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# Type D Personality and Posttraumatic Stress Disorder in Victims of Violence: A Cross-Sectional Exploration

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The current study explored the relationship between type D personality and posttraumatic stress disorder (PTSD) among victims of violence ( $n = 189$ ). The basic premise underlying the type D concept is that it is not the experience of negative emotions *per se* that renders individuals at risk of maladjustment in the face of adversity, but the way they are dealt with. Particularly the combination of high negative affectivity and social inhibition (i.e., the non-expression of emotions and inhibition of behaviours in social interactions) is assumed to be maladaptive. It was hypothesized that a high score on negative affectivity (i.e., above a pre-determined cut-off score) would only contribute to PTSD in the presence of a high score on social inhibition (also above a pre-determined cut-off score). Univariate results indicated that type D subjects (type Ds) reported higher PTSD symptom levels than those characterized by high negative affectivity/low social inhibition or low negative affectivity. Type Ds more often suffered from probable PTSD than non-type Ds. In multivariate analyses, type D personality was associated with an increased risk of probable PTSD above and beyond background variables, while high negative affectivity/low social inhibition was not. Results were discussed in light of victim support practices and study limitations. Copyright © 2010 John Wiley & Sons, Ltd.

#### Key Practitioner Message:

- Victims of violence with type D personality are more prone to report symptom levels that indicate diagnosis of PTSD.
- Victim support interventions should be tailored to help victims with type D personality to maintain their existing social networks, for example through support groups only accessible to victims and close relatives or friends.

**Keywords:** Violent Victimization, Type D Personality, PTSD

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## INTRODUCTION

Posttraumatic stress disorder (PTSD) was introduced in the 3rd edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III, American Psychological Association, 1987) and was categorized among anxiety disorders. According to the DSM diagnostic criteria, exposure to a traumatic event is a prerequisite for PTSD. To qualify as a *traumatic* event, the person in question must have experienced, witnessed or been confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others (criterion A1), while the response to the event must have involved intense fear, helplessness or horror (criterion A2). Although violent personal assault is explicitly mentioned in DSM as an example of an event that fulfils the first criterion, many studies reporting on PTSD among victims of violence have failed to assess PTSD criterion A2.

A wide array of risk factors for PTSD has been identified in trauma research. Review studies seem to suggest that more or less unequivocal detrimental effects exist for (1) recollections of peritraumatic dissociation (Breh & Seidler, 2007; Lensvelt-Mulders et al., 2008; Ozer, Best, Lipsey, & Weiss, 2003; Van der Hart, Van Ochten, Van Son, Steele, & Lensvelt-Mulders, 2008); (2) preexisting psychiatric disorders; (3) a family history of psychiatric disorders; (4) childhood trauma; and (5) female sex (Breslau, 2002; Brewin, Andrews, & Valentine, 2000). In addition, several trauma studies have found adverse outcomes for personality dimensions, particularly neuroticism (e.g., Parslow, Jorm, & Christensen, 2006) and negative affectivity (NA) (e.g., Shapinsky, Rapport, Henderson, & Axelrod, 2005). The latter has also been found to play an important role in the onset and maintenance of emotional problems following violent victimization (e.g., Mikkelsen & Einarsen, 2002; Zoellner, Goodwin, & Foa, 2000).

NA is a trait characteristic and involves, among other things, the stable tendency to experience negative emotions (e.g., Watson & Clark, 1984), negative self-evaluations, and oversensitivity to adverse stimuli (e.g., Watson & Pennebaker, 1989). When exposed to potentially stressful events, people with high levels of NA may be assumed to respond more intensely than others (e.g., Zeidner, 2006). Furthermore, if levels of heightened distress do not automatically resolve within a reasonable amount of time, they will be at an increased risk of developing psychiatric disorder.

However, whether one actually develops negative outcomes does not only depend on individual differences in NA. Several previous studies suggest that emotion-regulation strategies determine the course of negative emotions experienced in the aftermath of stress exposure (e.g., Tull, Jakupcak, McFadden, & Roemer, 2007). Social inhibition (SI) has often been suggested to act as a maladaptive coping strategy in overcoming the psychological burden of distress that follows stress exposure (e.g., Denollet, Sys, & Brutsaert, 1995; Denollet et al., 1996). SI involves the stable tendency to inhibit emotions and behaviour in social interactions to avoid disapproval by others, particularly strangers, and in spite of a need for companionship (Asendorpf, 1993). Particularly, the combination of high levels of negative emotions and high levels of inhibition is likely to be associated with adverse outcomes, as 'it is not the experience of negative emotions per se, but rather the chronic psychological distress that results from holding back negative emotions, that is likely to affect [...] health' (Denollet et al., 1995, p. 583). Individuals, scoring high both on NA and SI (i.e., above a pre-determined cut-off score), have a *distressed* or type D personality. Screening for this 'discrete personality configuration' (Denollet, 2000, p. 258) enables the identification of those most at risk for experiencing emotional and interpersonal difficulties (Denollet, 2000).

Many studies have shown that type D personality is an independent predictor of various negative health outcomes (e.g., Denollet, & Kupper, 2007; Martens, Smith, Winter, Denollet, & Pedersen, 2007; Verma, & Khan, 2007). However, to date, the vast majority of studies on type D personality and its health correlates was employed in hospitalized or extramural population samples, mostly consisting of patients with cardiac disease (e.g., Denollet et al., 2009; Pelle, Denollet, Zwisler, & Pedersen, 2009) or, to a lesser extent, subjects suffering from diverging conditions, such as chronic pain (Barnett, Ledoux, Garcini, & Baker, 2009), obstructive sleep apnoea syndrome (Broström et al., 2007) and mild traumatic brain injury (Stulemeijer, Andriessen, Brauer, Vos, & Van der Werf, 2007), while only a few have been conducted among subjects without a clinical diagnosis, including fire fighters (e.g., Oginska-Bulik & Langer, 2007), a convenience sample of healthy university student from the UK and Ireland (Williams et al., 2008), and prison workers (Kunst, Bogaerts, & Winkel, 2009). Furthermore, only twice the association between type D personality and PTSD has been investigated (Kunst et al., 2009; Pedersen & Denollet, 2004). Therefore, the relationship between type

D personality and PTSD needs further investigation in non-patient populations facing adversity, such as violent victimization.

Furthermore, since the basic tenet of type D personality is that not so much the experience of negative emotions *per se* is responsible for negative health consequences, but rather the way individuals cope with such emotions (Denollet, 2000), statistical models need to ascertain that adverse health consequences of type D personality are not merely due to a high score on NA. Surprisingly, however, only two studies (Denollet et al., 1996; Denollet et al., 2006) appear to have tested the impact of type D personality on health above and beyond NA. In both studies, it was the specific combination of NA and SI that contributed to adverse health outcomes rather than NA alone. These findings need further replication, particularly in non-cardiac patients.

Given the aforementioned, the purpose of the current study was to assess the relationship between type D personality and PTSD in victims of violence. First, differences in mean PTSD symptom severity between type D subjects (type Ds) and non-type Ds were explored. It was expected that type Ds would report more severe PTSD symptoms than those who scored high on NA and low on SI (high NA/low SI) and those with low scores on NA (low NA), whereas the latter two groups were not expected to differ significantly from each other. Second, the relationship between type D personality and probable PTSD (i.e., scoring above a pre-determined cut-off score on a PTSD symptom self-report measure and fulfilling PTSD criterion A2) was investigated. Type D personality, and not a high score on NA alone, was expected to be associated with PTSD.

## METHODS

### *Procedure*

The current study was part of a larger study into the psychosocial aftermath of violent victimization (Kunst, in press; Kunst, Bogaerts, Wilthagen, & Winkel, 2010; Kunst, Winkel, & Bogaerts, in press-a, in press-b). Participants were recruited through the Dutch Victim Compensation Fund (DVCF). Inclusion criteria were age  $\geq 18$ , filing a claim during the third quarter of 2006 and no missing file data on age, gender and date of crime. All victims eligible for participation were invited to fill out a set of internet questionnaires on NA, SI and PTSD symptom severity in December 2007. Those who did not have access to the World Wide Web or preferred

to complete the measures by pencil could request for a paper version. Background variables (age, gender, time relapse since victimization in years, compensation level for pain and suffering, and type of violence [sexual violence, severe physical assault, moderate physical assault, theft with violence, and other<sup>1</sup>]) were retrieved from the victims' electronic files. Compensation level for pain and suffering was mainly used as an indicator of the objective severity of the violence experienced and ranged from 0 to 8. Approval for the study was obtained from the DVCF Committee. Unfortunately, reminders were not allowed to be sent to non-respondents.

### *Participants*

In total, 1054 victims were approached for participation. Two hundred and five (19.5%) of them responded. One hundred and eighty-nine participants were included in statistical analyses, as they had complete data for all study variables (cf. Kunst et al., in press-a). Those participating in the study differed significantly from non-participants in age ( $M = 41.9$ , standard deviation [ $SD$ ] = 15.4 versus  $M = 39.3$ ,  $SD = 15.0$ ,  $p < 0.05$ ), compensation level for pain and suffering ( $M = 2.4$ ,  $SD = 1.9$  versus  $M = 2.0$ ,  $SD = 1.9$ ,  $p < 0.01$ ) and the number of severe physical assaults (17/189, 9.0% versus 131/865, 15.1%,  $p < 0.05$ ). No significant differences were observed on time since victimization ( $M = 5.7$ ,  $SD = 4.1$  versus  $M = 5.4$ ,  $SD = 3.7$ ), the number of males (86/189 versus 441/865), sexual offences (26/189, 13.8% versus 114/865, 13.2%), moderate physical assaults (61/189, 32.3% versus 301/865, 34.8%), thefts with violence (48/189, 25.4% versus 178/865, 20.6%) and other types of violence (37/189, 19.6% versus 141/865, 16.3%).

### *Measures*

#### *Type D Personality*

Type D personality was assessed by the Type D Scale 14 (DS14). The DS14 comprises two subscales:

<sup>1</sup>The DCVF categorizes type of violence according to their legal classification used in the Dutch Penal Code (DPC). To enable statistical testing, the number of different categories was reduced from 30 to 5 (cf. Kunst et al., in press-a). Severe and moderate physical assault and theft with violence corresponded to the original file categorization. Sexual violence included all individuals that had experienced an offence falling under Book 2, Title XIV of the DPC. The remainder of the sample is a mixture of offences that were too low in number to form a category of their own.

the NA subscale and the SI subscale. Both subscales contain seven items. Items need to be answered on a five-point Likert scale ranging from 0 (false) to 4 (true). In accordance with previous victim studies (Kunst et al., 2009), a pre-determined cut-off of  $\geq 10$  on both subscales was used to classify participants as type D, high NA/low SI, or low NA. Emons, Meijer and Denollet (2007) have shown that the DS14 items have the highest measurement precision around this cut-off. The subscales of the DS14 have high internal consistency and good test-retest validity over a 3-month period (Denollet, 2005). In the current study, the DS14 showed excellent internal consistency reliabilities, with Cronbach's alpha = 0.90 for the NA subscale and  $\alpha = 0.91$  for the SI subscale.

#### *Feelings of Horror, Fear and Helplessness*

The 13-item Peritraumatic Distress Inventory (PDI, Brunet et al., 2001) was used to retrospectively assess PTSD criterion A2. In addition, it was used as an indicator of peritraumatic distress severity. The psychometric properties of the PDI have been investigated in a sample of police officers exposed to critical incidents, which included both victims of physical and sexual assault. It has been found to be internally consistent, with good test-retest reliability and good convergent and divergent validity (Brunet et al., 2001). As a Dutch version of the PDI was not available, its items were translated by the researchers. The PDI was assessed using a five-point Likert scale (0 = not at all, 1 = slightly, 2 = somewhat, 3 = very true, 4 = extremely true). Participants were considered to fulfil criterion A2 if they had reported a score of  $\geq 1$  on the PDI (cf. Kunst et al., in press-a). In our sample, a good internal consistency reliability for the PDI was observed (Cronbach's alpha = 0.88).

#### *PTSD symptom severity*

The Dutch version of the PTSD Symptom Scale, Self-Report version (PSS-SR; Arntz, 1993; Foa, Riggs, Dancu, & Rothbaum, 1993) was used to measure PTSD symptom severity. The PSS-SR has often been used as a screening instrument for PTSD symptomatology among victims of crime (e.g., Andrews, Brewin, Rose, & Kirk, 2000; Dunmore, Clark, & Ehlers, 1999; Rose, Brewin, Andrews, & Kirk, 1999). For each of the 17 items, respondents had to indicate to what extent they had experienced the corresponding symptom during the past week on a four-point Likert scale (0 = never, 1 = once, 2 = two to four times, 3 = five times or more). The psychometric properties of the PSS-SR

have been found to be satisfactory in crime victim samples (Foa et al., 1993; Wohlfarth, Van den Brink, Winkel, & Ter Smitten, 2003). In the current study, internal consistency reliability of the PSS-SR was Cronbach's alpha = 0.94. Relying on previous studies (e.g., Birmes et al., 2005; Wohlfarth et al., 2003), participants who met DSM criterion A2 and had a PSS-SR score of  $\geq 15$  were considered to suffer from PTSD (cf. Kunst et al., in press-a).

#### *Statistical Analysis*

Frequencies and mean scores were calculated to describe type Ds, high NA/low SIs and low NAs by background variables and PDI mean scores and to test between-group differences by analyses of variance (ANOVAs) and chi-square tests, as appropriate. Another ANOVA was performed to test mean PSS-SR differences between type Ds, high NA/low NAs, and low NAs when adjusting for background variables and recalled peritraumatic distress severity. Tukey least significant difference (LSD) post hoc tests were performed to specify overall significant effects. Next, a chi-square test was performed to reveal differences in PTSD rates between type Ds and non-type Ds (i.e., the sum of high NA/low SIs and low NAs). Finally, a hierarchical logistic regression analysis was conducted to assess the multivariate association between type D personality and probable PTSD. As a preliminary step, dummy variables were created for the type D and the high NA/low SI groups. Low NAs served as reference category (cf. Denollet et al., 1996). If not precluded by violation of assumptions underlying logistic regression analysis, including multicollinearity and the total number of predictors allowed to be included in the model (Peduzzi, Concato, Kemper, Holtford, & Feinstein, 1996; Vittinghoff & McCullough, 2007), background variables, high NA/low SI, and type D personality were entered on the first, second, and third step, respectively. We did not adjust for multiple testing in any of the conducted analyses, since this is not required in exploratory research (Bender & Lange, 2001). All statistical analyses were performed using the software package SPSS 16.0 for Windows (SPSS Inc., Chicago, IL, USA).

## RESULTS

Ninety-two (48.7%) participants could be classified as type Ds, 30 (5.9%) as high NA/low SIs, and 67 (35.4%) as low NAs. The three personality subgroups differed in age,  $F(2, 187) = 3.75, p < 0.05$ , the

Table 1. Personality subgroups differentiated by background characteristics and PDI scores ( $n = 189$ )

	Type Ds ( $n = 92$ )	High NA/low SIs ( $n = 30$ )	Low NAs ( $n = 67$ )
Age	40.8 (14.0)	36.9 (13.8) <sup>†*</sup>	45.5 (17.2)
Male sex	39 (42.4%)	10 (33.3%)	37 (55.2%)
Time since victimization	6.3 (5.3)	5.5 (2.6)	5.0 (2.5)
Sexual violence	14 (15.2%)	7 (23.3%)	5 (7.5%)
Physical assault (severe)	8 (8.7%)	2 (6.7%)	7 (10.4%)
Physical assault (moderate)	23 (25%) <sup>**†</sup>	8 (26.7%)	30 (44.8%)
Theft with violence	25 (27.2%)	8 (26.7%)	15 (22.4%)
Compensation level	2.4 (2.0)	3.0 (1.9)	2.2 (1.7)
Peritraumatic distress	32.9 (11.6) <sup>***§</sup>	29.2 (9.5) <sup>†*</sup>	23.5 (12.0)

Note. Means and standard deviations are reported for continuous variables, frequencies and percentages for categorical variables.

\* $p < 0.025$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

† Difference between high NA/low SIs and low NAs.

‡ Difference between type Ds and low NAs.

§ Difference between type Ds and low NAs.

Type Ds = subjects with type D personality. NA = negative affectivity. SI = social inhibition.

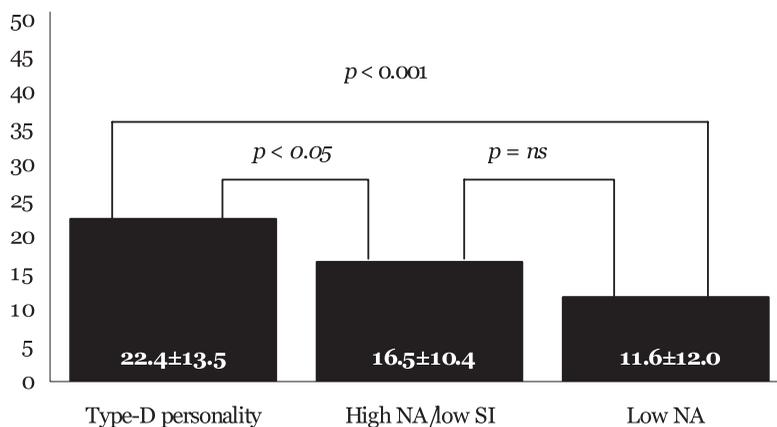


Figure 1. PSS-SR total scores differentiated by personality type ( $n = 189$ )

number of moderate physical assaults,  $\chi^2 (2, n = 189) = 7.45, p < 0.025$ , and peritraumatic distress severity,  $F (2, 187) = 13.06, p < 0.001$ . Post hoc analyses indicated that high NA/low SIs were substantially younger than low NAs, that type Ds had less often experienced moderate physical assaults than low NAs, and that low NAs had recalled lower levels of peritraumatic distress than type Ds and high NA/low SIs (Table 1). A significant overall effect was also observed for the ANOVA testing the effect of personality subgroup on PTSD symptom severity,  $F (2, 178) = 15.64, p < 0.001$ . As expected, post hoc analyses indicated that type Ds had reported higher PTSD symptom severity than high NA/low SIs and low NAs, while participants in the high NA/low SI group did not suffer from more severe PTSD symptom levels than those in the low NA

group (Figure 1). Chi-square analysis suggested that type Ds suffered from PTSD more often than non-type Ds (62/95, 65.3% versus 30/94, 31.9%,  $\chi^2 [2, n = 189] = 21.03, p < 0.001$ ). Results for the initial logistic model indicated that a one-point increase in level of compensation for pain and suffering and time since victimization would raise the odds for PTSD with approximately 24% and 15%, respectively. High NA/low SI was not significantly associated with PTSD when entered on the second step. Both level of compensation for pain and suffering and time since victimization remained significant positive predictors of PTSD. When type D personality was included in the model, level of compensation for pain and suffering remained significantly associated with PTSD, while time since victimization failed to reach significance. Contrary to the

Table 2. Multivariate logistic regression models predicting the odds of PTSD ( $n = 189$ )

Variables	Step 1	Step 2	Step 3
Age	1.02 (0.99–1.04)	1.02 (0.99–1.04)	1.02 (1.00–1.05)*
Gender	0.69 (0.36–1.34)	0.68 (0.35–1.32)	0.69 (0.34–1.41)
Time since victimization	1.15 (1.03–1.28)**	1.15 (1.03–1.28)**	1.12 (1.00–1.26)
Sexual violence	0.42 (0.12–1.42)	0.42 (0.12–1.45)	0.49 (0.13–1.79)
Physical violence (severe)	0.42 (0.11–1.56)	0.41 (0.11–1.55)	0.46 (0.11–1.91)
Physical violence (moderate)	1.18 (0.49–2.84)	1.18 (0.49–2.86)	1.70 (0.65–4.47)
Theft with violence	0.71 (0.28–1.80)	0.71 (0.28–1.82)	0.72 (0.27–1.95)
Compensation pain and suffering	1.24 (1.03–1.50)**	1.25 (1.04–1.51)**	1.25 (1.02–1.52)*
NA high/SI low		0.69 (0.30–1.60)	2.07 (0.78–5.55)
Type-personality			5.92 (2.77–12.69)***
$\chi^2$ (change), df	17.34, 8*	0.75, 1	23.51, 1***
Cox and Snell $R^2$	0.088	0.091	0.198
Nagelkerke $R^2$	0.117	0.122	0.263
Hosmer–Lemeshow fit ( $\chi^2$ , $p$ )	7.54, 0.48	7.79, 0.45	6.13, 0.63
Classification rate PTSDs	62.1	64.2	67.4
Classification rate non-PTSDs	61.7	64.9	66.0

Note. Gender is coded as male = 1.

\* $p < 0.05$ . \*\* $p < 0.025$ . \*\*\* $p < 0.01$ . \*\*\*\* $p < 0.001$ .

NA = negative affectivity. SI = social inhibition. df = degrees of freedom. PTSD = posttraumatic stress disorder.

first two steps, age was found to be significantly associated with PTSD in the third step as well. However, odds ratios suggested that type D personality was the strongest predictor of PTSD. Type Ds were almost six times more likely to suffer from PTSD than not when compared with non-type Ds. Hosmer–Lemeshow Goodness-of-Fit Tests indicated that the data did not deviate from the logistic model in any of the three steps. Values for Cox and Snell  $R^2$  and the Nagelkerke  $R^2$  showed that the explained pseudovariance in PTSD more than doubled after entry of type D personality. Classification tables suggested that each part of the model reached a sensitivity (i.e., the percentage of PTSD cases predicted correctly) and specificity (i.e., the percentage of non-PTSD cases predicted correctly) of over 60%. However, the full model (i.e., the model including type D personality) appeared to have the best predictive ability in estimating PTSD (Table 2). Assumptions of logistic regression did not seem to be violated.

## DISCUSSION

The present study investigated the association between type D personality and PTSD in a sample of victims of interpersonal violence. The concept of type D personality was developed by Denollet et al. (1995) and Denollet et al. (1996) and represents a personality configuration of high NA and

high SI. According to Denollet and colleagues (e.g., Denollet et al., 1996), particularly the combination of high scores on both traits renders individuals at risk of developing health-related problems and not a high score on NA alone. In line with expectations and previous research (e.g., Denollet et al., 1996; Denollet et al., 2006; Kunst, et al., 2009), type Ds reported more severe PTSD symptom levels than high NA/low SIs and low NAs. Furthermore, type D personality and not high NA/low SI was associated with probable diagnosis of PTSD.

Our findings are in line with several studies investigating the association between type D personality and anxiety in cardiac patients (e.g., Schiffer, Pedersen, Broers, Widdershoven, & Denollet, 2008; Spindler, Pedersen, Serruys, Erdman, & van Domburg, 2007; Van Gestel et al., 2007) and underline the importance of considering specific combinations of personality traits in PTSD research. Looking beyond the traditional question of how single traits affect disease and instead adopt an approach that takes into account the ways different traits interact to elicit adverse health consequences may help the identification of those most at risk for adverse outcomes when faced with highly stressful situations or events (e.g., Denollet, 1997).

The results may be interpreted to suggest that interventions aiming to reduce PTSD in victims of violence should be tailored to meet participants' individual needs and preferences. Currently, victim support agencies often offer victims the

opportunity to participate in a peer support groups (PSGs). Participation in PSGs is widely assumed to help victims overcome the adverse outcomes of victimization, for they provide the opportunity to share negative experiences with others (e.g., Craig-Henderson & Sloan, 2003). However, this supposition is merely anecdotal in nature and lacks empirical validation (Hogan, Linden, & Najarian, 2002; Winkel, 2006). Furthermore, this view is too general and fails to take into account that successful participation in PSGs may depend on individual characteristics. For example, regarding those with type D personality, one might argue that PSGs will only work if the setting in which they take place is perceived as safe and secure enough to freely exhibit and be oneself—a core condition that needs to be fulfilled in order to circumvent type Ds' tendency to withdraw in social interactions. If not, type Ds are likely to experience PSGs as highly distressing and therefore may fail to profit from participation. Relying on Schiffer et al. (2008), one might argue that victim support provided to type Ds should focus on stimulation and consolidation of their existing social networks. This may be accomplished, for example, by allowing relatives and friends to participate in PSGs.

If intimate support groups prove to be distressful as well, alternative treatment methods, such as internet-based interventions (IBIs) or structured writing therapy (SWT), should be considered. Both have been developed to prevent emotional expression in the presence of (significant) others or therapists and may therefore be particularly suitable for individuals with type D personality. IBIs often comprise components typical for cognitive behaviour therapy, such as psychoeducation, cognitive restructuring, goal setting, and exposure. IBIs for PTSD differ according to extent of interaction between clinician and client (Amstadter, Broman-Fulks, Zinzow, Ruggiero, & Cercone, 2009). Some only require initial face-to-face introduction sessions in which clients are instructed how to use a self-help program without much subsequent therapist assistance (e.g., Hirai & Clum, 2005; Litz, Williams, Wang, Bryant, & Engel, 2004; Ruggiero et al. (2006), while other programs remain therapist guided (e.g., Lange, Van de Ven, Schrieken, & Emmelkamp, 2001; Lange et al., 2003). IBIs have been shown to be effective in decreasing symptoms of PTSD (Hirai & Clum, 2005; Litz, Engel, Bryant, & Papa, 2007).

SWT consists of three phases of writing assignments: (1) the self-confrontation phase; (2) the cognitive reappraisal phase; and (3) the sharing and

farewell ritual phase (Van Emmerik, Kamphuis, & Emmelkamp, 2008). During the first phase, participants are instructed to write detailed accounts of the traumatic event. In the second phase, they need to provide an imaginary friend with a written advice on trauma resolution and then must apply the suggested coping strategy to themselves. Finally, during the third phase, a letter about the traumatic event and the victim's coping efforts is to be sent to someone close to them or another person exposed to the same event. This letter should also explain why it was sent to the addressee and indicate what was expected from him/her. Written emotional disclosure has been demonstrated to positively impact recovery from trauma-related distress (for a review, see Pennebaker, 1997). Van Emmerik et al. (2008) have shown that SWTs are equally successful in reducing PTSD symptoms as cognitive behaviour therapy.

Several study limitations need consideration when interpreting the data. First, since a cross-sectional study design was used, cause and effect could not be established. Second, due to the low response rate, it could not be ascertained whether the study sample was representative of the general population of victims applying for compensation from the DVCF. Non-response analyses suggested the existence of differences between participants and non-participants on several background characteristics. Third, the specific focus on victims applying for state compensation prevents generalization to other populations (of victims). Fourth, the data set did not allow controlling for personality characteristics other than NA and SI. Consequently, despite the methodological approach used (i.e., differentiating between type Ds and high NA/low SIs in statistical analyses), the divergent validity of type D personality with related personality constructs could not be determined. Faultfinders have argued that type D personality adds nothing new to 'the maze of concepts' (Garssen, 2007, p. 471) playing a role in the aetiology of health-related problems and is just another measure of NA, neuroticism (Lesperance and Frasere-Smith, 1996) or the anxious defensive style (Garssen, 2007). To refute such arguments, Denollet (2000, p. 258) has emphasized that 'within the type D framework, NA [or related constructs, such as neuroticism] refers to a continuous personality *trait* [ . . . ] while "distressed" refers to a *discrete* (italics by author) personality *configuration* designating patients who are inclined to experience emotional and interpersonal difficulties'. In support of this view, Williams et al. (2008) have shown that type D personal-

ity was associated with low levels of perceived social support when adjusting for a continuous variable of neuroticism. However, future studies are needed to replicate these findings and to determine their validity with regard to other outcomes. Fifth, the ability to correctly classify participants as PTSDs/non-PTSDs in each step of the logistic model and the large relative risk to have PTSD for victims with type D personality, may indicate that the estimates for either PTSD, type D personality, or both were biased (Manolio, 2003). Worth mentioning in this respect is that the prevalence rates for PTSD and type D personality in the current study were fairly high in comparison to the Dutch general population (De Vries & Olf, 2009; Denollet, 2005). A possible, yet speculative, explanation for these results is that participants exaggerated their current symptom levels to prevent charges for unjustified compensation allowances. Sixth, similarities in wording between the DS-14 and PSS-SR items may have erroneously inflated the association between type D personality and PTSD. However, we do not consider this to be very likely, for the observed case ratio of type D personality to PTSD corresponded to a bivariate correlation of just over  $r = 0.3$ . This value clearly suggests that type D personality and PTSD are related, but separate constructs.

Despite these limitations, our study was the first to investigate the association between type D personality and PTSD in victims of violence. By doing so, we extended the slowly growing body of research focussing on the interplay of different global personality traits and health outcomes (see also Denollet, 2000; Grant & Langan-Fox, 2006).

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