

Pretrauma Neuroticism, Negative Appraisals of Intrusions, and Severity of PTSD Symptoms

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Earlier studies found that self-reported posttraumatic stress disorder (PTSD) symptoms are correlated with negative appraisals of symptoms and with neuroticism. It is unclear whether the latter two are associated. Possibly, an overarching trait such as neuroticism mediates the relationship between PTSD symptoms and negative appraisals of symptoms. Data from a previous study (see I. M. Engelhard, M. A. van den Hout, M. Kindt, A. Arntz, & E. Schouten, 2003) were used in the present effort to address these issues. Neuroticism scores were obtained from 1,372 pregnant women. One hundred and twenty-six women experienced a pregnancy loss, and 117 of them were assessed for PTSD symptoms and negative appraisals of symptoms. The 3 variables of interest were all significantly correlated. The data indicate that negative appraisals of symptoms explain and predict PTSD symptoms independently of neuroticism.

KEY WORDS: trauma; neuroticism; cognitive model; appraisals.

After a potentially psychotraumatic event, individuals vary widely in the severity of posttraumatic stress disorder (PTSD) symptoms. Ehlers and Clark (2000) suggest that this symptom severity critically depends on *individual differences* in the interpretation of the event and/or its consequences. Recovery from trauma is held to be hampered if victims interpret normal reactions to trauma (e.g., involuntary intrusions) in a negative way and take these reactions to imply that something is wrong with them (e.g., that they will lose their minds). There are empirical data to support this notion. Negative evaluations of intrusions were found to correlate with PTSD symptoms in a sample of ambulance personnel (Clohessy & Ehlers, 1999) and in survivors of motor vehicle accidents (Steil & Ehlers, 2000), and patients with persistent PTSD had more negative interpretations of symptoms than did recovered patients (Dunmore, Clark, & Ehlers, 1997, 1999). Furthermore, negative evaluations

of trauma symptoms 3 months posttrauma predicted the severity of PTSD after 1 year (Ehlers, Mayou, & Bryant, 1998).

Given then that negative interpretations of trauma and/or posttrauma symptoms predict the severity of posttrauma complaints, the question ensues what “individual differences” determine the negativity of these interpretations. An obvious candidate is neuroticism. Neuroticism is the stable predisposition to see the world and oneself in a negative way (Clark, Watson, & Mineka, 1994) and, by its very nature, may predispose to the pattern of negative appraisals described by Ehlers and Clark (2000). Although this seems plausible, no prior studies have linked neuroticism to interpretations of the traumatic event or posttrauma responses. However, many studies have investigated the association between neuroticism and PTSD. Studies comparing PTSD patients with non-PTSD traumatized controls found that PTSD patients had consistently higher neuroticism scores (Breslau, Davis, Andreski, & Peterson, 1991; Casella & Motta, 1990; Kelly et al., 1998; McFarlane, 1992). In the same vein, PTSD symptom severity is correlated with the degree of neuroticism (Chung, Easthope, Chung, & Clark-Carter, 1999; Hyer et al., 1994; Lewin, Carr, & Webster, 1998; McFarlane, 1992; Roca, Spence, & Munster, 1992).

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In sum, both negative appraisals of symptoms and neuroticism predict PTSD symptoms. It seems plausible that neuroticism is associated with both PTSD symptoms and negative appraisals of posttrauma symptoms. One question is whether negative appraisals of symptoms predict PTSD symptoms independently of neuroticism, or, alternatively, whether neuroticism predicts PTSD symptoms after accounting for negative appraisals. Considering that PTSD symptoms may produce an increase in neuroticism scores, the three variables of interest (appraisals, PTSD symptoms, and neuroticism) should preferably not be assessed in a cross-sectional study but in a prospective design, where neuroticism is assessed prior to trauma/appraisals. Although trauma studies typically do not include pretrauma assessments of personality, data from a large-scale previous study (Engelhard, van den Hout, & Arntz, 2001; Engelhard, van den Hout, & Kindt, 2003; Engelhard, van den Hout, Kindt, Arntz, & Schouten, 2003) allowed for a prospective test of this issue. Neuroticism scores were obtained from 1,372 pregnant women. One hundred and twenty-six of them later experienced a pregnancy loss, and 118 were followed up at 1 month and at 4 months. As previously reported (Engelhard et al., 2001), there were considerable individual differences in PTSD symptom severity 1 month after pregnancy loss, and only part of it was accounted for by gestational age. The most common PTSD symptom was intrusive recollections (reported by two thirds of women).

The data available from this study allowed for a test if there is (a) an association between pretrauma neuroticism and negativity of appraisals of posttrauma symptoms, (b) an association between pretrauma neuroticism and PTSD symptoms, and (c) an association between negativity of posttrauma symptom appraisals and PTSD symptoms. The crucial question was whether the hypothetical association (c) would remain significant if the contribution of neuroticism was statistically controlled. If the link between negative appraisals and PTSD symptoms, which has often been reported by Ehlers and colleagues, disappeared after controlling for neuroticism, this would obviously reduce the explanatory and predictive value of the theory. If, on the other hand, the link between neuroticism and PTSD symptoms disappeared after controlling for negative appraisals, this would suggest that neuroticism exerts its explanatory value through negativity of appraisals.

METHOD

As reported earlier (see Engelhard, van den Hout, Kindt, Arntz, et al., 2003), 1,372 pregnant women responded to advertisements in magazines recruiting participants for a questionnaire study. The advertisements

did not mention that the study also concerned pregnancy loss. All participants were within the first 12 weeks of pregnancy. Immediately upon their initial response, they were sent baseline questionnaires, including a measure for neuroticism. Every 2 months after that, until 1 month after the expected date of birth, they were sent questionnaires including pregnancy-related questions (e.g., Have you decided on the baby's name? What were your reactions to the ultrasound?), and a question related to possible pregnancy loss. Participants with a pregnancy loss were sent follow-up questionnaires 1 month later. From the initial sample, 126 (9%) experienced a loss and 8 of them (6%) dropped out of the study, resulting in 118 women. Because one woman did not complete all questionnaires, data are reported on the remaining 117 women. The mean age was 31 years ($SD = 4.2$). The mean gestational age was 8 weeks ($SD = 1.9$) when the study started and 12 weeks ($SD = 6.4$; range = 5–40) at the time of loss.

Whereas neuroticism was measured before pregnancy loss, appraisals and PTSD symptoms were assessed at a mean of 1 month after the loss. Neuroticism was assessed with the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975), and PTSD symptoms were measured using the Posttraumatic Symptom Scale (Foa, Riggs, Dancu, & Rothbaum, 1993). Finally, negativity of appraisals of trauma reactions was assessed with the Response to Intrusions Questionnaire (RIQ; Clohessy & Ehlers, 1999). In RIQ, participants indicated what their initial posttrauma emotional reactions meant to them (e.g., "my reactions mean that something is wrong with me").

RESULTS

PTSD symptom severity was significantly correlated with negative appraisals of symptoms, $r = .38$, $p < .001$, and with neuroticism, $r = .25$, $p < .05$. The latter two were also significantly correlated, $r = .21$, $p < .05$. To test whether neuroticism mediates the relation between negative appraisals and PTSD symptoms, three regression equations were tested (see Baron & Kenny, 1986): (1) neuroticism was regressed on negative appraisals, (2) PTSD symptoms were regressed on negative appraisals, and (3) PTSD symptoms were regressed on both neuroticism and negative appraisals. Mediation is established when the effect of negative appraisals on PTSD symptoms is less in equation (3) than in (2). First, negative appraisals ($\beta = .21$, $t = 2.30$, $p = .023$) accounted for 4% of the variance of neuroticism. Second, negative appraisals ($\beta = .38$, $t = 4.45$, $p < .001$) accounted for 15% of the variance of PTSD symptoms. Third, negative appraisals ($\beta = .35$, $t = 3.98$, $p < .001$) and neuroticism ($\beta = .18$, $t = 2.03$, $p = .045$) accounted for 18% of

the variance of PTSD symptoms, $F(2, 114) = 12.22$, $p < .001$. Thus, negative appraisals added significantly to neuroticism's prediction of symptoms.

DISCUSSION

In line with expectations, the three variables of interest were significantly, though modestly, correlated. The association between negative appraisals of symptoms and PTSD symptoms remained intact when neuroticism was statistically controlled. This indicates that neuroticism is not a third variable that straightforwardly explains the association between negative appraisals of symptoms and the severity of PTSD complaints. Controlling for neuroticism hardly affected the correlation between negative appraisals and PTSD symptoms. Of course, neuroticism by itself, independently from negative appraisals, explained some variance in PTSD symptoms, but given the generality of neuroticism effects, this was not surprising. Because neuroticism did not exert significant influence in explaining the negative interpretation/PTSD symptoms link, one might ask what, if any, individual factors contribute to this link. Although the question is appealing, it may not be theoretically or clinically decisive. A range of environmental or incidental state factors may promote negative interpretations of symptoms like the severity and nature of the trauma, the presence of social support, depressed mood, and so forth. Once the interpretation is made, the person may take strategic measures to reduce emotional problems (deliberate suppression of memories, behavioral avoidance, etc.), even though such measures may be counterproductive. Understanding maintenance may be more important than understanding etiology, and this is a direction for future research.

In conclusion, Ehlers and Clark suggested that "individual differences" are responsible for negative interpretations of PTSD symptoms and that these interpretations determine the persistence of symptoms. An obvious candidate for this "individual difference" factor is neuroticism. This study tested whether neuroticism was sufficient in explaining the association between negative interpretations and PTSD symptoms. This was not the case. Results showed that negative appraisals of symptoms added significantly to neuroticism's prediction of PTSD symptoms.

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