .05$) and change in depression ($r = 0.27, p < .01$). Participants who believed themselves to be more "at risk" from fire (as measured by the FBQ) therefore showed a greater emotional reaction to the fire film.

Correlations between predictors and measures of intrusion

Table 2 is the correlation matrix showing the associations between the three measures of intrusion and each independent variable. Three of the questionnaires were correlated with intrusions. These were the measures of a general tendency to suppress negative thoughts (TSS), fire vulnerability beliefs (FBQ) and self-reported proneness to intrusions (PICS). All four of the mood change variables were associated with intrusions. The strength of these relationships were further explored in the multiple regression analyses.

Predictors of short term intrusions

The stepwise multiple regression analysis using short term intrusions as the dependent measure produced a 3-step solution. Change in depression was the strongest predictor ($R^2 = 0.21, F \text{ Change} = 24.10, p < .001$) followed by the self-rated proneness to intrusions (PICS: $R^2 = 0.31, \text{Change in } R^2 = 0.09, F \text{ Change} = 11.52, p < .001$) and then the TSS ($R^2 = 0.34, \text{Change in } R^2 = 0.03, F \text{ Change} = 4.48, p < .05$). No other variables entered the equation. This model therefore accounted for 34% of the total variance.

Table 2. Pearson correlations between measures of intrusion and independent variables

	Intrusions (Short term)	Intrusions (Diary total)	Intrusions (Diary days)
Neuroticism	0.09	0.06	0.16
Extraversion	-0.14	-0.09	0.01
Trait anxiety	0.15	0.02	0.14
Depression	0.09	0.03	0.09
Mental imagery	-0.08	0.01	0.03
Thought suppression	0.23*	-0.04	0.09
Fire beliefs	0.23*	0.33**	0.17
Intrusion proneness	0.36**	0.15	0.28**
Happiness change	-0.30**	-0.28**	-0.11
Anxiety change	0.39**	0.29**	0.26**
Depression change	0.46**	0.29**	0.34**
Anger change	0.31**	0.38**	0.28**

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

The interaction between the TSS and change in depression was then explored in a hierarchical regression. This allowed an analysis of whether a trait present before exposure to the fire film would interact with the emotional impact of the film in the prediction of intrusions. Change in depression was entered first ($R^2 = 0.21$, F Change = 24.10, $p < .001$), followed by the TSS ($R^2 = 0.26$, Change in $R^2 = 0.05$, F Change = 5.53, $p < .05$) and finally the interaction term which further added to the equation ($R^2 = 0.31$, Change in $R^2 = 0.05$, F Change = 5.82, $p < .05$). The amount of variance accounted for was therefore 31%. This finding suggested that participants who had both a stronger tendency to suppress unpleasant thoughts and who responded to the film with greater dysphoria also experienced more intrusions (compared with participants who did not have high scores on both these measures).

Predictors of longer-term intrusions

Total number of intrusions. A stepwise multiple regression using the total number of intrusions recorded in the diary as the dependent variable produced two steps in the equation. The strongest predictor was change in anger ($R^2 = 0.15$, F Change = 15.24, $p < .001$) followed by the FBQ ($R^2 = 0.22$, Change in $R^2 = 0.07$, F Change = 7.59, $p < .01$). When the interaction between change in anger and the FBQ was evaluated after the separate entries of these variables, this was also significant ($R^2 = 0.30$, Change in $R^2 = 0.08$, F Change = 9.68, $p < .01$). The three variables therefore accounted for 30% of the variance. The interaction indicated that participants who scored highly on both change in anger and the FBQ reported more intrusions than participants who scored highly on only one of these measures.

Number of days with intrusions. In predicting the number of days with intrusions, the stepwise analysis produced a 2-step outcome. Change in depression was the strongest

predictor ($R^2 = 0.12$, F Change = 11.78, $p < .001$) followed by the PICS ($R^2 = 0.18$, Change in $R^2 = 0.06$, F Change = 6.01, $p < .05$). Together, these variables accounted for 18% of the total variance.

Additional analyses

To test the possibility that compliance with the diary might be related to the level of longer-term intrusions, the correlations between the DCS and intrusions were examined. The measure of compliance was not related to either the number of ticks ($r = -0.05$, NS) or the number of days with intrusions ($R = 0.10$, NS). This suggested that non-compliance with the diary was not a major factor in the study and was consistent with the quite low mean on the DCS (Mean = 2.5, $SD = 2.1$). A post hoc artefactual explanation for the association between the FBQ and the number of longer-term intrusions was that participants with more negative fire beliefs may have been more motivated to comply with the diary completion task. This would lead to a significant positive correlation between the FBQ and the DCS. In fact, this was not the case ($r = 0.10$, NS) and so the artefactual explanation was rejected.

Discussion

Consistent with the findings of Horowitz (1975), it was shown that exposure to a film about a real traumatic event produced intrusive cognitions. This supported the view that this type of cognition is a “normal” response to a distressing event. The film was also shown to result in significant increases in negative mood states. In fact, mood-change proved to be the strongest and most consistent predictor of intrusions. Thus, short term intrusions and the number of days with intrusions were best predicted by changes in depressed mood and the total number of intrusions (recorded in the diary) were predicted most strongly by film-induced increases in anger. The failure of increases in anxiety to predict the dependent measures in the multiple regression analysis can probably be attributed to the mood-change variables being highly inter-correlated. This suggested that it was general changes in negative mood rather than specific increases that were important because all the negative mood-change variables were univariately associated with intrusions.

The generalizability of negative mood change as a predictor is supported by the findings of Solomon et al. (1989) who found that higher levels of negative emotions around the time of combat (rated retrospectively) predicted later PTSD symptoms. It is also consistent with the results of Rothbaum et al. (1992) which showed that measures of initial distress following rape trauma predicted the longer-term development of PTSD. The strength of the present study is that a similar effect has been demonstrated using a fully prospective methodology. The clinical implication of these findings relates to the importance of early identification of individuals, in the post-trauma setting, who may be particularly vulnerable to developing chronic post-traumatic stress reactions. Thus, those people who show the highest level of negative emotions in the short term could be targeted for longer-term follow up.

A general tendency to suppress unpleasant thoughts, as reported prior to exposure to the fire film, was shown to be predictive of short term intrusions. Furthermore, the

interaction between thought suppression and film-induced changes in depression was also significant. Thus, people who showed a greater increase in negative mood and who reported a stronger preexisting tendency to suppress unpleasant thoughts had more intrusions than those who did not possess this combination. Although this finding was obtained using a correlational methodology, it is in line with the results of experimental investigations of thought suppression which have shown that (a) attempts “not to think about” analogue post-traumatic intrusions lead to an increase in their frequency (Davies & Clark, 1998a, b) and (b) depressed mood augments suppression-induced increases in negative thoughts (Wenzlaff, Wegner, & Roper, 1998).

Despite the ability of thought suppression to predict intrusions within the laboratory session, it did not predict them over the following week. This could be due to the relative simplicity of the single item measure of suppression used in this study. Greater predictive power might be obtained using more detailed, general thought control measures such as the Thought Control Questionnaire (Wells & Davies, 1994) or the White Bear Suppression Inventory (Wegner & Zanakos, 1994). Alternatively, persistent intrusions may be better predicted by measures of thought suppression immediately after a traumatic event. Ehlers and Steil (1995) have argued that whether individuals engage in thought suppression after a traumatic event is a function of their idiosyncratic beliefs about their behaviour during the event and the meaning of their initial PTSD symptoms. It is therefore possible that some individuals who do not have a general tendency to thought suppression, suppressed after the film because they interpreted film-specific intrusions in a negative fashion. Similarly, some individuals with a general tendency to suppress may not have done so after the film. Irrespective of these points, the demonstration that a general tendency to suppress was a predictor of intrusions provides further support for the role of “avoidance” in the perpetuation of intrusions as demonstrated with clinical samples (Bryant & Harvey, 1995; Ehlers, Mayou, & Bryant, 1998; Lawrence et al., 1996). This highlights the potential value of assessing and attempting to reduce the processes of suppression in patients who report persistent attempts to avoid thinking about their traumatic intrusions.

Cognitive models of PTSD have suggested that beliefs about personal vulnerability may predispose some people to adverse responses to trauma (e.g., Foa & Riggs, 1993). This study supported this view by demonstrating that specific beliefs about being “at risk” from fire predicted the longer-term intrusions induced by a film about a real traumatic event involving fire. These beliefs interacted with film-induced dysphoria such that individuals who showed both stronger fire beliefs and larger increases in dysphoria also evidenced more intrusions. It may be that the film activated (and even elaborated) preexisting beliefs about being vulnerable to the effects of an accident involving fire. These activated beliefs could then generate intrusive cognitions about the film. This finding is in line with the emphasis placed in cognitive therapy on identifying and modifying the negative beliefs which are thought to underlie many of the features of PTSD.

The only other predictor of intrusions was the scale that measured self-rated proneness to intrusions (the PICS). It had been expected that participants might be fairly accurate in predicting their own level of intrusion and this was shown to be the case. Thus the PICS was related to both short term intrusions and the number of days over which they were present. The PICS was an extremely specific measure as it required

people to predict their film-related intrusions based on previous experience of such responses. Further research will be required to determine whether individuals can be similarly accurate with other types of traumatic event.

The ability to generate mental imagery was not associated with intrusions. It had been assumed that a significant proportion of cognitions about the film would take the form of images. However, the actual amount of imaginal compared with verbal or other types of intrusion was not known. This study therefore demonstrated that individual differences in the ability to generate imagery was not a predictor of undifferentiated intrusions. A test of the particular ability of a measure of imagery to predict only intrusive images would require a more specific measure of intrusive cognitions.

One of the most surprising aspects of the present findings was the failure of established measures of emotional vulnerability/psychology to predict intrusive thoughts. It had been expected that, as a feature of emotional problems, higher levels of intrusion would be associated with measures such as neuroticism, trait anxiety and depression (measured by the BDI). In fact, these variables were not even univariately associated with intrusions. Instead, it would appear that the main predictors are the more specific variables (such as idiosyncratic appraisals and appraisal-driven strategies) that have been highlighted in cognitive models of PTSD.

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