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Maarten Kunst,¹ Frans Willem Winkel,¹
and Stefan Bogaerts¹

Abstract

Many studies have focused on the predictive value of victims' emotions experienced shortly after violence exposure to identify those vulnerable for development of posttraumatic stress disorder (PTSD). However, many victims remain unidentified during the initial recovery phase, yet may still be highly in need of psychological help after substantial time since victimization has passed. Professionals involved in the settlement of civil damage claims filed by victims of violence may play an important role in referring victims with current psychological problems to appropriate treatment services, as they are likely to maintain relations with victims until all compensation possibilities have been exhausted. As an exploratory examination of this topic, the current study investigates the potential utility of file characteristics as predictors of chronic PTSD among 686 victims of violence who had applied for state compensation with the Dutch Victim Compensation Fund (DVCF) in 2006. Identification of significant predictors is preceded by estimating prevalence rates of PTSD. Results indicate that approximately 1 of 2 victims applying

¹Tilburg University, the Netherlands

Corresponding Author:

Maarten Kunst, Tilburg University, School of Law, International Victimology Institute Tilburg Building M, Room M 733, P.O. Box 90153, Tilburg 5000 LE, the Netherlands
Email: m.j.kunst@uvt.nl

for state compensation in the Netherlands still have PTSD many years after victimization and claim settlement. Age, female sex, time since victimization, acquaintance with the perpetrator, violence-related hospitalization, and compensation for immaterial damage prove to be predictive of PTSD, although female sex and immaterial damage compensation fail to reach significance after adjusting for recalled peritraumatic distress severity. Implications for policy practice as well as strengths and limitations of the study are discussed.

Keywords

violence, PTSD

Victims of violence need to cope with the psychological burden that the act of violence has laid on them. Although most of them appear to adapt well to the stress experienced shortly after victimization and return to their previctimization levels of functioning rather soon (e.g., Norris & Kaniasty, 1994), some still suffer from distress after several months have passed and may even experience symptom levels that qualify them for chronic posttraumatic stress disorder (PTSD).

To be diagnosed with chronic PTSD, the individual involved must fulfill *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR*; 4th ed., text rev., American Psychiatric Association [APA], 2000) criteria for PTSD 3 months after the traumatic event has occurred. Previous research suggests that the prevalence of violence-related chronic PTSD recorded by studies using follow-up assessments after initial case identification 1 month postvictimization is approximately 10% to 15% (Winkel, 2007). However, individual studies have recorded much higher prevalence rates, with percentages as high as 25% among victims recruited through police stations (Wohlfarth, Winkel, & Van den Brink, 2002) and 32% in emergency department samples (Birmes et al., 2003). In addition, many studies have, either prospectively (e.g., Lawyer, Ruggiero, Resnick, Kilpatrick, & Saunders, 2006; Kilpatrick et al., 2003) or retrospectively (Orth, Cahill, Foa, & Maercker, 2008), investigated PTSD symptom severity in victims of rather diverse categories of interpersonal violence with varying intervals between time of victimization and PTSD assessment.

To help victims overcome the initial shock instigated by the violent event and to prevent the development of chronic PTSD, they need to be screened for factors that may render them at risk for the persistence of negative post-trauma reactions. Prevention of PTSD and relieving symptom levels among those suffering from PTSD is important to minimize the profound impact this

disorder may have on victims' everyday lives; among other things, previous research suggests PTSD is associated with a number of adverse conditions, including functional impairment in work and other activities (e.g., Momartin, Silove, Manicavasagar, & Steel, 2004), sickness absenteeism (e.g. Hoge, Terhakopian, Castro, Messer, & Engel, 2007), unemployment (e.g., Kimerling et al., 2009), health-threatening behaviors (e.g., Ullman, Filipas, Townsend, & Starzynski, 2005, 2006), and increased health care utilization (e.g., Surís, Lind, Kashner, Borman, & Petty, 2004). In order to investigate whether victims are at risk of maladaptive outcomes, professionals involved in the immediate aftermath of the violent act, such as police officers and emergency department workers, should be equipped with the diagnostic skills necessary to adequately act as "gatekeepers" in the referral process (e.g., Winkel, Wohlfarth, & Blaauw, 2003). Recently, several short screening instruments, such as the RISK10 (Winkel, 2000), the RISK11 (Winkel et al., 2003; Winkel, Wohlfarth, & Blaauw, 2004; Wohlfarth et al., 2002), and the Trauma Screening Questionnaire (TSQ; Brewin et al., 2002), have been developed. Each of these screeners can be quickly and easily administered among victims of crime to estimate vulnerability for PTSD-related symptomatology shortly after victimization.

However, despite the development of adequate screening tools, many victims highly in need of psychological help remain unidentified during the early coping stages. Several reasons have been suggested for the problem of underidentification. First, screening for psychological problems and referral to victim support organizations or other social service agencies by the police (and primary care services available to victims) appears to function rather haphazardly (e.g., Brienen, Groenhuijsen, & Hoegen, 2000) and is only incidentally based on screening examinations. Presumably, many police departments do not dispose of sufficient financial and organizational resources to incorporate psychology-based screening instruments into their existing working practices. Second, many victims do not report their cases to the police (e.g., Van Dijk, 2008) and do not seek or need medical care for physical injuries (e.g., Logan, Evans, Stevenson, & Jordan, 2005). Third, some victims do not develop psychological health problems until several months have passed since the traumatic victimization experience. This phenomenon is often referred to as *delayed* distress (e.g., Yoshihama & Horrocks, 2003). Victims with late onset of trauma-related psychopathology may fail to report symptom levels that qualify them for referral during the initial recovery phase.

Given the variety of reasons that underlie the problem of underidentification, policy measures focusing on the early stages of mental illness development

cannot be expected to prevent all cases of chronic PTSD or other forms of persistent psychopathology, even if implemented properly. Therefore, in addition to the uptake of primary and secondary prevention strategies (i.e., activities initiated to prevent the onset or to interrupt the progression of disease), information and referral services should also be provided to victims who have been overlooked at first, yet are (still) highly in need of professional help and assistance (i.e., tertiary prevention strategies) many years postvictimization.

Professionals involved in the settlement of civil damage claims filed by victims of violence, such as lawyers and physicians, may play an important role in referring victims with current psychological problems to appropriate treatment services, as they are likely to maintain relations with the victim involved until all compensation possibilities have been exhausted. Support services automatically provided to victims who contacted the police or emergency services may have ended by that time, whereas those who failed to do so may also hesitate to seek help afterward (e.g., McFarlane, Soeken, Reel, Parker, & Silva, 1997).

Previous research suggests that victims of violence compensated for damages may still suffer from PTSD several years after victimization, although prevalence rates in this population have not been estimated yet. Recently, Orth, Montada, and Maercker (2006) investigated the association between feelings of revenge and current PTSD symptom levels among victims who had received financial support from a German victim assistance association for legal costs made within the past 5 years. PTSD symptom levels were measured with the 22-item Impact of Event Scale (IES; Weiss & Marmar, 1997). The reported mean symptom scores ($M \geq 20$ for each symptom cluster) seem to indicate that many victims still suffered from PTSD symptom levels that lay well above the cutoff (IES total score ≥ 35) used by several prior studies (e.g., Knipscheer & Kleber, 2006; Mooren, De Jong, Kleber, & Ruvic, 2003). In addition, the study's results suggest that rather objectively assessable criteria, such as time relapse since victimization and physical harm resulting from violence, may predict persistent PTSD symptomatology. To further explore this topic, the present article addressed the potential utility of file characteristics as predictors of chronic PTSD among victims applying for state compensation with the Dutch Victim Compensation Fund (DVCF).

The rise of state compensation programs was induced by pleas for state compensation to crime victims of a British magistrate, Margery Fry, in the 1960s. The first scheme was introduced in New Zealand (e.g., Davies, 1991). Since then, many Western jurisdictions have adopted compensation schemes for victims of violence. In Europe, many countries have ratified the 1983 European

Convention on the Compensation of Victims of Violent Crimes (Brienen & Hoegen, 2000), which provides minimum standards for national compensation schemes. State compensation provides the resources necessary to cover losses that cannot be obtained through other means and additionally may serve as a final resort to ensure that traumatized victims are informed on available mental health services before they return into anonymity (e.g., Alvidrez et al., 2008). File characteristics, such as the nature, severity, and amount of damages claimed by the applicant, may act as red flags for PTSD and may justify assessment of current mental help status by a clinical psychologist or psychiatrist. To date, this possibility seems to have been overlooked in the recent literature on victims of violence. A large advantage of using file characteristics to screen for PTSD is that existing working practices do not require substantial adaptation.

Following from the aforementioned, our study had two objectives. First, we intended to assess the prevalence of PTSD among a sample of victims who had filed a claim for state compensation with the DVCF. Although we did not have prior expectations with regard to the exact prevalence to be found, we expected that the rate of PTSD cases would be rather high. Several studies on accidental trauma suggest that victims initiating litigation suffer from more severe PTSD symptoms than nonlitigants (e.g., Blanchard et al., 1998; Fujita & Nishida, 2008; Harris, Young, Rae, Jalaludin, & Solomon, 2008). As the fund serves as an “ultimum remedium” (Groenhuijsen, 2001), many victims who apply for compensation are likely to be on the verge of despair. Consequently, PTSD rates may be assumed to be higher than among victims of violence not seeking compensation from the fund. Second, we wanted to explore whether current PTSD could be predicted from data available in the fund’s electronic archives. As we did not have prior knowledge of which data are included in the fund’s files, we did not speculate on the predictive value of individual file characteristics.

Method

Procedure and Participants

Identification of file information suitable for analysis. Prior to participant recruitment, the fund’s electronic database was consulted to determine which file data are systematically recorded and are appropriate for quantitative evaluation. The selected data were broadly categorized into four domains of information. Each domain comprised a set of predictors considered to be relevant for the identification of PTSD. Relevance was based on existing literature.

The first domain included data on the act of violence itself: type of violence and time since victimization. Both appear to be predictive of current PTSD, although inconsistency appears to exist concerning the nature and direction of their effects. With regard to type of violence, previous studies have mostly confined themselves to distinguish between rather coarse categories of violence, such as sexual and nonsexual violence (e.g., Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993), and only a few have explicitly tested differences in effects on health and thereby failed to observe meaningful results that only applied to specific types of violence (e.g., Basile, Arias, Desai, & Thompson, 2004; Coker, Smith, McKeown, & King, 2000). Time since traumatization may either be negatively (e.g., Ulvik, Kvåle, Wentzel-Larsen, & Flaatten, 2008) or positively (e.g., Whiting & Bryant, 2007) correlated with symptomatology, yet has also been found to be irrelevant, particularly when several years since trauma have passed (e.g., Thapa, Van Ommeren, Sharma, De Jong, & Hauff, 2003). Furthermore, positive associations between time since trauma and negative outcomes may depend on the number of prior trauma (e.g., Steel, Silove, Phan, & Bauman, 2002) or, in the case of violent victimization, on concurrent feelings of revenge (e.g., Orth et al., 2006).

The second domain comprised information related to the perpetrator: acquaintance with the perpetrator and perpetrator conviction. Both may be assumed to be associated with victimization-related PTSD; some empirical evidence with regard to the predictive value of the first factor was provided by Ullman (2007), who found that adult survivors of child sexual abuse by relatives had more PTSD symptoms than stranger victims. On the other hand, conviction of the perpetrator marks the public recognition of the victim as a victim of a criminal offense (Orth, 2002) and, therefore, may modify posttraumatic stress reactions. Preliminary evidence for this line of reasoning was reported by Orth (2004); he observed a negative association between satisfaction with perpetrator punishment severity (with no conviction as the least severe form of punishment) and victims' feelings of revenge (e.g., Orth, 2004)—a potential correlate of PTSD in victims of crime (e.g., Orth et al., 2006).

The third domain regarded medical care costs made by the victim: costs spent on victimization-related hospitalization, other physical health care services, and psychotherapy. Several studies have found positive associations between health care costs and PTSD symptoms (e.g., New & Berliner, 2000; Walker et al., 2003).

The fourth and final domain consisted of claim allowance characteristics: compensation denial and compensation for immaterial damage. Disallowance may be supposed to act as a source of secondary victimization and as such

may increase PTSD symptom levels (e.g., Orth, 2004), whereas immaterial damage compensation may be suggested to reflect the severity of the violence experienced and its effects on (mental) health status.

Participant Recruitment

Participants were recruited through the DVCF. Victims of violent offenses can apply to the fund for a single payment if they have suffered physical or immaterial damage and cannot be compensated through other means. In principle, victims need to file their claim within 3 years of victimization or at a later moment, if this is justified by circumstances not reasonably attributable to the victim (Dutch Victim Compensation Fund Act, 1975). As the DVCF primarily serves as a last resort for compensation after all other possibilities have been exhausted, many victims do not apply for compensation until considerable time since victimization has passed.

Data collection consisted of two phases. The first phase took place from October to December 2007 (Time 1 [T1]) and consisted of administration of a set of questionnaires measuring current PTSD symptom levels and recalled peritraumatic distress. Recollections of distress during and shortly after victimization were assessed to ensure the traumatic nature of the act of violence. According to the *DSM* diagnostic criteria, 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), whereas the response to the event must have involved intense fear, helplessness, or horror (Criterion A2). Because acts of severe violence fall within the *DSM* definition of a traumatic event, all participants were considered to fulfill Criterion A1. By contrast, fulfillment of the Criterion A2 can only be determined through explicit assessment of peritraumatic distress.

A letter that explained the purpose of the study was sent to applicants who had filed a claim between January 1 and December 31, 2006, and were eligible for participation. Inclusion criteria were: age ≥ 18 and no missing file data on age, gender, and date of crime. Missing file data on these variables indicated that the victim involved had failed to return the application form after an initial request for sending a copy through the mail. The period of application chosen to select potential participants was prompted by the possibility that those who had applied at a later moment had not received a decision on their claim yet or had objected against it.¹ In such cases, self-reports of PTSD symptoms may reflect *compensation neurosis*. Kennedy (1946) cynically described compensation neurosis as “a state of mind, born out of fear, kept alive by avarice, stimulated by lawyers, and cured by a

verdict.” Previous research, particularly regarding U.S. war veterans, suggests that assessing PTSD during a compensation application procedure may induce symptom overreporting (e.g., Frueh et al., 2003; Frueh, Gold, & De Arellano, 1997; Frueh, Hamner, Cahill, Gold, & Hamlin, 2000).

Potential participants were invited to fill out a survey through the Internet or to request for a hardcopy version if they did not have access to the Internet or preferred to fill out the questionnaire on paper. To test the stability of PTSD, respondents who had agreed to participate in a follow-up study were asked to fill out the PTSD measure again 6 months after initial assessment (Time 2 [T2]).

In total, 4,513 individuals had filed a claim with the DVCF during the reference period; 792 of them did not fulfill inclusion criteria and were, therefore, not approached for participation; 744 (20%) victims responded; 640 participants filled out the initial questionnaire through the Internet; 104 participants filled out the questionnaire on paper; and 640 participants (551 [86.1%] participants used Internet and 89 [85.6%] participants used paper) agreed to participate in the follow-up study. A total of 235 participants responded (187 [33.9%] participants used Internet and 48 [46.2%] participants who used paper). One participant had requested for a paper version of the initial questionnaire filled out the follow-up questionnaire through the Internet.

Only respondents without missing values were included in statistical analyses. Missing data on study variables were not estimated using statistical imputation procedures, as the program running the questionnaires did not allow participants to skip a particular question and continue with the next question. Consequently, the pattern of missingness for successive questions could not be investigated; 686 (92.2%) participants did not have missing values on any of the study variables at T1 and 208 (88.5%) participants did not have any missing data either at T1 or at T2 (Figure 1). Approval for the study was obtained from the internal board of directory of the fund.

Significant differences existed between non-respondents (i.e., those who did not respond to the baseline questionnaires; $n = 3035$), T1 respondents (i.e., participants who had complete data only at baseline; $n = 478$), and T2 respondents (i.e., respondents who had complete data both at baseline and at follow-up; $n = 208$) for age, $F(2, 3718) = 9.71, p < .001$, and female sex, $F(2, 3718) = 9.29, p < .001$. Post hoc analyses revealed that T2 respondents ($M = 44.1, SD = 15.8$) were older than T1 respondents ($M = 40.0, SD = 14.8$), while both were older than non-respondents ($M = 39.2, SD = 15.6$). The rate of females among T2 respondents (131/208, 63.0%) was higher than for T1 respondents (246/478, 51.5%) and non-respondents (1457/3035, 48.0%). The difference in rates of females between T1 respondents and

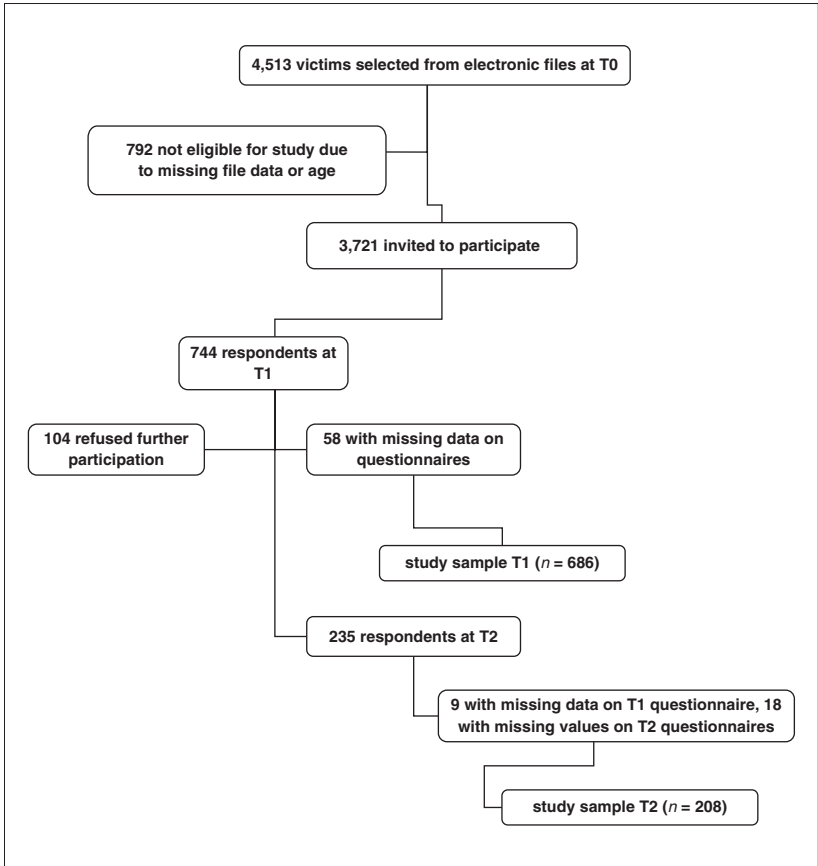


Figure 1. Flow chart of study participants

non-respondents was not significant. No differences between the three groups were observed on time since victimization. Mean time since victimization was 4.7 years ($SD = 3.5$) for non-respondents, 4.9 years ($SD = 3.7$) for T1 respondents, and 5.3 years ($SD = 4.8$) for T2 respondents.

Measures

File characteristics. There are four domains to be discussed:

Domain 1: Type of violence was operationalized by reducing the number of legal classifications of violent acts encountered in the files

from 30 to 5: sexual violence, physical assault (severe), physical assault (moderate), theft with violence, and other (reference category). Time since victimization was measured by computing the number of years since date of victimization.

Domain 2: Acquaintance with the perpetrator and conviction of the perpetrator were retrieved directly from victims' files and indicated the existence of any kind of relationship between the victim and the perpetrator (yes/no) and the imposition of a sentence (yes/no).

Domain 3: Requested compensation for costs of hospitalization, other physical health care services, and psychotherapy were used as indicators of medical costs.

Domain 4: Compensation denial (yes/no) and compensation for immaterial damage were also retrieved directly from victims' electronic files, yet only regarded the initial outcome of the application procedure. A small number of victims may have received additional payments after a successful complaint against compensation denial. For immaterial damage compensation, five dummy variables were created. The dummies represented the different scale categories of financial compensation that can be granted for immaterial damage by the DVCF. Dummy 1 included participants who had at least been granted the lowest level of compensation (Level 1), whereas Dummies 2, 3, 4, and 5 included participants who had at least been granted Level 2, 3, 4 or 5, respectively. No compensation for immaterial damage was the reference category.

Peritraumatic Distress Inventory (PDI). The 13-item PDI (Brunet et al., 2001) was used to retrospectively check whether participants fulfilled Criterion A2 with regard to the act of violence they had experienced. 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 5-point scale (0 = *not at all*, 1 = *slightly*, 2 = *somewhat*, 3 = *very true*, 4 = *extremely true*). Participants were considered to fulfill Criterion A2 if they had reported a score of ≥ 1 on the PDI. In our sample, a good internal consistency reliability for the PDI was observed ($\alpha = .87$).

PTSD Symptom Scale (Self-Report Version). The PTSD Symptom Scale, Self-Report Version (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993), was used to

measure PTSD. Its 17 items correspond to the PTSD symptoms listed in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-III; 3rd ed., APA, 1987)*. 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). The Dutch version of the PSS-SR has been constructed by Arntz (1993). Recently, several studies have used Web-based versions of the PSS-SR (e.g., Elhai & Simons, 2007). Total scores for the PSS-SR as well as subscale scores for intrusion, avoidance, and hyperarousal symptoms can be computed by summing item scores. For each of the 17 items, respondents have to indicate to what extent they have experienced the corresponding symptom during the past week on a 4-point Likert scale (0 = *never*, 1 = *once*, 2 = *2-4 times*, 3 = *5 times or more*) in relation to the event under investigation. 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, the PSS-SR demonstrated good internal consistency reliabilities, with Cronbach's $\alpha = .95$ for the total scale, $\alpha = .90$ for the intrusion subscale, $\alpha = .88$ for the avoidance subscale, and $\alpha = .83$ for the hyperarousal subscale. Comparable with procedures used by previous studies (e.g., Birmes et al., 2003), we classified participants who met Criterion A2 as measured with the PDI and had a PTSD symptom score of ≥ 15 on the PSS-SR as suffering from PTSD. This cutoff score was derived from a study that evaluated the suitability of the PSS-SR as a screener for PTSD and corresponded to the best possible sensitivity (90%) coupled with the best possible specificity (90%) among victims of crime (Wohlfarth et al., 2003).

Statistical Analyses

PTSD prevalence rates as well as PSS-SR mean total and subscale scores were calculated for T1 and T2 respondents. Stability of PTSD was investigated by computing Cohen's kappa for participants with T1 and T2 responses. In addition, Pearson correlations between T1 and T2 assessments were estimated. Paired samples *t* tests were performed to investigate changes in self-reported symptomatology. McNemar's test was performed to test whether differences in PTSD rates existed between T1 and T2. To determine which of the selected file characteristics predicted current PTSD, several logistic analyses were performed using T1 responses only. Univariate analyses were carried out to describe victims with and without PTSD. Finally, a multivariate hierarchical regression was conducted to identify independent predictors of PTSD. Demographic characteristics (age and female sex) were entered on

Step 1, whereas Domain 1, 2, 3, and 4 predictors were entered on the Step 2, Step 3, Step 4, and Step 5, respectively. A final step was performed to include the additional effect of recalled severity of peritraumatic stress reactions. Previous studies suggest that peritraumatic emotions are highly predictive of PTSD development in crime victims (e.g., Brewin, Andrews, & Rose, 2000). Prior to entry, the correlation between recalled peritraumatic distress and PTSD was computed to determine the overlap between both outcome measures and to decide the appropriateness of adding recalled peritraumatic distress to the model.

Results

Self-Reported PTSD

A total of 333 (48.5%) T1 respondents had PSS-SR and PDI total scores corresponding to diagnosis of violence-related PTSD ($M = 28.6$, $SD = 9.8$). Mean PSS-SR subscale scores for individuals with PTSD were 7.8 ($SD = 3.8$) on the intrusion subscale, 11.2 ($SD = 4.8$) on the avoidance subscale, and 9.7 ($SD = 3.0$) on the hyperarousal subscale. Mean PSS-SR scores for non-PTSD participants were 6.2 ($SD = 4.5$) on the total scale, 1.6 ($SD = 1.8$) on the intrusion subscale, 1.8 ($SD = 1.9$) on the avoidance subscale, and 2.9 ($SD = 2.4$) on the hyperarousal subscale.

Stability of self-reported PTSD. The kappa coefficient for the reliability of violence-related PTSD at T1 and T2 was .56 ($p < .001$) and could be considered moderate according to the rules of thumb developed by Landis and Koch (1977). Violence-related PTSD diagnosis (yes vs. no) among 46 participants (22.1% of the entire group and 38% of all violence-related cases of PTSD identified at T1 and T2) were discrepant between T1 and T2. PSS-SR total scores at T1 and T2 were highly correlated, $r = .78$, $p < .001$, indicating good test-retest reliability over a 6-month period. Correlations between subscale scores were also very high, with $r = .88$ ($p < .001$) for the intrusion subscales, $r = .92$ ($p < .001$) for the avoidance subscales, and $r = .87$ ($p < .001$) for the hyperarousal subscales. Significant decreases in PSS-SR scores were observed between T1 and T2, with $t = 3.69$ ($p < .001$) for total symptom scores, $t = 9.54$ ($p < .001$) for intrusion scores, $t = 11.04$ ($p < .001$) for avoidance scores, and $t = 14.79$ ($p < .001$) for hyperarousal scores, indicating that the recovery process was still not complete several years after victimization. Prevalence of PTSD at T2 was 48.1%. McNemar's test revealed that the prevalence rates at both assessments did not differ from each other ($\chi^2 = 1.07$, $df = 1$, $p = .302$).

Relationships between claim characteristics and self-reported PTSD. Table 1 presents the results of the logistic regression analyses. As shown, univariate effects were found for predictors within each domain of file characteristics. In addition, age, female sex, and recalled peritraumatic stress were related to PTSD. Hierarchical analysis showed that predictors within Domains 1, 2, and 3 contributed to a better fit of the model. Adding Domain 4 variables to the equation did not improve the prediction of PTSD. When demographic and file characteristics were considered simultaneously, yet without taking into account the effect of recalled peritraumatic distress severity, age (Wald = 22.21, Odds Ratio [OR] = 1.03, 95% Confidence Interval [CI] = 1.02-1.04, $p < .001$), female sex (Wald = 5.10, OR = 1.52, 95% CI = 1.06-2.18, $p = .024$), time since victimization (Wald = 5.69, OR = 1.08, 95% CI = 1.01-1.15, $p = .017$), acquaintance with the perpetrator (Wald = 15.56, OR = 2.33, 95% CI = 1.53-3.54, $p < .001$), violence-related hospitalization costs (Wald = 7.93, OR = 2.28, 95% CI = 1.28-4.04, $p = .005$), and compensation for immaterial damage ≥ 5 (Wald = 4.43, OR = 1.98, 95% CI = 1.05-3.73, $p = .035$) appeared to be the only independent predictors of PTSD. This means that the odds for having PTSD increased by 3% with each age year and by 8% with each year time relapse since victimization. The odds for female sex indicate that women were 1.5 times more likely to have PTSD than men. The odds for acquaintance with the perpetrator suggest that victims who had been acquainted to the perpetrator were 2.33 times more likely to suffer from PTSD than stranger victims. The odds for violence-related hospitalization costs appear to imply that victims who had claimed costs for hospitalization were 2.28 times more likely to be diagnosed with PTSD than those who had not claimed such costs. Finally, the odds for immaterial damage compensation ≥ 5 seem to entail that victims who had been granted a compensation level of at least 5 were almost twice as likely to qualify for PTSD as those granted with lower compensation levels.

Prior to entry of recalled peritraumatic distress, the model explained between 14% and 19% of the pseudo variance in PTSD (Cox and Snell $R^2 = .140$, Nagelkerke $R^2 = .187$), whereas the Hosmer and Lemeshow goodness of fit test indicated that the model fitted the data well ($\chi^2 = 3.638$, $df = 8$, $p = .888$). The classification table showed that 65.2% of the cases were classified correctly by the model (60.7% for participants with PTSD and 69.4% for participants without PTSD), which is more than a 50% random chance classification.

A substantial correlation was found between recalled peritraumatic distress and PTSD ($r = .61$, $p < .001$), implying that both outcomes were closely related in the present study but not identical. As the value for the bivariate

Table 1. Logistic Regression Analyses for Predicting PTSD at Time 1

Step and Variable	Step Analysis			Univariate Analysis			Stepwise Analysis			Analysis of Total Equation		
	χ^2	df	p	Wald	OR (95% CI)	P	Wald	OR (95% CI)	p	Wald	OR (95% CI)	P
	Step 1	34.82	2	.000								
Age	—	—	—	18.16	1.02 (1.01-1.03)	.000	15.79	1.02 (1.01-1.04)	.000	18.18	1.03 (1.02-1.04)	.000
Female sex	—	—	—	13.48	1.77 (1.30-2.40)	.000	15.79	1.88 (1.38-2.57)	.000	0.159	0.92 (0.59-1.42)	.690
Step 2	28.63	5	.000									
Sexual violence	—	—	—	5.16	1.73 (1.08-2.78)	.023	0.85	1.33 (0.72-2.45)	.358	0.80	0.69 (0.31-1.55)	.373
Severe physical assault	—	—	—	0.00	0.98 (0.60-1.66)	.992	0.08	1.09 (0.59-2.03)	.783	2.92	0.47 (0.20-1.12)	.088
Moderate physical assault	—	—	—	2.61	0.76 (0.54-1.06)	.106	1.75	0.73 (0.45-1.17)	.186	0.04	1.06 (0.57-1.98)	.848
Theft with violence	—	—	—	1.63	0.81 (0.59-1.12)	.202	0.43	0.86 (0.54-1.36)	.513	0.17	0.88 (0.49-1.60)	.680
Time since victimization	—	—	—	16.99	1.12 (1.06-1.19)	.000	12.25	1.11 (1.05-1.17)	.000	7.47	1.11 (1.03-1.20)	.006
Step 3	17.14	2	.000									
Accquaintance with perpetrator	—	—	—	32.85	2.61 (1.88-3.63)	.000	15.99	2.28 (1.52-3.40)	.000	6.54	1.89 (1.16-3.09)	.011
Conviction of perpetrator	—	—	—	0.77	1.17 (0.83-1.65)	.378	0.02	0.97 (0.66-1.43)	.877	0.03	0.96 (0.59-1.55)	.868
Step 4	13.70	3	.003									
Hospitalization	—	—	—	8.25	1.96 (1.24-3.10)	.004	10.23	2.44 (1.41-4.21)	.001	8.27	2.75 (1.38-5.46)	.004
Medical help (other)	—	—	—	0.01	1.02 (0.72-1.44)	.929	0.86	0.94 (0.64-1.40)	.770	0.10	1.08 (0.67-1.72)	.757
Psychotherapy	—	—	—	12.00	1.89 (1.32-2.71)	.001	3.09	1.44 (0.96-2.17)	.079	0.03	0.96 (0.58-1.57)	.858

(continued)

Table 1. (continued)

Step and Variable	Step Analysis			Univariate Analysis			Stepwise Analysis			Analysis of Total Equation		
	χ^2	df	p	Wald	OR (95% CI)	P	Wald	OR (95% CI)	p	Wald	OR (95% CI)	P
Step 5	9.53	6	.146									
Claim disallowance	—	—	—	0.01	0.98 (0.61-1.57)	.927	0.01	0.97 (0.51-1.87)	.928	0.04	1.080 (0.49-2.39)	.850
Immaterial damage	—	—	—	1.10	0.82 (0.57-1.18)	.294	2.11	0.63 (0.33-1.18)	.147	1.60	0.61 (0.28-1.32)	.206
compensation (1)	—	—	—	2.53	1.28 (0.94-1.74)	.112	0.04	1.06 (0.62-1.82)	.835	1.03	0.72 (0.38-1.36)	.309
Immaterial damage	—	—	—	3.21	1.32 (0.97-1.80)	.073	0.10	1.12 (0.55-2.28)	.750	1.85	1.77 (0.78-4.05)	.174
compensation (2)	—	—	—	3.98	1.39 (1.01-1.91)	.046	0.01	1.04 (0.51-2.11)	.921	0.31	0.79 (0.34-1.82)	.580
Immaterial damage	—	—	—	11.25	2.26 (1.40-3.64)	.001	4.43	1.98 (1.05-3.73)	.035	2.38	1.81 (0.85-3.86)	.123
compensation (3)	—	—	—									
Immaterial damage	—	—	—									
compensation (4)	—	—	—									
Immaterial damage	—	—	—									
compensation (5)	—	—	—									
Step 6	200.07	1	.000									
Recalled peritraumatic stress	—	—	—	154.01	1.14 (1.12-1.16)	.000	132.53	1.15 (1.12-1.17)	.000	132.53	1.15 (1.12- 1.17)	.000

Note: The numbers in parentheses in the first column refer to the level of compensation for immaterial damage.

correlation did not exceed the upper boundary of .7 as proposed by Tabachnick and Fidell (1996), entry of recalled peritraumatic stress into the model was deemed appropriate. The final step yielded an enormous improvement of the fit of the model over the model without recalled peritraumatic distress and included five independent predictors of current PTSD: age, time since victimization, acquaintance with the perpetrator, violence-related hospitalization costs, and recalled peritraumatic distress severity. Female sex and immaterial damage compensation ≥ 5 failed to reach significance after adjustment for recalled peritraumatic distress. The pseudo variance in PTSD after adjusting for recalled peritraumatic distress reactions was between 36% and 48% (Cox and Snell $R^2 = .358$, Nagelkerke $R^2 = .477$). The value for the Hosmer and Lemeshow goodness of fit test still indicated an acceptable fit of the data: $\chi^2 = 10.989$, $df = 8$, $p = .202$. The total model classified 77.4% of participants correctly (75.4% for participants with PTSD and 79.3% for participants without PTSD).

Discussion

The current study appeared to be the first to investigate the prevalence of PTSD among victims of violence applying for compensation from a national victim compensation fund. In addition, it was the first study to demonstrate that data recorded in such a fund's electronic database may serve as a signal for persistent PTSD. The results indicated that approximately 1 of 2 victims applying for state compensation in the Netherlands still have PTSD many years after victimization and claim settlement, and that several sources of information included in the fund's electronic files may be used to predict which victims are most likely to suffer from sustained PTSD; multivariate hierarchical logistic regression analyses yielded significant results for age, female sex, time since victimization, acquaintance with the perpetrator, violence-related hospitalization, and compensation for immaterial damage ≥ 5 prior to entry of recalled peritraumatic distress severity. If these factors are properly assessed during or at conclusion of the application procedure, victims likely to have PTSD and neglected during the first stages of trauma recovery may still be identified and referred to mental health services before their files are closed. Policy makers should no longer picture victim compensation funds solely as *targets* of referral (e.g., Fritsch, Caeti, Tobolowski, & Taylor, 2004) and also consider their potential as a *sources* of referral. More specifically, guidelines are needed to ensure that file-based screening and subsequent referral become a standard part of their working practices. As both do not require face-to-face contact with the victim involved, marginal

resource allocation to existing victim compensation programs is likely to suffice for successful implementation. Remarkable in this respect is that a contract concluded between the DVCF and Victim Support Netherlands in 2006 aims to improve referral to the fund by employees and volunteers working for the latter organization, yet not the other way around.

Although not a primary purpose of the study, the results further indicated the importance of recalled peritraumatic distress severity as an explanatory variable in the maintenance of PTSD in victims of violence. This finding is in line with a recent study by Boals and Schuettler (2009), who found a strong association between recollections of peritraumatic distress and current PTSD symptoms, yet failed to find a relationship between events that fulfilled the *DSM* Criterion A1 and symptomatology.

Several researchers have argued that peritraumatic distress can only be validly and reliably assessed during the immediate posttrauma phase, as recall may decay over time or be biased by current symptom levels (e.g., Southwick, Morgan, Nicolaou, & Charney, 1997). However, this is only true when one intends to determine its predictive value for developing onset of PTSD and cannot refute that assessment of peritraumatic distress is necessary when determining the traumatic nature of the event(s) under investigation, regardless of time since traumatization. Furthermore, although it is beyond the scope of this article to discuss the clinical implications of the predictive value of peritraumatic distress severity in too much detail, retrospectively asking victims to rate the level of negative emotions experienced during trauma exposure may reveal whether *peritraumatic emotional hotspots* are present. As the intensity of the initial trauma response prevents their immediate and full processing, such trauma-related cognitions are fragmentally stored in the memory and, therefore, need to be distinguished from cognitions that stem from maladaptive appraisal processes occurring during later phases of trauma resolution. In contrast to the latter, the first are only likely to be restructured through cognitive therapy in combination with exposure (Grey, Young, & Holmes, 2002).

The study had several limitations. First, the cross-sectional nature of the study prevented us from establishing causal relations between identified risk factors and violence-related PTSD. In particular, victims' PTSD self-reports may have depended on their previctimization levels of distress or personality traits that predisposed them to PTSD in the face of trauma. The current study was not developed to make assumptions with regard to cause and effect though, yet primarily intended to explore the worthiness of file characteristics as screeners for referral. Second, the low response rate might indicate that our sample was not representative of the average victim applying for state

compensation. The data partly supported this hypothesis, with nonrespondents being younger and more often being male. However, this appears to be a general characteristic of nonrespondents in survey research (e.g., Van Loon, Tjhuis, Picavet, Surtees, & Ormel, 2003). Furthermore, respondents and nonrespondents did not differ in mean time since victimization—a factor that seemed to be of utmost importance in identifying victims with persistent PTSD. Third, the high prevalence rate of PTSD observed in the current study may have been due to the manner of assessment. Future studies need to replicate our findings with interview data. Fourth, our sample may not have been representative of the general population of victims of violence eligible for compensation from the fund, as it only included victims who had filed a claim for compensation with the DVCF. Illustrative in this respect is a recent study by Alvidrez et al. (2008). They found an overall application rate of 43.5% among victims residing in San Francisco who had presented themselves for emergency medical treatment. Lower rates were observed among young, male, ethnic minority, and physical assault victims. However, future studies need to determine the representativeness of victims applying for compensation in the Netherlands before a sample bias can be assumed.

Despite these limitations, our study also had several strengths. In contrast to most previous studies, the Criterion A2 of PTSD was explicitly assessed and not merely assumed to be fulfilled. Furthermore, PTSD was measured at two time points to ensure adequate scores. Finally, the study was designed to avoid biased PTSD self-reports due to the entanglement in a damage compensation procedure.

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Note

1. Unfortunately, the electronic database used by the fund was not able to produce a reliable list of recently closed files.

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Bios

Maarten Kunst, LLM, MSc, is a doctoral candidate in Subprogram B of the International Victimology Institute Tilburg (INTERVICT), which concerns the psychological aspects of victimization and victim assistance. His doctoral research focuses on the psychosocial consequences of violent victimization. In addition, he conducts research for external parties, such as the Dutch Ministry of Justice.

Frans Willem Winkel, PhD, is a professor in victimological psychology with INTERVICT. He is author and coauthor of many journal articles and chapters in edited volumes. His research is financially supported by the Achmea Foundation Victim and Society (SASS). Recent co-edited volumes include: *Intimate partner violence prevention and intervention: The risk assessment and management approach* (New York, NY: Nova Science, 2008), and *Victimization in a multidisciplinary key: Recent advances in victimology* (Nijmegen, NL: Wolf, 2009). His current research focuses on anger management in victims of crime with diagnosis of PTSD.

Stefan Bogaerts, PhD, is a professor in forensic psychology with the Faculty of Social and Behavioral Sciences of Tilburg University and involved in many projects conducted by INTERVICT. He has published in many peer-reviewed journals and edited books. His research interests include a broad range of issues in forensics, psychology, and criminology.