

**Aggression and violence, posttraumatic stress,
and absenteeism among employees in penitentiaries**

260a

Onderzoek en beleid

Aggression and violence, post-traumatic stress, and absenteeism among employees in penitentiaries

M.J.J. Kunst

S. Schweizer

S. Bogaerts

L.M. van der Knaap



BJu

Boom Juridische uitgevers



**Wetenschappelijk Onderzoek-
en Documentatiecentrum**

Onderzoek en beleid

De reeks Onderzoek en beleid omvat de rapporten van onderzoek dat door en in opdracht van het WODC is verricht.

Opname in de reeks betekent niet dat de inhoud van de rapporten het standpunt van de Minister van Justitie weergeeft.

Exemplaren van dit rapport kunnen worden besteld bij het distributiecentrum van Boom Juridische uitgevers:

Boom distributiecentrum te Meppel

Tel. 0522-23 75 55

Fax 0522-25 38 64

E-mail bdc@bdc.boom.nl

Voor ambtenaren van het Ministerie van Justitie is een beperkt aantal gratis exemplaren beschikbaar.

Deze kunnen worden besteld bij:

Bibliotheek WODC

Postbus 20301, 2500 EH Den Haag

Deze gratis levering geldt echter slechts zolang de voorraad strekt.

De integrale tekst van de WODC-rapporten is gratis te downloaden van www.wodc.nl.

Op www.wodc.nl is ook nadere informatie te vinden over andere WODC-publicaties.

© 2008 WODC

Behoudens de in of krachtens de Auteurswet van 1912 gestelde uitzonderingen mag niets uit deze uitgave worden veeleelvoudigd, opgeslagen in een geautomatiseerd gegevensbestand, of openbaar gemaakt, in enige vorm of op enige wijze, hetzij elektronisch, mechanisch, door fotokopieën, opnamen of enige andere manier, zonder voorafgaande schriftelijke toestemming van de uitgever.

Voor zover het maken van reprografische veeleelvoudingen uit deze uitgave is toegestaan op grond van artikel 16h Auteurswet 1912 dient men de daarvoor wettelijk verschuldigde vergoedingen te voldoen aan de Stichting Reprorecht (Postbus 3060, 2130 KB Hoofddorp, www.reprorecht.nl). Voor het overnemen van (een) gedeelte(n) uit deze uitgave in bloemlezingen, readers en andere compilatiewerken (art. 16 Auteurswet 1912) kan men zich wenden tot de Stichting PRO (Stichting Publicatie- en Reproductierechten Organisatie, Postbus 3060, 2130 KB Hoofddorp, www.cedar.nl/pro).

No part of this book may be reproduced in any form, by print, photoprint, microfilm or any other means without written permission from the publisher.

ISBN 978 90 5454 980 2

NUR 771

Preface

Within the Judicial Penitentiary Service (DJI), aggression and violence among employees seem to occur twice as often as in other sectors. More than a quarter of the employees in penitentiaries contends with intimidation by a colleague and/or executive staff member; approximately 10% of the employees is confronted with unwanted sexual attentions, and a small group of mainly male employees falls victim to physical violence. Thus concluded the Scientific Research and Documentation Centre (WODC) in 2006 (Bogaerts & Den Hartogh, 2006)¹. The DJI, the unions, and the Ministry of Social Affairs and Employment had already anticipated these problems in an earlier stage, signing the Arboplus Covenant DJI on 23 March 2005. The goal of this agreement, which was to be valid until 1 July 2007, was to ameliorate the career perspective of executive staff members, to improve the personal safety of DJI employees, and to reduce the amount of absenteeism. The results were published on 19 June 2007, and a comparison was made between the situation in 2004 and that in 2007. Both the occurrence of physical violence among co-workers and the absenteeism have decreased, but not to the degree intended.

In 2006, the DJI requested an in-depth study to gain more insight into the relation between aggression and violence among employees on the one hand, and absenteeism on the other. The model of Schaufeli and Peeters (2000) was used as a theoretical framework. Furthermore, the factor of posttraumatic stress was propounded, because an abundance of studies show a correlation between violence at work, job stress, posttraumatic stress, and absenteeism. Taking this theoretical framework as its starting point, the Ministry of Justice's Scientific Research and Documentation Centre (WODC) has sought out substantive collaboration with the International Victimology Institute Tilburg (Intervict), associated with the University of Tilburg. By mutual agreement, both institutes together have determined the study's content. Through the DJI, more than 170 penitentiary employees were interviewed. We are greatly indebted to Mr Ron Scherf, who acted as contact between the WODC and the non-departmental public bodies. In addition, we would like to thank Toon Molleman, MA, who also contributed to this process. Finally, a word of thanks to Dr Arie van den Hurk and Prof Dr Stijn Vanheule, of the Faculty of Psychological and Pedagogical Sciences of Gent University, for their support and expertise. Last but no least, our gratitude goes to the participants, who gave their free time in order to participate in this study.

Prof dr Frans L. Leeuw
Director WODC

1 This study has been published in the summer of 2007.

Table of contents

1	Introduction	9
2	Possible effects of aggression and violence among employees and factors causing it	11
2.1	Posttraumatic stress and absenteeism	11
2.2	Predictors of posttraumatic stress and absenteeism	12
2.2.1	The nature and seriousness of aggression and violence among employees	12
2.2.2	Psychosocial factors	13
3	Construction and testing of the hypothetical model	15
3.1	The most important findings of the literature study	15
3.2	Hypothetical model	16
3.3	Respondents	17
3.4	Research procedure	17
3.5	The instruments	18
3.6	Testing the hypothetical model	20
4	The research results	23
4.1	The model's quality	24
4.2	The effect parameters between the variables	24
4.3	Further research: testing four hypothetical sub-models	25
4.3.1	The quality of the four sub-models	26
4.3.2	The effect parameters between the variables in the four sub-models	26
4.4	Preliminary conclusions	27
5	The exploratory study	29
5.1	Specific research questions	29
5.2	Methods	31
5.3	Results	33
5.4	Preliminary conclusions	39
6	Summary and conclusions	41
6.1	The results of the literature study and the construction of the hypothetical model	41
6.2	The empirical validity of the hypothetical model	42
6.3	The exploratory study	43
6.4	Conclusions	45
6.5	The interpretation of the study's results	46
6.6	The study's limitations	47
	References	49

Introduction

On the basis of the Labour Conditions Act of 18 March 1999, employers are obliged to take care of their employees' safety and health, and to pursue a policy aimed at creating the best possible labour conditions. The prevention of aggression towards employees falls under this obligation.

In November 2005, the Scientific Research and Documentation Centre (WODC) carried out a large-scale study into the prevalence of aggressive behaviour targeting employees of penitentiaries during their work, which was commissioned by the Judicial Penitentiary Service (DJI) (Bogaerts & Den Hartogh, 2006). One of the remarkable findings of this study was that 'aggression and violence among employees' is a frequently occurring phenomenon within the prison system; of the 5,750 responding employees, no less than 641 reported to have fallen victim to one or more forms of aggression and violence among employees in the course of the previous twelve months. In this context, the term 'aggression and violence among employees' includes experienced unwanted sexual attention, intimidation, and physical violence. Aggression and violence among employees consists either of incidents between staff members, or of incidents between executive staff members and ordinary staff members.

A substantial part of prison personnel is comprised of penitentiary workers (in Dutch, so-called 'PIW-ers'). In order to improve the safety of penitentiary workers, the Ministry of Social Affairs and Employment, the DJI, and the unions have reached an agreement about a reduction of aggression and violence among employees, laid down in the 'Arboplus Covenant Judicial Penitentiary Service on the Policy on Absenteeism, Integral Personal Safety, and the Career Perspective of Executive Personnel'². The goal was for this reduction to be brought about halfway through 2007³. To enable itself to successfully act upon the agreement, in addition to many actions and measures, the Sector Directorate of the Prison System asked the WODC to conduct an in-depth study on aggression and violence among employees within the penitentiaries.

It was decided to examine only personal factors in this study. Organisational and economic factors and the institutional features of organisations that, without any doubt, play an important role in both the prevention and the occurrence of aggression and violence among employees were not studied. Framing mechanisms, for instance, which occur in every organisation, were not included in the study, the importance of this and other concepts notwithstanding. In his book 'Frame analysis: An essay on the organization of experience', Goffman writes: "*The concept of framing is taken to label schemata of interpretation that allows individuals or groups to locate, perceive, identify, and label events and occurrences, thus rendering meaning, organizing experiences, and guiding actions.*"

2 This covenant can be downloaded at www.arboconvenanten.nl.

3 The precise percentages agreed upon, divided according to the type of aggression and violence among employees, have been included in article 2 paragraph 2 of the covenant.

(Goffman, 1974, p. 21) The study 'Benchmark Penitentiaries', which will start in the autumn of 2007, will include institutional, organisational, and economic characteristics as well, besides the personal indicators, in order to assess the quality of the penitentiaries. In this way, aggression and violence among employees will not only be linked to personal factors, but will also be related to institutional factors and characteristics specific to the organisation. Another correlation not included in the present study is that between domestic violence (partner violence), violence at work, absenteeism, and the economic costs, even though this correlation is regularly established in the literature (e.g. Reeves & O'Leary-Kelly, 2007; Swanberg, Macke, & Logan, 2007).

With this study, the aim of the Judicial Penitentiary Service is to gain insight into the possible effects of aggression and violence among employees and in the factors which are at the roots of it. The DJI is especially interested in absenteeism as a possible effect of aggression and violence among employees, and in the psychosocial factors that play a role. In the present report, we will present the findings of this study. It is set up as follows.

In chapter 2, we will examine the potential effects of aggression and violence among employees and the factors at their source, such as can be assumed to exist when we base ourselves on the literature.

Next, we will take these findings as the basis for our hypothetical model presented in chapter 3, which will be the starting point for the empirical part of the study. We will also discuss how this model was tested.

In chapter 4, we will present the results of this test and we will examine whether it is necessary to break down the model into sub-models.

In chapter 5, we will subsequently formulate twelve specific research questions, which deserve further exploration in the researchers' view, both on the basis of the literature study and of the hypothetical model derived from it. All these questions are in logical keeping with the formulated hypothetical model. Again, we will indicate how these questions were tested.

Finally, chapter 6 will provide a summary of the study. In this chapter we will present some conclusions as well.

2 Possible effects of aggression and violence among employees and factors causing it

The present study presents the first research into the effects of aggression and violence among employees within penitentiaries and the factors that contribute to it. Earlier studies primarily focused on aggression and violent incidents within other settings than prisons, such as hospitals, social workshops, and public services (e.g. Eley, Hegney, Buikstra, Fallon, Plank & Parker, 2007; Dupre & Barling, 2006; Littlechild, 2005; Walsh & Clarke, 2003; Winstanley & Whittington, 2002; De Vries, Van Dalen & Nuyens, 2002). By far most of these studies dealt, moreover, with aggression or violence committed by patients or clients against staff members. Nevertheless, the literature seems to provide enough insight to enable us to give the outline of a model of the phenomenon of aggression and violence among penitentiary workers, which can serve as an adequate theoretical starting point for empirical testing. In this chapter, we will throw light on the most important findings within the literature. The focus will be on studies of the prison system. We will make a distinction between the effects of aggression and violence among employees on the one hand, and the factors which are assumed to be at the basis of it on the other.

2.1 Posttraumatic stress and absenteeism

Violence and other aggressive behaviours can have serious negative consequences for the employee involved. In addition to physical injuries, the violent incident can cause the victim to start suffering from long-lasting and sometimes even permanent psychological symptoms. Because of the frequent and intensive contact with detainees, the confrontation with aggression and violence seems to be inherent to the profession of a penitentiary worker. Tensions among detainees, or between detainees and their warders, can result in the verbal or even physical expression of aggression. Research seems to indicate that in comparison to other professional groups, penitentiary workers are more susceptible to the development of various symptoms because of the nature of their work. In an extremely extensive, international survey study, Schaufeli and Peeters (2000) have tried to map out the effects on the tasks of the penitentiary worker. Psychosomatic disorders and burn-out symptoms turn out to be rife among penitentiary workers. Serious burn-out symptoms might involve experiences of depersonalisation. Negative attitudes towards the job also frequently occur among penitentiary workers, often prompted by the idea that one has no say in the organisation of one's work and feelings of powerlessness when it comes to changing this. Later studies have suggested that penitentiary workers run a higher risk to be diagnosed

with Posttraumatic Stress Disorder (PTSD). Stadnyk (2004), for example, found that the prevalence of posttraumatic stress symptoms indicative of a PTSD diagnose, ran as high as 25.8% among a group of penitentiary workers employed in the Canadian province of Saskatchewan. Among the general population, the prevalence of PTSD seems to amount to approximately 8% (e.g. Kessler, Sonnega, Bromet, Hughes & Nelson, 1995). Stadnyk's research also showed that penitentiary workers who were part of the group with PTSD symptoms experienced a significantly lower quality of life than the group without PTSD, and were absent from work more often. Other studies seem to corroborate the correlation between stress and absenteeism (e.g. Mitani, Fujita & Shiraawa, 2005). We can assume that violent experiences can result in posttraumatic stress symptoms among penitentiary workers, and can even lead to a diagnosis of PTSD in a limited number of cases. Through posttraumatic stress such experiences might result in absenteeism. We can also assume that there is, indeed, a direct correlation between violent experiences and absenteeism. While a temporary absence in case of (serious) physical injury is an obvious occurrence, several studies on absenteeism suggest that, for some employees, absenteeism is a response to a working environment in which they feel uncomfortable (e.g. Lowe, Schellenberg & Shannon, 2003; Harrison & Martocchio, 1998). Violence constitutes an important predictor for the satisfaction about one's working environment (e.g. Brough, 2005).

2.2 Predictors of posttraumatic stress and absenteeism

2.2.1 *The nature and seriousness of aggression and violence among employees*

At first glance, the degree to which posttraumatic stress symptoms are experienced seems to depend for an important part on the nature and seriousness of the violence that has been used. However, this description is not confirmed by empirical studies. The *seriousness* of the violence used against the victim can only be established by looking at the gravity of the physical injury inflicted on the victim during the violent incident. According to some, the seriousness of the physical damage sustained by the victim during this incident is an important predictor of the extent to which the victim will experience posttraumatic stress symptoms (e.g. Lipsky, Field, Caetano & Larkin, 2005). Yet, other studies have not been able to establish a relation between the seriousness of the injuries sustained and the development of posttraumatic stress symptoms (e.g. Holbrook, Stein & Amick-McMullan, 2001). Nor is there any clarity on the nature of the violence used; most studies have focused on the victims of only one particular type of criminal offence, such as the victims of an assault (e.g. Ullman, Townsend, Filipas & Starzynski, 2007). In such cases,

the nature of the offence is a constant and, for this reason, it cannot be studied. One of the few exceptions involves the study by Walsh and Clarke (2003). They found something that might not be expected on the basis of intuition alone: verbal aggression at work results in more posttraumatic stress than physical forms of aggression.

2.2.2 Psychosocial factors

In addition to the nature and seriousness of aggression and violence among employees, psychosocial factors also play a role in the development of posttraumatic stress symptoms. In succession, we will briefly address social support, adult attachment style, negative affectivity, and type D personality, as possible predictors of posttraumatic stress and absenteeism.

Empirical studies have repeatedly proven that a correlation exists between social support and posttraumatic stress, in the sense that experiencing social support reduces the risk of the development of posttraumatic stress symptoms (e.g. Vranceanu, Hobfoll & Johnson, 2007; Van Emmerik, Euwema & Bakker, 2007; Mitani et al, 2005; Kaspersen, Matthiesen & Götestam, 2003). More specifically, there seems to be a relation between the social support of co-workers and posttraumatic stress after a 'critical incident' (Haslam & Malon, 2003). Among other things, aggression and violence among employees can be understood as constituting a critical incident.

Besides social support, the development of posttraumatic stress symptoms also depends on certain personal predispositions. Firstly, there seems to be a relation with adult attachment style. Bartholomew and Horowitz (1991) discern four attachment styles: A) safe attachment, B) anxious attachment, C) preoccupied attachment, and D) avoiding attachment. Various studies have shown that the anxious and preoccupied styles of attachment are accompanied by a heightened risk of experiencing posttraumatic stress symptoms after a traumatic event (e.g. Declercq & Palmans, 2006; Declercq & Willemsen, 2006; Dieperink, Leskela, Thuras & Engdahl, 2001). There are indications that the relation between attachment styles and posttraumatic stress can be (partly) explained by the experiencing of social support (Simpson, Rholes, Oriña & Grich, 2002). Possibly, the nature of attachment style determines whether or not victims are able to generate sufficient support from within their direct social environment, enabling them to cope with their trauma in a healthy manner. Furthermore, there seems to be a relation between adult attachment style and violence (e.g. Bogaerts, Vervaeke & Goethals, 2004; Bogaerts, Declercq & Vanheule, 2005; Bogaerts, Vanheule & Desmet, 2006a, 2006b; Bogaerts, Daalder, Vanheule & Leeuw, 2007, in press).

Secondly, a correlation seems to exist between personality aspects and posttraumatic stress. In particular negative affectivity – a personality

trait that refers to the almost continuous presence of negative thoughts, emotions, and a negative self-image (Watson & Clark, 1992) – has repeatedly been linked to posttraumatic stress (e.g. Bramsen, Dirkzwager & Van der Ploeg, 2000; Cox, MacPherson, Enns & McWilliams, 2004; Engelhardt, Van den Hout & Kindt, 2003; Hyer et al, 2003; Miller, 2003); people characterised by negative affectivity run a heightened risk of developing posttraumatic stress. In some studies (e.g. Shapinsky, Alicia, Rapport, Henderson & Axelrod, 2005), such strong correlations are found between negative affectivity and posttraumatic stress, that the question is warranted whether or not, in these cases, the posttraumatic stress symptoms rather reflect always-present negative thoughts and emotions, instead of a more or less temporary response to a traumatic or otherwise stressful event.

In addition to negative affectivity as a separate personality trait, a relation seems to exist between the so-called 'distressed' or type D personality construct and the development of posttraumatic stress symptoms. One speaks of type D personality when negative affectivity is combined with social inhibition, that is, the steady inclination not to express negative emotions in social interactions (e.g. Denollet, 2000). Type D personality involves a heightened risk for the development of posttraumatic stress symptoms (Pedersen & Denollet, 2004).

Furthermore, negative affectivity seems to be related to adult attachment style (e.g. Pines, 2005; Penny & Spector, 2005; Adam, Gunnar & Tanaka, 2004; Waerden, Cook & Vaughan, 2003; Davila, Bradbury & Fincham, 1998). On the basis of theoretical arguments, we can also assume a correlation between type D personality and adult attachment style. Firstly, negative affectivity is part of the type D personality concept. And secondly, we can argue that not expressing emotions to others is an indicator of the way in which people engage in relationships with others; it seems unlikely that people who feel uncomfortable when expressing emotions would not encounter problems while building up an emotional bond with others. After all, daring and being able to express emotions is part of that. Finally, there are indications that negative affectivity is a predictor for absenteeism (Hanebuth, Meinel & Fisher, 2006).

3 Construction and testing of the hypothetical model

Based on the findings from the literature study, we are able to develop a hypothetical model about the effects of aggression and violence among employees and the factors at their source. Before presenting this model in section 3.2, for the sake of clarity we will briefly summarise the most important findings from the literature study in the next section. In sections 3.3, 3.4, and 3.5, we will discuss the respondents, the research procedure, and the instruments, respectively. Finally, in section 3.6, we will clarify how the hypothetical model was tested empirically.

3.1 The most important findings of the literature study

The literature study suggests that aggression and violence among employees can generate various negative psychological effects among penitentiary workers. Violent experiences form a structural part of the job of penitentiary workers. Various studies have shown that penitentiary workers often suffer from posttraumatic stress symptoms (Stadnyk, 2004) and are often absent from work (Schaufeli & Peeters, 2000). We can assume that experiences with violence can result in posttraumatic stress. Subsequently, posttraumatic stress can lead to absenteeism.

Furthermore, several studies suggest that experiencing social support reduces the risk of developing posttraumatic stress (e.g. Mitani et al, 2005), while an avoiding or anxious attachment style (Declercq & Palmans, 2006), negative affectivity (e.g. Cox et al, 2004), and type D personality (Pedersen & Denollet, 2004) all seem to be risk factors for it. Negative affectivity also seems to be related to absenteeism independent of the development of posttraumatic stress symptoms.

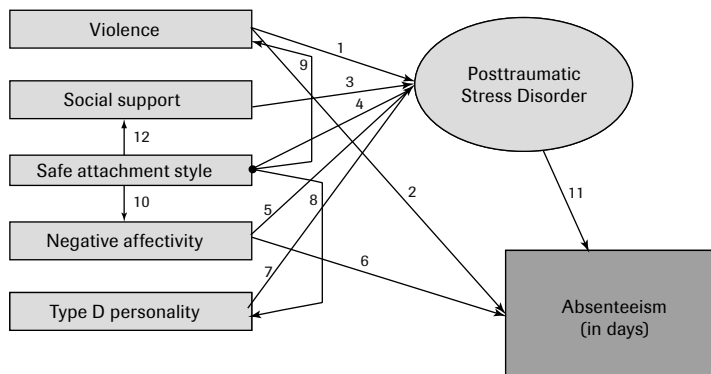
Finally, an unsafe adult attachment style seems to be associated with social support (Simpson et al, 2002), negative affectivity (e.g. Adam et al, 2004), type D personality, and violence (e.g. Brough, 2005). Individuals with an unsafe adult attachment style subjectively experience less social support from others, are more negative and more socially inhibited when expressing feelings towards others, and run a greater risk of falling victim to violence than individuals with a safe adult attachment style.

All in all, the literature study gives cause to assume that aggression and violence among employees is a complex phenomenon; it possibly results in various negative, health-related problems. Divergent factors seem to contribute, either directly or indirectly, to the occurrence of those problems. In the next section, we will indicate how this complex phenomenon might be translated in a theoretical, hypothetical model, suitable for testing by means of empirical research.

3.2 Hypothetical model

In view of the results of the literature study, of all the possible determinants and effects of aggression and violence among employees, the hypothetical model must contain the following variables: aggression and violence among employees, violence committed by detainees, social support, a safe (adult) attachment style, negative affectivity, type D personality, posttraumatic stress symptoms, and absenteeism. The model can be graphically reproduced in a so-called paddiagram in the following way: the first two paths run from Posttraumatic Stress Disorder (PTSD) via violence to absenteeism. We assume that violence causes PTSD and absenteeism. The paths 3, 4, and 5 run from social support, an unsafe attachment style, and negative affectivity to PTSD. A (chronic) lack of social support, an unsafe attachment style, and negative affectivity might be the cause of the development of PTSD. For path 6, the assumption is that people with a negative affectivity will resort to absenteeism quicker than others. We assume that type D personality (path 7) increases the risk for PTSD, and might correlate negatively with a safe attachment style (path 8). We also assume that someone with a safe attachment style runs a decreased risk of falling victim to violence (path 9). A safe attachment style might correlate negatively with a negative affectivity (path 10), and positively with experiencing positive social support (path 12). Finally, we assume that there is a relation between PTSD and absenteeism (path 11).

Figure 1 The hypothetical model: violence, social support, a safe attachment style, negative affectivity, and type D personality, related to posttraumatic stress and absenteeism



3.3 Respondents

The studied group consisted of 174 penitentiary workers, employed in one of the penitentiaries of the Judicial Penitentiary Service (DJI). The study was carried out at ten different locations. Within each of the participating penitentiaries, an independent process supervisor was approached with the request to select four penitentiary workers with whom to conduct a structured interview. Of those four selected penitentiary workers, two had to have fallen victim to aggression and violence among employees within that particular penitentiary during the past twelve months, while the other two had to be non-victims. In this manner, a group of 100 victims and a control group of 100 non-victims had to be built up. Because of refusals, it turned out to be impossible to select 100 victims and 100 non-victims; the final sample consisted of 174 penitentiary workers in total, of which 54 indicated to have fallen victim to aggression and violence among employees during the past twelve months, while 118 had not. All participants were explicitly informed that they were under no obligation to take part in the study and that their privacy would be guaranteed.

The participants' average age was 43 years and 11 months (SD=8.59; range=22-59 years of age). Of this group, 122 were men. The participating men were significantly older than the women (av age ♂=45 years and 5 months v av age ♀=40 years and 4 months, $p=0.000$). The average duration of employment was 14 years and 4 months (SD=8.84; range=0.5-36 years). The average number of years of employment was significantly higher for the men than for the women (av ♂=15 years and 9 months v av ♀=11 years and 7 months, $p=0.000$).

3.4 Research procedure

Before the start of the study, the process supervisors received extensive written instructions on the way in which they were expected to conduct the interviews.

The interview consisted of 29 questions. The questions were either closed or (half-)open. The first eight questions dealt with socio-demographic data. The other 21 questions related to experiences with violence on the job. Five questions were about violence committed by detainees. As in the study of November 2005, in these five questions information was asked about, successively, the form of the violence involved (unwanted sexual attention, intimidation, physical violence, a combination of these forms and 'another form of aggression'), the frequency of the violence, social support (meaning talking with colleagues about violence committed by detainees), the way this was talked about, and whether or not violence committed by detainees was experienced differently than aggression

and violence among employees. The other sixteen questions related to aggression and violence among employees. Again, information was asked about the form (unwanted sexual attention, intimidations, and physical violence) and frequency of the violence. In addition, information was asked about the interviewee's reaction to aggression and violence among employees (for instance: 'I reported it to an executive staff member'), and about earlier experiences with violence (on the job as well as in the private sphere). Furthermore, the interviewees were asked whether they had any knowledge of aggression and violence among co-workers, and if so, how they had acquired this information. Finally, some questions were asked about absenteeism (about the frequency, the duration per period of absenteeism, and whether or not the absenteeism was caused by aggression and violence among employees), and social support (talking about it with colleagues), and the way in which it was talked about. At the end of the interview, each participant got the opportunity to bring forward subjects about which no questions had been asked. The process supervisor filled in the answers to the questions on an answering form. After the interview, the participants were presented with three questionnaires, accompanied by a brief instruction. These we will briefly discuss below⁴.

3.5 The instruments

The participants filled in three questionnaires, about symptoms of Post-traumatic Stress Disorder (PTSD), their attachment style, and type D personality, respectively.

Questionnaire for self-stock-taking (ZIL)

The ZIL consists of 22 propositions relating to symptoms of PTSD (Hovens, 2001; Hovens, Bramsen & Van der Ploeg, 2000). The ZIL does not refer to a specific traumatic experience. Because of its independence of trauma, the ZIL is suitable as a screening instrument to map out PTSD symptoms within the normal population.

De propositions of the ZIL are scored on a four-point scale, a score of 1 representing 'not at all', and a score of 4 representing 'very much'. For each question, the respondent has to indicate whether he has been suffering from that particular symptom for more or less than a month. By using the ZIL, the seventeen symptoms of PTSD can be mapped out unequivocally according to the fourth, revised version of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)*. The DSM criteria that put into words more than one symptom have been separated. Just like the

4 The questionnaires can be acquired simply by making a request to the Scientific Research and Documentation Centre (WODC).

DSM symptoms, the symptoms of the ZIL can be distinguished into three symptom clusters: symptoms of renewed experiencing, of avoidance, and of hyper-arousal. An example of a question from the symptom cluster of renewed experiencing is: 'I had the feeling as if events from the past were happening again.' An example of a question from the avoidance cluster is: 'I tried to avoid thinking about past events'. An example of a question relating to hyper-arousal is: 'I was irritable'.

The psychometric qualities of the ZIL have been reported for various groups of Dutch citizens. To this end, the ZIL has been put to a group of traumatised psychiatric patients, a group consisting of Dutch people who have lived through the Second World War and veterans known to the Association for Military War Victims (Bond voor Militaire Oorlogsslachtoffers), a group of veterans of Dutch peace missions, and a group of medical students. Recently, its psychometric qualities have been studied in a group of elderly people between the ages of 55 and 90, selected from the general population. Time and again, both the total scores for the ZIL and the scores for the separate sub-scales were found to have a good consistency, with Cronbach's α between .90 en .94 for the total ZIL, between .77 and .89 for the sub-scale renewed experiencing, between .80 and .89 for the sub-scale avoidance, and between .76 and .89 for the sub-scale hyper-arousal. Furthermore, the questionnaire was found to have an acceptable test-retest reliability (over a seven-day period), with Cronbach's α being .92 for the total ZIL, .84 for the sub-scale renewed experiencing, .91 for the sub-scale avoidance, and .85 for the sub-scale hyper-arousal (Hovens, 2001; Hovens et al, 2000).

When for at least one item of the sub-scale renewed experiencing a score is reported of 3 or higher, for at least three items of the sub-scale avoidance a score of 3, and for at least two items of the sub-scale hyper-arousal a score of 3, this will be an indication that a PTSD diagnosis answers to the DSM criteria.

Relationship Questionnaire (RQ)

The RQ (Bartholomew & Horowitz, 1991) is an adaptation of the Romantic Attachment Questionnaire (RAC) of Hazan and Shaver (1987). The RQ consists of four vignettes that describe experiences and behaviours corresponding to the safe, the avoiding, the preoccupied, and the anxious attachment styles. Respondents are to indicate on a seven-point scale to what degree a vignette applies to them. In the present study, we only asked the respondents which vignette provided the best description of them. Because each of attachment styles is represented by only one item, it is impossible to examine the internal consistency of this scale.

Type D Scale-14 (DS 14)

The DS 14 contains the sub-scales negative affectivity and social inhibition. Both sub-scales consist of seven propositions. Each proposition of

the DS 14 is scored on a five-point scale. To be able to speak of type D personality, a respondent has to score high on both sub-scales. Respondents score high for negative affectivity or social inhibition when they have a total score of 10 or more on the sub-scale in question. An example of an item on the sub-scale negative affectivity is: 'I often get excited about matters which are unimportant'. An example of an item of the sub-scale social inhibition is: 'I easily make contact with others'.

The separate sub-scales have an internal consistency with Cronbach's α values of .88 and .86 for the sub-scale negative affectivity and the sub-scale social inhibition, respectively; they have a test-retest reliability of .72 and .82 over a three-month period (Denollet, 2005).

3.6 Testing the hypothetical model

The empirical tenability of the hypothetical model is tested by means of a covariance structure analysis. Covariance structure analysis is used to explain the structure or pattern of a set of variables. A distinction can be made between 'manifest' (that is, observed or empirical) variables on the one hand, and 'latent' (that is, not observed or theoretical) variables on the other. The ratios between the latent variables make up the so-called structural part of the assumed model. The correlations between the latent variables and corresponding observed variables are represented in a measured model. While the structural model is related to the model for (confirmatory) factor analysis, the measuring model is related to the model for regression analysis (Diamantopoulos, 1994). Furthermore, a distinction has to be made between endogenous and exogenous variables. Endogenous variables are explained by the hypothetical model. Exogenous variables, however, are not explained by the hypothetical model and only function as independent variables. In the present model, only posttraumatic stress symptoms constitute a latent variable. The other variables are manifest variables. Except for the safe attachment style, all variables are endogenous. For the execution of the covariance structure analysis, we have used the computer programme Lisrel. The name 'Lisrel' stands for 'Linear structural relations'. On the basis of a covariance matrix of the observed data, Lisrel makes an estimate of the parameters of the assumed model. The estimated parameters correspond with the regression coefficients, the variances, and covariances of the independent variables in the model, and subsequently constitute the starting point for an estimate of the unstructured population covariance matrix. Generally, this is done with the aid of the Maximum Likelihood Estimation.

On the basis of so-called 'fit indices', we can assess whether the observed values fit in with the hypothetical model. Often, fit indices are divided into 'absolute', 'incremental' and 'parsimonious' indices. Absolute fit indices, like the 'root mean squared error of approximation' (RSMEA),

the 'Goodness of Fit Index' (GFI), the 'Adjusted Goodness of Fit Index' (AGFI), and the Root Mean Square (RMR), inform us about the hypothetical model's capacity to reproduce the observed covariance matrix. RSMEA involves the mean of the differences between the expected and the observed covariance values. The closer this value is to 0, the better the observed values match the hypothetical model. According to Hu and Bentler (1999), the value of the RSMEA has to be lower than .06. Shelvin and Miles (1997) even advise to keep to an upper limit of .05. The GFI can be understood as the proportion-explained variance of the observed covariance matrix, and is comparable to R^2 (Tanaka & Huba, 1989). When the GFI value is higher than .90, the model can be accepted (Verschuren, 1991). The AGFI is a variant of the GFI; it corrects for the number of degrees of freedom in the model. Both the GFI and the AGFI are reasonably stable and insensitive to the sample size; they are also relatively resistant to infringements on normality. RMR is based on residues and relates to the average difference between covariances within the sample and the population. Because the scale on which variables can be scored can influence the RMR value, it can be difficult to interpret the value found. It is safe to say that the value has to be as low as possible (Ullman, 2006). Hu and Bentler advise to keep to a value below .08.

Incremental fit indices, such as the Comparative Fit Index (CFI), make a comparison between the hypothetical model and a basic model that presupposes no covariance between the observed values, or that contains less parameters. There is no consensus with regard to the value to be kept to in order to be able to speak of an acceptable 'fit'. Hu and Bentler (1999) suggest a minimum value close to .95. Cheung (2000) proposes to keep to a CFI value greater than or equal to .95.

Parsimonious fit indices, like PGFI and PCFI, are used to assess whether a theoretical model with (either more or) less parameters is as good or even better at reproducing the estimated population covariance matrix. When such is the case, the simpler model should be preferred (Kline, 2005). The decision to start with less parameters should always be substantiated on the basis of theoretical arguments.

The fit indices discussed above will be used to assess whether the hypothetical model fits in with the observed data. This is step 1 of the testing. When the hypothetical model tallies sufficiently with the measured model, we will proceed to step 2. During step 2, the strength (or weakness) of the intercorrelations between the variables will be measured, that is, the individual effect parameters will be tested for their statistical significance. The explained variance of the model will be assessed as well. Testing the individual effect parameters is one of the most elementary means of checking the theoretical lines of reasoning. Parameters with a t-value below a threshold value (usually a t-value < 1.96 , the result of a one-sided testing level of 5%) are assumed to deviate in reality from zero non-significantly (Tacq, 1997). When a parameter deviates from zero

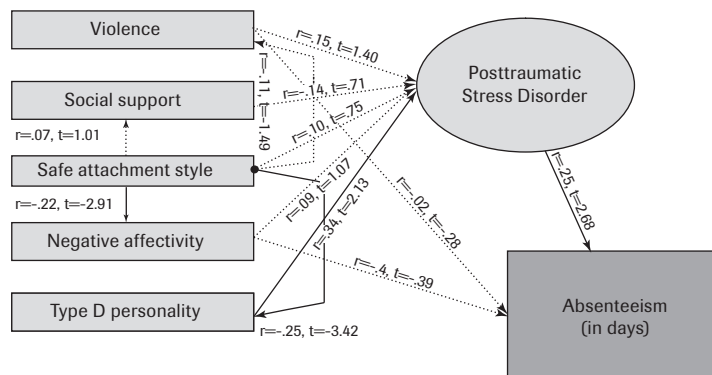
non-significantly, this might be a reason to drop the assumed causal relation. It is not wise, however, to make this decision on the basis of just the t-test. As we mentioned earlier, this decision should be based on theoretical arguments as well.

Two arguments that are important for the assessment of the obtained effect parameters are the sample size and the dispersion of the individual values in the independent variable in comparison to the mean. The larger the sample, the greater the likelihood of finding significant differences. With regard to the problem of the sample size, Verschuren (1991) distinguishes between statistical and substantial significance. In a very large sample (for example $n=1,000$), a low value of an effect parameter (for example $r=.10$) might be statistically significant, while the contribution of the independent variable to the dependent variable is just about negligible. With regard to the dispersion in the independent variable, it can be assumed that variables with a strong dispersion are more likely to have a significant effect than variables with little dispersion (Tacq, 1997).

4 The research results

The variables that were included in the hypothetical model on the basis of the literature study, were operationalised in the following way: violence was understood as falling victim to aggression and violence among employees and/or violence committed by detainees during the past twelve months (affirmed/disaffirmed)⁵; social support was operationalised as talking with colleagues about aggression and violence among employees and/or violence committed by detainees during the past twelve months (affirmed/disaffirmed). A safe attachment style was split up in a safe and an unsafe attachment style. The safely attached group was made up of respondents who had reported a safe attachment style when filling in the RQ. Together, the other respondents constituted the group of unsafely attached penitentiary workers. Negative affectivity was operationalised as the total score on the negative affectivity sub-scale of the DS 14. Someone was assumed to have type D personality when the score on the DS 14 was 10 or higher on the negative affectivity sub-scale, combined with a score of 10 or higher on the social inhibition sub-scale. With regard to posttraumatic stress, a distinction was made between respondents with a ZIL score indicating the presence of PTSD, and respondents who did not have such a score. Finally, absenteeism was understood as the total number of days of absence from work during the past twelve months.

Figure 2 The testing of the hypothetical model



5 Because of the small total number of victims of aggression and violence among employees ($n=54$), it was decided to make a new 'violence' variable, containing both the victims of aggression and violence among employees and the victims of violence committed by detainees.

4.1 The model's quality

Earlier, we described five indices that tell us something about the quality of the model as a whole. These are the Goodness of Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI), the standardised Root Mean Square Residuals (RMR), the Root Mean Square Error of Approximation (RMSEA), and the Comparative Fit Index. The fit between both models is good to very good; no significant difference was found between the hypothetical and the measured model ($p=.23$). The GFI, which represents the extent of the variance and covariance explained by the model, was .98. The AGFI, which is obtained after correcting for the number of degrees of freedom, was .94. The RMR, the mean of the residual variances and covariances, was .042, while the RMSEA was .045. De CFI was .98.

Interpreting the values found for the fit indices, we can note the following. The observed model fit well with the theoretical model ($p>.05$, ns.). The GFI value stayed well above the threshold value of .90. The RMR was .042 and the RMSEA was .045. Both values were well below the threshold values of .08 and .06 proposed by Hu and Bentler (1999). The RSMEA value was even lower than the stricter threshold value of Shelvin and Miles (1997) (RMSEA=.05). The CFI value, being .98, was higher than the threshold value proposed by Cheung (2000) ($CFI\geq.95$). We accept the model on the basis of the values found. We will now continue with the discussion of the individual effect parameters.

4.2 The effect parameters between the variables

Below, we will discuss the correlation coefficients⁶ between the different variables. We do not use covariance coefficients⁷ to describe the effects between the variables. The correlation coefficient between the type D personality and Posttraumatic Stress Disorder was $r=.34$, $t=2.13$. The correlation coefficient between the type D personality and the safe attachment style was $r=-.25$, $t=-3.42$. Finally, the correlation coefficient between Posttraumatic Stress Disorder and absenteeism was $r=.25$, $t=2.68$. The others paths within the model were not significant. We corrected for covariance errors on the basis of modification indices. This we did between the type D personality and negative affectivity, and between Posttraumatic Stress Disorder and absenteeism. The explained variance

6 All the time, we describe the relation between latent variables by using correlation coefficients.

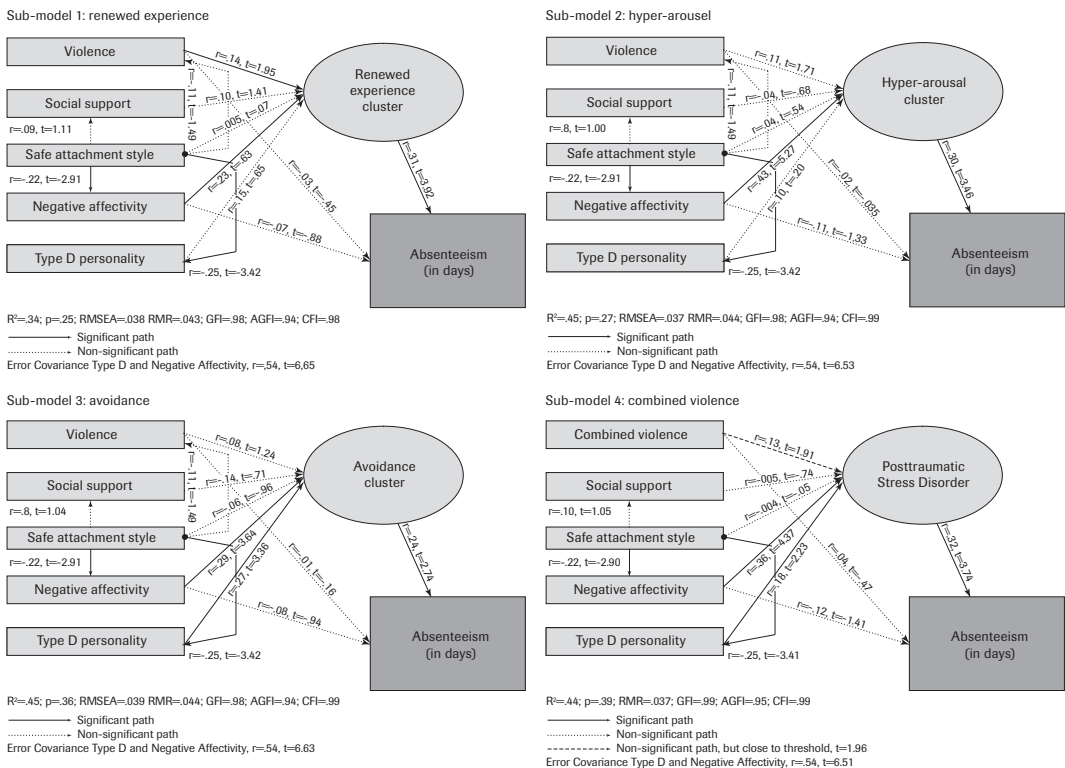
7 For the most part, the coherence between latent and measured variables is expressed by means of covariance coefficients, but it can also be expressed in correlation coefficients. In this study, we opt for correlation coefficients, because Posttraumatic Stress Disorder is the only latent variable within the model, and because covariance coefficients are non-standardised values, which makes it difficult to interpret the effect parameters.

within the model was .36. The variables in the model ultimately explained 36% of the variance within the model with absenteeism being the ultimate dependent variable. Thus, the (residual) unexplained variance was 64%, which means that 64% of the variability in the dependent variable is explained by factors which are not included in the model.

4.3 Further research: testing four hypothetical sub-models

Based on the results of the testing of the hypothetical model, we opted for additional, exploratory research. Two more analyses were carried out. During the first analysis, we introduced the three ZIL sub-scales renewed experience, hyper-arousal, and avoidance into separate models (sub-models 1, 2, and 3). During the second analysis, we exchanged the variable violence for the variable ‘combined violence’ (that is, ‘has fallen victim to more than one violent incident committed by co-workers and/or detainees in the course of the past twelve months’) (sub-model 4).

Figure 3 The testing of four hypothetical sub-models



The thought behind the separate introduction of the three ZIL sub-scales renewed experience, hyper-arousal, and avoidance into a model was primarily based on the assumption that an individual suffering from PTSD does not necessarily score pathologically on each of the three sub-scales. Secondly, we did not find any (direct) correlation between the safe attachment style and (one or more of) the separate clusters of symptoms. The idea of introducing combined violence into a separate model originated from the assumption that plural violence is a better predictor for the development of Posttraumatic Stress Disorder than singular violence.

4.3.1 The quality of the four sub-models

The similarity between the four measured or observed sub-models and the hypothetical models is good to very good (range $p = .25-.39$). In the four sub-models, the GFI was very high, varying between .98 and .99, while the AGFI varied between .94 and .95. The RMR fluctuated between .037 and .044; the RMSEA between .037 and .039. The CFI was .98 in sub-model 1 and .99 in the other three models. On the basis of the reported values, we accepted the sub-models. We will now continue with the discussion of the individual effect parameters.

4.3.2 The effect parameters between the variables in the four sub-models

In the four sub-models, we found significant positive paths from Posttraumatic Stress Disorder to absenteeism. The three ZIL sub-scales in the separate models strongly correlated with absenteeism as well. Violence correlated extremely weakly with absenteeism in the four sub-models. There was, however, a positive significant path running from violence to the posttraumatic stress symptom avoidance. The relation between violence and the other two symptoms was weaker and non-significant. The path between 'combined violence' and Posttraumatic Stress Disorder was nearly significant. Since the value we found approximated the threshold value of $t=1.96$, we will not pass this relation over on theoretical grounds.

Furthermore, the paths between, respectively, safe attachment style and negative affectivity, and a safe attachment style and type D personality, were significant and negative in the four sub-models. The path between negative affectivity and (symptoms of) posttraumatic stress (disorder) was significant and positive. We found significant positive paths between type D personality and (symptoms of) posttraumatic stress (disorder) both in the sub-model into which the ZIL sub-scale renewed experience was introduced, and in the model into which combined violence was introduced. Social support and safe attachment style correlated non-

significantly with (symptoms of) posttraumatic stress (disorder). Furthermore, safe attachment style correlated non-significantly with violence. The correlations were so weak, moreover, that findings from the literature can no longer justify the assumption of the existence of this correlation.

4.4 Preliminary conclusions

Basing ourselves on the literature, we assumed that protective and facilitating factors would be present during the development of Posttraumatic Stress Disorder and absenteeism. PTSD and the separate symptoms of PTSD are strong predictors of absenteeism.

Contrary to what we assumed, social support proved not to be a protective factor with regard to the development of (symptoms of) posttraumatic stress (disorder). Both in the general model and the four sub-models, the path running from social support to (symptoms of) posttraumatic stress (disorder) was weak to very weak. Nor did we find that a safe attachment style is a protective factor. Yet, the safe attachment style did correlate significantly negative with both negative affectivity and type D personality. These findings partly fit in with, among others, the studies carried out by Pines (2004) and Penney & Spector (2005). They found correlations between negative affectivity and safe attachment style as well.

In most of the models, we found significant paths between negative affectivity, type D personality, and (symptoms of) posttraumatic stress (disorder). These findings partly fit in with the study of Cox et al (2004). They found that there is a clear relation between negative affectivity/neuroticism and posttraumatic stress symptoms (Cox et al, 2004; Engelhardt et al, 2003).

We conclude that:

- 1 both PTSD and the separate symptoms of PTSD are directly related to absenteeism, measured in days;
- 2 type D personality is of direct influence on (symptoms of) posttraumatic stress (syndrome);
- 3 a safe attachment exerts no direct influence on (symptoms of) posttraumatic stress (syndrome), but this correlation runs via negative affectivity and/or type D personality;
- 4 violence (aggression and violence among employees and/or violence committed by detainees) and combined violence are related to the development of Posttraumatic Stress Disorder, but this correlation is weak and not always significant;
- 5 in this model, social support cannot be understood as a protective factor against the development of (symptoms of) posttraumatic stress (syndrome).

5 The exploratory study

In addition to the testing of the hypothetical model, there are twelve specific research questions which deserve further exploration. The first three questions are descriptive in nature; their primary goal is to provide insight into the group of penitentiary workers who have fallen victim to aggression and violence among employees.

Questions 3 until 12 are in logical keeping with the hypothetical model, which was set up on the basis of the literature study, in the sense that they referred to the relations that were supposed to exist between the model's different variables. In the first place, the hypothetical model assumes that aggression and violence among employees, violence committed by detainees, social support, a safe attachment style, negative affectivity, and type D personality are related to posttraumatic stress. Regarding attachment style, the model also assumes that there is a correlation with posttraumatic stress as well, via violence committed by detainees, aggression and violence among employees, social support, negative affectivity, and/or type D personality. Questions 4 until 8 deal with these relations. In the second place, the model assumes that violence committed by detainees, aggression and violence among employees, and negative affectivity are related to absenteeism, and that these relations also run via posttraumatic stress. Questions 9 until 11 refer to this issue.

We will enumerate the twelve specific research questions that can be discerned in section 5.1. The methods used to find answers to these questions will be discussed in section 5.2. We will discuss the results in section 5.3. Finally, we will come to some preliminary conclusions to be drawn from the exploratory study in section 5.4.

5.1 Specific research questions

- 1 *How often did penitentiary workers report that they had fallen victim to aggression and violence among employees during the past twelve months?*
- 2 *In what respects do victims of aggression and violence among employees differ from non-victims?*
- 3 *Does the extent to which penitentiary workers report posttraumatic stress differ according to the type of aggression and violence among employees that they have experienced (unwanted sexual attention, intimidation, and physical violence)?*
- 4 *Is there a relation between aggression and violence among employees on the one hand, and posttraumatic stress on the other?*
- 5 *Is there a relation between violence committed by detainees and posttraumatic stress?*

- 6 *Is there a relation between social support and posttraumatic stress?*
- 7 *Is there a relation between the style of attachment and posttraumatic stress?*
 - 7a *Is the relation between attachment style and posttraumatic stress mediated by aggression and violence among employees?*
 - 7b *Is the relation between attachment style and posttraumatic stress mediated by violence committed by detainees?*
 - 7c *Is the relation between attachment style and posttraumatic stress mediated by social support?*
 - 7d *Is the relation between attachment style and posttraumatic stress mediated by negative affectivity?*
 - 7e *Is the relation between attachment style and posttraumatic stress mediated by type D personality?*
- 8 *Is there a relation between negative affectivity and posttraumatic stress?*
- 9 *Is there a relation between type D personality and posttraumatic stress?*
- 10 *Is there a relation between aggression and violence among employees on the one hand, and absenteeism on the other?*
 - 10a *Is the relation between aggression and violence among employees on the one hand, and absenteeism on the other mediated by posttraumatic stress?*
- 11 *Is there a relation between violence committed by detainees and absenteeism?*
 - 11a *Is the relation between violence committed by detainees and absenteeism mediated by posttraumatic stress?*
- 12 *Is there a relation between negative affectivity and absenteeism?*
 - 12a *Is the relation between negative affectivity and absenteeism mediated by posttraumatic stress?*

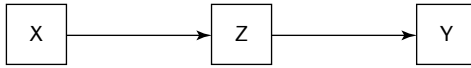
5.2 Methods

All questions were analysed by using the statistics programme Statistical Package for the Social Sciences (SPSS). We will clarify the answer to question 1 with the help of a frequency table.

With regard to question 2, we will make a distinction between socio-demographic factors (age and gender), experiences with violence committed by detainees (affirmative versus negative), social support (talks to colleagues about violence committed by detainees, or talks to colleagues about aggression and violence among employees) (affirmative versus negative), personal predispositions (attachment style, safe versus unsafe; negative affectivity, a score of 10 or higher on the DS 14 versus a score lower than 10; type D personality, affirmative versus negative), and the effects of aggression and violence among employees (posttraumatic stress, the average number of reported posttraumatic stress symptoms; absenteeism, the average number of days that penitentiary workers have been absent from work). With respect to the categorical variables, we will examine whether their frequencies differ between the group who experienced aggression and violence among employees and the group who did not. For this, we will use chi-square tests. Differences between averages for the continuous variables will be analysed with t-tests.

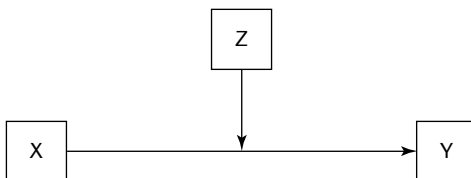
We will explore question 3 by means of a one-way Analysis of Variance (ANOVA). This is used to test whether three or more groups differ from each other with respect to their mean score for a continuous variable.

The questions 4, 5, 6, 7, 8, 9, 10, 11, and 12 will be answered by means of t-tests. We will answer the sub-questions 7a until 7e, 10a, 11a, and 12a by using the procedure described by Baron and Kenny (1986) in their classical article on mediation and moderation. According to them, mediation can be tested by regressing the mediator in succession on the independent variable, the dependent variable on the independent variable, and the dependent variable on both the mediator and the independent variable. One can speak of mediation when one controls for the independent variable and the independent variable has an effect on the mediator, the independent variable has an effect on the dependent variable, and the mediator has an effect on the dependent variable. In addition, the effect of the independent variable on the dependent one has to have decreased. When this effect disappears, there is complete mediation. Complete mediation can be graphically represented as follows:

Figure 4 Complete mediation

In this picture, X represents the independent variable, while Z represents the mediator, and Y the dependent variable

In addition to this, for the questions 4, 5, 6, 8 en 9, we will examine whether significant correlations can be explained by a third variable. When no significant correlation can be found, we will see whether both variables might be yet related to each other by adding a moderator. Thus, in these cases, mediation and moderation effects are examined on statistical grounds (cf Baron & Kenny, 1986, p. 1178). This in contrast to the mediation effects that will be examined when the questions 7a until 7e, 10a, and 12a must be answered. These are in keeping with the hypothetical model, and thus will be examined on theoretical grounds. Yet, in these cases, too, we will see whether moderation is taking place when no mediation effect is found. A moderator influences the direction or the strength of the correlation between two variables. How moderation can be tested depends on the nature of both the independent variable and the moderator. Here, we will confine ourselves to a brief explanation of the procedures that have to be followed according to Baron and Kenny (1986) when 1) both the independent variable and the potential moderator are dichotomous variables, and 2) the independent variable is dichotomous, while the moderator is a continuous variable. In the first case, a 'two-way between groups' ANOVA must be carried out. There is moderation when an interaction effect is found of both the independent variable and the moderator on the dependent variable. In the second case, the dependent variable must be regressed on the independent variable, the moderator, and the interaction effect between the independent variable and the moderator. Like before, there is moderation when a significant interaction effect occurs between the independent variable and the moderator. Moderation can be graphically represented in the following manner:

Figure 5 Moderation

In this picture, X represents the independent variable, Z the moderator, and Y the dependent variable

5.3 Results

1 *The prevalence of different types of aggression and violence among employees, subdivided according to sex.*

Table 1 The prevalence of aggression and violence among employees

	Men %	(n)	Women %	(n)
<i>Aggression and violence among employees</i>	32	(39)	28.8	(15)
Unwanted sexual attention	1.6	(2)	11.5	(6)
Intimidation	32	(39)	19.2	(10)
Physical violence	0.8	(1)	1.9	(1)

In total, 54 penitentiary workers reported experiences with aggression and violence among employees. The table shows that some of them have fallen victim to more than one type of aggression and violence among employees. A closer examination of the prevalence figures reveals that four penitentiary workers have had to endure both unwanted sexual attention and intimidation. Two penitentiary workers have been confronted with intimidation as well as physical violence.

2 *Differences between the victims and the non-victims of aggression and violence among employees.*

In view of table 2, the following can be noted:

- a Penitentiary workers who reported to have fallen victim to aggression and violence among employees were also confronted with violence committed by detainees more often than non-victims of aggression and violence among employees.
- b Victims of aggression and violence among employees reported more often that they talked to colleagues about it than non-victims.
- c Victims of aggression and violence among employees proved to attach themselves unsafely to others more often than non-victims.
- d Victims of aggression and violence among employees reported more posttraumatic stress symptoms than non-victims.
- e Finally, victims of aggression and violence among employees were absent from work more often than penitentiary workers who had non fallen victim to aggression and violence among employees.

Table 2 Differences between victims of aggression and violence among employees and non-victims

Characteristics of penitentiary workers	Penitentiary workers		Victims of aggression and violence among employees		Non-victims		P-value
	n/total	sd	n/total	sd	n/total	sd	
<i>Demographic factors</i>							
Age	43.9	8.59	45.08	7.9	43.12	8.9	0.175
Male sex	118		39		79		0.391
<i>Other violent experiences</i>							
Violence by detainees	108		69		39		0.084
<i>Social support</i>							
Talks about violence by detainees	162		53		109		0.479
Talks about aggression and violence among employees	130		50		80		0.001
<i>Personal predispositions</i>							
unsafe attachment style	53		24		29		0.027
negative affectivity	48		31		17		0.409
Type D personality	26		9		17		0.513
<i>Effects of aggression and violence among employees</i>							
Posttraumatic stress symptoms	30.21	10.17	35.33	12.48	27.87	7.89	0.000
Number of workdays absent	11.51	23.07	17.04	27.25	9.45	21.02	0.084

3 Differences in posttraumatic stress symptoms between victims of unwanted sexual attention, intimidation, and violence.

The extent to which victims of aggression and violence among employees reported posttraumatic stress symptoms differed per type of aggression and violence among employees ($F = 5.7, p = .001$). However, because of the small number of respondents within the groups 'unwanted sexual attention' and 'physical violence', not much meaning can be attributed to this result. This being said, the difference seems to be caused mainly by the female respondent who has experienced physical violence. Her score on the ZIL is 84, while the average scores for victims of unwanted sexual attention and intimidation are 38.57 and 34.09 respectively.

4 The relation between aggression and violence among employees and posttraumatic stress symptoms

For the answer to question 4 we refer to the answer to question 2, under d. Because there is a significant correlation between aggression and violence among employees and posttraumatic stress symptoms, we examined whether this correlation might be explained by social support (that is, talking to colleagues about aggression and violence among employees) and/or attachment style. To be able to speak of

mediation, the requirements we discussed in section 6.3 must be met. Aggression and violence among employees is a significant predictor for both social support ($p = .003$) and adult attachment style ($p = .036$). Aggression and violence among employees is a predictor for post-traumatic stress symptoms as well ($p = .000$). Yet, because aggression and violence among employees still is a significant predictor for post-traumatic stress symptoms even after controlling for social support and attachment style ($p = .000$), the third requirement for mediation has not been met. Thus, the relation between aggression and violence among employees and posttraumatic stress symptoms is not mediated by social support or attachment style.

5 *The relation between violence committed by detainees and posttraumatic stress symptoms*

Penitentiary workers who had been confronted with violence committed by detainees during the last twelve months, did not differ with respect to their average number of experienced posttraumatic stress symptoms in comparison to penitentiary workers who had not been confronted with it ($t = -1.1$, $p = .254$). Because there was no significant correlation between violence committed by detainees and post-traumatic stress symptoms, we examined whether this correlation is moderated by social support (that is, talking to colleagues about aggression and violence among employees) and/or attachment style. In interaction with violence committed by detainees ($p = .794$), however, neither social support ($p = .117$) nor attachment style turned out to have an effect on posttraumatic stress symptoms. Thus, neither one of these variables functions as a moderator in the relation between violence committed by detainees and posttraumatic stress symptoms.

6 *The relation between social support and posttraumatic stress symptoms*

Penitentiary workers who talked to their colleagues about violence committed by detainees, did not differ in their average number of experienced posttraumatic stress symptoms from penitentiary workers who did not talk about it ($t = .4$, $p = .668$). Neither did we find a significant difference with respect to talking to a colleague about aggression and violence among employees ($t = 1.1$, $p = .289$). Under question 5, we already established that social support, meaning talking to colleagues about violence committed by detainees, does not have a significant effect on posttraumatic stress symptoms in interaction with violence committed by detainees. The interaction effect between social support and aggression and violence among employees, however, did prove to be significant ($p = .049$). Thus, the relation between social support and posttraumatic stress symptoms is moderated by aggression and violence among employees.

7 *The relation between attachment style and posttraumatic stress symptoms*

Penitentiary workers with a safe style of attaching to others reported less posttraumatic stress symptoms than penitentiary workers with an unsafe attachment style, although this difference is marginal ($t = 1.7$, $p = .084$).

7a *Mediation by aggression and violence among employees*

Attachment style is a significant predictor of aggression and violence among employees ($p = .036$), and a marginal predictor of posttraumatic stress symptoms ($p = .084$). Because the effect of attachment style on posttraumatic stress symptoms disappears completely after a check for aggression and violence among employees ($p = .191$), while aggression and violence among employees significantly predicts posttraumatic stress symptoms ($p = .000$), we can conclude that all requirements for mediation have been met. In other words: the relation between style of attachment and posttraumatic stress symptoms is partly explained by aggression and violence among employees.

7b *Mediation by violence committed by detainees*

Because attachment style is not a significant predictor of violence committed by detainees ($p = .411$), the first requirement for mediation has not been met. Thus, the relation between attachment style and posttraumatic stress symptoms is not mediated by violence committed by detainees, nor is this relation moderated by violence committed by detainees. As we mentioned under question 6, while answering question 5 it already turned out that there is no interaction effect between attachment style and social support.

7c *Mediation by social support*

We examined whether social support mediates the relation between attachment style and posttraumatic stress symptoms both for talking to colleagues about aggression and violence among employees, and for talking to colleagues about violence committed by detainees. Attachment style is neither a significant predictor for talking to colleagues about aggression and violence among employees ($p = .598$), nor for talking to colleagues about violence committed by detainees ($p = .857$). Thus, in neither of these cases has the first requirement for mediation been met. Accordingly, the relation between attachment style and posttraumatic stress symptoms is not mediated by talking to colleagues about either aggression and violence among employees, or violence committed by detainees. While answering questions

5 and 6, we already established that only social support, to be understood as talking to colleagues about aggression and violence among employees, moderates the relation between a safe attachment style and posttraumatic stress symptoms.

7d *Mediation by negative affectivity*

Adult attachment style proved to be a significant predictor of negative affectivity ($p = .013$) and, as we already established while answering question 7a, a marginal predictor of posttraumatic stress symptoms ($p = .084$). Because the effect of attachment style disappears completely after controlling for negative affectivity ($p = .445$), while negative affectivity significantly predicts posttraumatic stress symptoms ($p = .000$), we can conclude that all requirements for mediation have been met. In other words: the relation between a safe attachment style and posttraumatic stress symptoms is partly explained by negative affectivity.

7e *Mediation by type D personality*

Attachment style is a significant predictor of type D personality ($p = .003$) and is – as we already mentioned while answering question 7a and repeated while answering the last question – a marginal predictor of posttraumatic stress symptoms ($p = .084$). Because the effect of attachment style on posttraumatic stress symptoms disappears completely after controlling for type D personality ($p = .587$), while type D personality significantly predicts posttraumatic stress symptoms ($p = .000$), we can conclude that all requirements for mediation have been met. In other words: the relation between attachment style and posttraumatic stress symptoms is partly explained by type D personality.

8 *The relation between negative affectivity and posttraumatic stress symptoms*

Penitentiary workers characterised by a large degree of negative affectivity experienced more posttraumatic stress symptoms than penitentiary workers characterised by a small degree of negative affectivity ($t = -4.9$, $p = .000$). Because we found a significant correlation, we examined whether the relation between negative affectivity and posttraumatic stress symptoms is mediated by, respectively, aggression and violence among employees, violence committed by detainees, social support, attachment style, or absenteeism. None of these variables turned out to explain this relation. Negative affectivity proved to be no significant predictor of aggression and violence among employees ($p = .683$), talking to colleagues about violence committed by detainees ($p = .692$), talking to colleagues about aggression and violence among employees ($p = .827$), and absenteeism ($p = .733$). Consequently, in

these cases the first requirement for mediation has not been met. Yet, negative affectivity did prove to be a significant predictor of violence committed by detainees ($p = .037$) and attachment style ($p = .013$). Negative affectivity also turned out to be a significant predictor of posttraumatic stress symptoms ($p = .000$). However, the effect of negative affectivity on posttraumatic stress symptoms continued after controlling for violence committed by detainees or attachment style. Thus, in these cases, the third requirement for mediation has not been met.

9 *The relation between type D personality and posttraumatic stress symptoms*

Penitentiary workers with type D personality experience more posttraumatic stress symptoms than penitentiary workers without type D personality ($t = -3.7, p = .001$). Because we found a significant correlation, we examined whether the relation between type D personality and posttraumatic stress symptoms is mediated by, respectively, aggression and violence among employees, violence committed by detainees, social support, attachment style, or absenteeism. Once again, none of these variables turned out to explain this relation. Type D personality proved not to be a predictor of aggression and violence among employees ($p = 0.922$), violence committed by detainees ($p = .144$), talking to colleagues about violence committed by detainees ($p = .834$), talking to colleagues about aggression and violence among employees ($p = .597$), or absenteeism ($p = .335$). Type D personality is, however, a predictor of attachment style ($p = .003$) and posttraumatic stress symptoms ($p = .000$). Yet, in this case, too, this effect continued to exist after controlling for attachment style.

10 *The relation between aggression and violence among employees and absenteeism*

For the answer to question 10 we refer to the answer to question 2, under e.

10a *Mediation by posttraumatic stress symptoms*

Aggression and violence among employees proved to be a significant predictor of posttraumatic stress symptoms ($p = .000$) and a marginal predictor of absenteeism ($p = .055$). Because the effect of aggression and violence among employees on absenteeism disappears completely after controlling for posttraumatic stress symptoms ($p = .416$), while posttraumatic stress symptoms significantly predict absenteeism ($p = .000$), we can conclude that all requirements for mediation have been met. In other words: the relation between aggression and violence among employees and absenteeism is explained by posttraumatic stress symptoms.

11 The relation between violence committed by detainees and absenteeism

Penitentiary workers who reported to have fallen victim to violence committed by detainees were not absent from work more often than penitentiary workers who had not been confronted with that kind of violence ($t = 1.2, p = .247$).

11a Mediation by posttraumatic stress symptoms

Because violence committed by detainees is not a significant predictor of posttraumatic stress symptoms ($p = .254$), the first requirement for mediation has not been met. Thus, the relation between violence committed by detainees and absenteeism is not mediated by posttraumatic stress symptoms. Nor was there any moderation by posttraumatic stress symptoms, now that the interaction effect between violence committed by detainees and posttraumatic stress symptoms is not significant, even though it is marginal ($p = .091$).

12 The relation between negative affectivity and absenteeism

Penitentiary workers characterised by a high amount of negative affectivity, did not report to have been absent from work more often than penitentiary workers who have little negative affectivity ($t = .3, p = .733$).

12a Mediation by posttraumatic stress symptoms

Negative affectivity is a significant predictor of posttraumatic stress symptoms ($p = .000$). Yet, because negative affectivity is not a significant predictor of absenteeism ($p = .733$), the second requirement for mediation has not been met. Thus, the relation between negative affectivity and absenteeism is not mediated by posttraumatic stress symptoms. Nor is there any moderation by posttraumatic stress symptoms, now that the interaction effect between negative affectivity and posttraumatic stress symptoms is not significant. Once again, however, there is a marginal effect ($p = .074$).

5.4 Preliminary conclusions

The conclusions that can be drawn on the basis of the exploratory research must be interpreted in the light of the results of the hypothetical model's testing, about which we reported in chapter 4. We will return to these results in chapter 6. With some reserve, we note the following:

- Victims of aggression and violence among employees seem to fall victim to violence committed by detainees more often than non-victims, they talk more often to colleagues about aggression and violence among employees, more frequently have an unsafe attachment style, have more posttraumatic stress symptoms, and are absent from work more often;
- The extent to which victims of aggression and violence among employees experience posttraumatic stress symptoms does not seem to differ per type of aggression and violence among employees;
- There seems to be no relation between violence committed by detainees and posttraumatic stress symptoms;
- The relation between social support and posttraumatic stress symptoms seems to be moderated by aggression and violence among employees;
- The relation between attachment style and posttraumatic stress symptoms seems to be mediated by aggression and violence among employees, negative affectivity, or type D personality;
- There seems to be a strong correlation between negative affectivity and posttraumatic stress symptoms;
- There seems to be a strong correlation between type D personality and posttraumatic stress symptoms;
- The relation between aggression and violence among employees on the one hand, and absenteeism on the other seems to be mediated by posttraumatic stress symptoms;
- There seems to be no relation between violence committed by detainees and absenteeism;
- There seems to be no relation between negative affectivity and absenteeism.

6 Summary and conclusions

The study about which we have reported here was commissioned by the Sector Directorate of the Prison System. Its primary goal was to gain insight into the possible consequences of aggression and violence among penitentiary workers, and into the determinants at its source. Special attention was to be paid to absenteeism as a possible consequence of aggression and violence among employees and to the psychosocial factors that play a role in it. For the purpose of this research, 174 penitentiary workers were interviewed about their experiences with violence during their work. The interviews, which were structured, were conducted by process supervisors. They were employed by the participating penitentiaries in the context of dealing with the issue of aggression and violence among employees. In addition to the interviews, the interviewed penitentiary workers were presented with three standardised questionnaires. The empirical part of the research was preceded by an extensive study of the literature.

6.1 The results of the literature study and the construction of the hypothetical model

The literature study revealed that hardly any research has been done on either the possible consequences of aggression and violence among penitentiary workers, or the psychosocial factors responsible for it. Most of the earlier studies on violence on the job were limited to incidents within other settings than prisons. Moreover, earlier researchers were hardly interested in expressions of violence between co-workers. Yet, the existing literature provided enough insights to set up a hypothetical model that could serve as an adequate theoretical foundation for the empirical part of the study. The literature showed that aggression and violence among employees is a very complex phenomenon; it seems that it can have various negative effects on the health of the employee involved. Post-traumatic stress and absenteeism seem to be the most common effects. Various psychosocial factors seem to contribute, either directly or indirectly, to the occurrence of these effects. Social support, attachment style, the personality trait negative affectivity, and type D personality seem to be the most important factors playing a role in the occurrence of effects of aggression and violence among employees. Social support seems to induce less posttraumatic stress, while an unsafe attachment style, negative affectivity, and type D personality seem to be positively associated with posttraumatic stress. Through posttraumatic stress, all these factors can result in absenteeism. Possibly, the relation between attachment style and posttraumatic stress runs via negative affectivity, type D personality, or violent experiences such as aggression and violence among co-workers. Negative affectivity seems also to be related to absenteeism independent of the development of posttraumatic stress.

All the mutual relations that could be assumed to exist on the basis of the literature study were included in the hypothetical model. A graphical representation of the hypothetical model we constructed with the aid of the findings from the literature was presented in section 3.2.

6.2 The empirical validity of the hypothetical model

We tested the empirical validity of the constructed hypothetical model by using a covariance structure analysis. For this, we used the statistical programme Lisrel. The variables included in the hypothetical model on the basis of the literature study were operationalised in the following way: violence was understood as falling victim to aggression and violence among colleagues and/or violence committed by detainees during the past twelve months (affirmed/disaffirmed); social support was operationalised as talking with colleagues about aggression and violence among employees and/or violence committed by detainees during the past twelve months (affirmed/disaffirmed). Attachment style was split up in a safe and an unsafe attachment style. The safely attached group consisted of respondents who had reported a safe attachment style when filling in the RQ. Together, the other respondents constituted the group of unsafely attached penitentiary workers. Negative affectivity was operationalised as the total score on the negative affectivity sub-scale of the DS 14. Someone was assumed to have type D personality when the score on the DS 14 was 10 or higher on the negative affectivity sub-scale, combined with a score of 10 or higher on the social inhibition sub-scale. With regard to post-traumatic stress, a distinction was made between respondents with a ZIL score indicating the presence of PTSD, and respondents who did not have such a score. Finally, absenteeism was understood as the total number of days of absence during the past twelve months.

Basing ourselves on various fit indices, we assessed whether the hypothetical model fit in with the observed values (that is, the answers given by the respondents during the interviews and while filling out the questionnaires). We found no significant difference between the hypothetical model and the measured model. Testing the separate parameters showed that there were significant paths between type D personality and Post-traumatic Stress Disorder, between type D personality and attachment style, and between Posttraumatic Stress Disorder and absenteeism. The other paths within the model were not significant. 36% of the model's variance, with absenteeism being its ultimate dependent variable, was explained by the variables that were part of the model.

Testing the hypothetical model was followed by two extra analyses. During the first analysis, the hypothetical model was tested once more for the separate ZIL sub-scales renewed experience (sub-model 1), hyper-arousal (sub-model 2), and avoidance (sub-model 3). During the second analysis, violence was operationalised as ‘has fallen victim to more than one violent incident committed by co-workers and/or detainees’ (‘combined violence’) (sub-model 4). The assumption was that being the victim of more violent incidents would be a better predictor of PTSD than being the victim of a single violent incident. The paths between the three separate ZIL sub-scales and absenteeism were significant. The path between violence and the PTSD symptom cluster avoidance was significant as well. This did not apply to the paths between violence and the symptom clusters renewed experience and hyper-arousal. The assumed path between combined violence and PTSD was nearly significant. Significant paths were found between negative affectivity and the ZIL sub-scales hyper-arousal and avoidance and also between negative affectivity and PTSD in sub-model 4. Finally, we found a significant path between type D personality and the PTSD symptom cluster renewed experience, while in sub-model 4 a significant path was also found between type D personality and PTSD, just like it was found in the hypothetical model.

6.3 The exploratory study

In addition to the testing of the hypothetical model, twelve specific research questions deserved to be explored more closely. The first three questions were descriptive in character; their primary goal was to provide insight into the group of penitentiary workers who had fallen victim to aggression and violence among employees. The other nine questions were in logical keeping with the hypothetical model, in the sense that they dealt with the relations which were assumed to exist between the different variables in the model. We formulated the following research questions:

- 1 *How often did penitentiary workers report that they had fallen victim to aggression and violence among employees during the past twelve months?*
- 2 *In what respects do victims of aggression and violence among employees differ from non-victims?*
- 3 *Does the extent to which penitentiary workers report posttraumatic stress differ according to the type of aggression and violence among employees that they have experienced (unwanted sexual attention, intimidation, and physical violence)?*
- 4 *Is there a relation between aggression and violence among employees on the one hand, and posttraumatic stress on the other?*

- 5 *Is there a relation between violence committed by detainees and post-traumatic stress?*
- 6 *Is there a relation between social support and posttraumatic stress?*
- 7 *Is there a relation between the style of attachment and posttraumatic stress?*
 - 7a *Is the relation between attachment style and posttraumatic stress mediated by aggression and violence among employees?*
 - 7b *Is the relation between attachment style and posttraumatic stress mediated by violence committed by detainees?*
 - 7c *Is the relation between attachment style and posttraumatic stress mediated by social support?*
 - 7d *Is the relation between attachment style and posttraumatic stress mediated by negative affectivity?*
 - 7e *Is the relation between attachment style and posttraumatic stress mediated by type D personality?*
- 8 *Is there a relation between negative affectivity and posttraumatic stress?*
- 9 *Is there a relation between type D personality and posttraumatic stress?*
- 10 *Is there a relation between aggression and violence among employees on the one hand, and absenteeism on the other?*
 - 10a *Is the relation between aggression and violence among employees on the one hand, and absenteeism on the other mediated by posttraumatic stress?*
- 11 *Is there a relation between violence committed by detainees and absenteeism?*
 - 11a *Is the relation between violence committed by detainees and absenteeism mediated by posttraumatic stress?*
- 12 *Is there a relation between negative affectivity and absenteeism?*
 - 12a *Is the relation between negative affectivity and absenteeism mediated by posttraumatic stress?*

All questions were analysed by using the statistical programme SPSS. We answered the first question by means of a frequency analysis. With regard to question 2 a distinction was made between socio-demographic factors (age and gender), experiences with violence committed by detainees (affirmed/disaffirmed), social support (talking to colleagues about violence committed by detainees or talking to colleagues about aggression and violence among employees, (affirmed/disaffirmed)), personal predispositions (a safe or an unsafe attachment style; a score of 10 or higher on the DS 14 for negative affectivity against a score below 10; type D personality (affirmed/disaffirmed)), and the effects of aggression and violence among employees (posttraumatic stress, the average number of reported posttraumatic symptoms; absenteeism, the average number of days that penitentiary workers were absent from work). For the categorical variables, we examined whether their frequencies differed between the group of penitentiary workers who had fallen victim to aggression

and violence among employees and the group of non-victims. For this, we used chi-square tests. We analysed the differences in averages between the continuous variables with the aid of t-tests. Question 3 was explored by means of a one-way Analysis of Variance (ANOVA). We answered the questions 4, 5, 6, 7, 8, 9, 10, 11, and 12 by using t-tests.

54 penitentiary workers reported to have been confronted with aggression and violence among employees during the past twelve months. The victims of aggression and violence among employees had fallen victim to violence committed by detainees more often than non-victims, talked more often to colleagues about aggression and violence among employees, more often attached unsafely to others, experienced more posttraumatic stress, and were absent from work more often. The extent to which the victims of aggression and violence among employees experienced posttraumatic stress did not differ per type of aggression and violence among employees. We did not find a relation between violence committed by detainees and posttraumatic stress. The relation between social support and posttraumatic stress was moderated by aggression and violence among employees. Aggression and violence among employees, negative affectivity, or type D personality mediated the relation between attachment style and posttraumatic stress. We found strong correlations between negative affectivity and posttraumatic stress, and between type D personality and posttraumatic stress. The relation between aggression and violence among employees on the one hand, and absenteeism on the other was mediated by posttraumatic stress. Finally, no relations were found between, respectively, violence committed by detainees and absenteeism, and negative affectivity and absenteeism.

6.4 Conclusions

Based on the research results we obtained, we can draw the following conclusions:

- The violent experiences of penitentiary workers, whether they have fallen victim to violence committed by detainees and/or violence committed by co-workers only once or more than once, do not seem to go together with a diagnosis of PTSD, or with a clinically significant degree of renewed experience, hyper-arousal, or avoidance⁸. However, penitentiary workers who haven fallen victim to aggression and violence among employees in the course of the past twelve months do suffer more from posttraumatic stress symptoms⁹.

8 That means: a pathological score on one of the separate ZIL sub-scales, as intended in chapter 4.

9 That is: posttraumatic stress symptoms as intended in chapter 5. This must be distinguished from a pathological score on one of the separate ZIL sub-scales.

- Talking to colleagues about aggression and violence among employees seems to protect penitentiary workers who have fallen victim to it from developing posttraumatic stress symptoms.
- When either PTSD or a clinically significant degree of renewed experience, hyper-arousal, or avoidance occurs, this seems to go together with absenteeism.
- Type D personality seems to be an important predictor of posttraumatic stress symptoms among penitentiary workers; it possibly even predicts PTSD.
- As far as a relation exists between adult attachment style and posttraumatic stress, whether this applies to a PTSD diagnosis or posttraumatic stress symptoms, this seems to be explained by other factors. On the basis of the exploratory study, aggression and violence among employees, negative affectivity, and type D personality seem to be potential mediators.

6.5 The interpretation of the study's results

Our findings can be interpreted in the following way. In the first place, violent experiences among penitentiary workers do not automatically result in posttraumatic stress. Once someone has fallen victim to such violence, it seems important to talk about it with colleagues, although this only seems to apply to talking about aggression and violence among employees. It seems plausible that most penitentiary workers view violent incidents in which detainees are involved as an inherent part of their work. Apparently, it is seen as only natural that penitentiary workers regularly talk among themselves about violence committed by detainees; no less than 162 penitentiary workers indicated that they talk about it with colleagues. The small group of penitentiary workers who refrain from this is not more susceptible to posttraumatic stress. It is possible that this group consists of those who are not very talkative regardless of the subject. Aggression and violence among co-workers is much talked about as well, although a substantial group does not. This group, however, actually does run a greater risk of developing posttraumatic stress, but only if they themselves are the ones to have fallen victim to this kind of aggression and violence. There are several explanations for this. To begin with, the victim might be afraid to fall victim to violence again. A second explanation might be that, in the victim's opinion, the nature of the violence is disproportionate to the consequences for the perpetrator, when he or she talks about it with colleagues. According to a third explanation, the victim might be afraid that colleagues will not believe him or her, and wishes to spare him- or herself that form of 'secondary' victimisation. Perhaps the availability of an intermediary *outside* the work location might contribute to the prevention of posttraumatic stress among this group.

In the second place, it seems possible to reduce the amount of absenteeism among penitentiary workers by preventing posttraumatic stress. Specific personal predispositions, of which type D personality seems as yet to be the most important, seem to make penitentiary workers more susceptible to the development of posttraumatic stress. Such predispositions can be assumed to be already present at the moment the employment started.

6.6 The study's limitations

This study's most important limitation is the fact that it was a cross-sectional study. For this reason, it is impossible to make statements about the causality of the relations we found. On the basis of our results, we can only say something about the direction of the relations between the observed variables.

A second limitation is that we made use of self-reported data, since no administrative data about incidents were present. It is possible that respondents have given socially desirable answers during the interviews. Furthermore, there is a possibility that not all of the respondents were equally capable of remembering the moment of the violent incident they were involved in. It is also possible that incidents were reported which took place outside the twelve-month period. Nor is it impossible that the less serious incidents were underreported. After all, such incidents are easier to forget.

Another point involves the study's chosen line of approach, that is, our decision to opt for personal factors only. We did not take into account, among other things, the organisational and economic factors at work in the institutions, or the age and structure of the penitentiaries, or the managerial method (for instance: multi-division or central management) (Gray, Jenkins, Mayne & Leeuw, 2003). Nor did we look at the ways of getting attuned or making decisions. To give an example: the vertical, informal attuning (the mutual association, expectations, and reputations) becomes important when organisations no longer use a hierarchic approach to achieve goals, or when such an approach no longer works (Bulder, 2000). In this study, we did not have the opportunity to examine the quality of the vertical formal and hierarchic attuning and decision making, in order to relate these to aggression and violence among employees. Instead, we made the conscious choice to limit ourselves in this study to personal factors.

We already announced in the introduction that the Research and Documentation Centre (WODC) will start another study in the autumn of 2007, called 'Benchmark Penitentiaries'. In this study, indicators about, among other things, personnel and organisation, quality standards and

performance indicators will be mapped out, in addition to personal factors, in order to make pronouncements upon certain qualitative characteristics of penitentiaries. To begin with, this research will be seen as a feasibility study.

References

Adam, E.K., Gunnar, M.R., & Tanaka, A. (2004)

Adult attachment, Parent Emotion, and Observed Parenting Behavior: Mediator and Moderator Models. *Child Development*, 75, 110-122.

Baron, R.M., & Kenny, D.A. (1986)

The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.

Bartholomew, K., & Horowitz, L.M. (1991)

Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, 61, 226-244.

Bogaerts, S., Vervaeke, G., & Goethals, J. (2004)

A Comparison of Relational Attitude and Personality Disorders in the Explanation of Child Molestation. *Sexual Abuse: A journal of Research and Treatment*, 16, 37-47.

Bogaerts, S., Declercq, F., & Vanheule, S. (2005)

Recalled parental bonding, adult attachment style, and personality disorders in child molesters: a comparative study. *The Journal of Forensic Psychiatry & Psychology*, 16, 445-458.

Bogaerts, S.; & Vanheule, S., & Desmet, M. (2006b)

Personality Disorders and Romantic Adult Attachment: A Comparison of Secure and Insecure Attached Child Molesters. *International Journal of Offender Therapy and Comparative Criminology*, 50, 139-147.

Bogaerts, S., Vanheule, S., & Desmet, M. (2006a)

Feelings of subjective emotional loneliness: an attachment exploration. *Social Behavior and Personality*, 34(7), 797-812.

Bogaerts, S. & Den Hartogh, V. (2006)

Onderlinge agressie en geweld van personeelsleden in een penitentiaire inrichtingen. Werkdocument, Wetenschappelijk Onderzoek- en Documentatie Centrum, Ministerie van Justitie: Den Haag.

Bogaerts, S., Daalder, A., Vanheule, S., & Leeuw, F. (in press)

Personality disorders in a sample of paraphilic and non-paraphilic child molesters: a comparative study. *International Journal of Offender Therapy and Comparative Criminology*.

Bramsen, I., Dirkzwager, A.J.E., & Van der Ploeg, H.M. (2000)

Predeployment personality traits and exposure to trauma as predictors of posttraumatic stress symptoms: A prospective study of former peacekeepers. *American Journal of Psychiatry*, 157, 1115-1119.

Brough, P. (2005)

Workplace violence experienced by paramedics: Relationships with social support, job satisfaction, and psychological strain. *Australian Journal of Disaster and Trauma Studies*, 2, n.d.

Bulder, B. (2000)

Sociaal kapitaal en reorganisaties bij de rijksoverheid. Dissertatie, Universiteit Utrecht.

Cheung, G.W. (2000).

Re: New Cutoff values for fit indices? Message to SEMNET, October 5, 2000. Retrieved January 30, 2001, from the World Wide Web.
[Http://www.ssicentral.com](http://www.ssicentral.com).

Cox, B.J., MacPherson, P.S.R., Enns, M.W., & McWilliams, L.A. (2004)

Neuroticism and self-criticism associated with posttraumatic stress disorder in a nationally representative sample. *Behaviour Research and Therapy*, 42, 105-114.

Davila, J., Bradbury, T.N., & Fincham, F. (1998)

Negative affectivity as a mediator of the association between adult attachment and marital satisfaction. *Personal Relationships*, 5, 467-484.

Declercq, F., & Palmans, V. (2006)

Two subjective factors as moderator between critical incidents and the occurrence of post traumatic stress disorders: 'Adult attachment' and 'perception of social support'. *Psychology and Psychotherapy: Theory, Research and Practice*, 79, 323-337.

Declercq, F., & Willemsen, J. (2006)

Distress and post-traumatic stress disorders in high risk professionals: Adult attachment style and the dimensions of anxiety and avoidance. *Clinical Psychology and Psychotherapy*, 13, 256-263.

Denollet, J. (2000)

Type D personality: A potential risk factor refined. *Journal of Psychosomatic Research*, 49, 255-266.

Denollet, J. (2005)

DS14: Standard Assessment of Negative Affectivity, Social Inhibition, & Type D Personality. *Psychosomatic Medicine*, 67, 89-97.

De Vries, S., van Niekerk, M., van Dalen, E.J., & Nuyens, M. (2002)

Gewenst beleid tegen ongewenst gedrag: voorbeelden van goed beleid tegen ongewenste omgangsvormen op het werk. TNO Arbeid: Hoofddorp.

Diamantopoulos, A. (1994)

Modelling with LISREL: A Guide for the Uninitiated. *Journal of Marketing Management*, 10, 105-136.

Dieperink, M., Leskela, J., Thuras, P., & Engdahl B. (2001)

Attachment style classification and posttraumatic stress disorder in prisoner of war. *American Journal of Orthopsychiatry*, 71, 374-378.

Dupre, K.E., & Barling, J. (2006)

Predicting and preventing supervisory workplace aggression. *Journal of Occupational Health Psychology*, 11, 13-26.

Eley, R., Hegney, D., Buikstra, E., Fallon, T., Plank, A., & Parker, V. (2007)

Aged care nursing in Queensland: the nurses' view. *Journal of Clinical Nursing*, 16, 860-872.

Engelhard, I.M., Van Den Hout, M.A., & Kindt, M. (2003)

The relationship between neuroticism, pre-traumatic stress, and post-traumatic stress: A prospective study. *Personality and Individual Differences*, 35, 381-388.

- Gray, A., Jenkins, B., Mayne, L., & Leeuw, F. (2003)**
Collaboration in public services: the challenge for evaluation. Transaction Publishers, Rutgers: New Jersey.
- Hanebuth, D., Meinel, M., & Fisher, J.E. (2006)**
 Health-Related Quality of Life, Psychosocial Work Conditions, and Absenteeism in an Industrial Sample of Blue- and White-Collar Employees: A Comparison of Potential Predictors. *Journal of Occupational and Environmental Medicine, 48*, 28-37.
- Haslam, C., & Malon, K. (2003)**
 A preliminary investigation of posttraumatic stress symptoms among firefighters. *Work and Stress, 17*, 277-285.
- Hazan, C., & Shaver, P. (1987)**
 Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*, 511-524.
- Hovens, J. E. (2001)**
 De Zelfinventarisatielijst Posttraumatische Stresstoornis: Psychodiagnostisch gereedschap. *De Psycholoog, 36*, 61-63.
- Hovens, J.E., Bramsen, I., & Van der Ploeg, H.M. (2000)**
Zelfinventarisatielijst Posttraumatische Stresstoornis: ZIL handleiding. Lisse: Swets & Zeitlinger.
- Hyer, L., Braswell, L., Albrecht, B., Boyd, S., Boudewyns, P., & Talbert, S. (2003)**
 Relationship of NEO-PI to personality styles and severity of trauma in chronic PTSD victims. *Journal of Clinical Psychology, 59*, 1295-1304.
- Hu, L., & Bentler, P.M. (1999)**
 Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus alternatives. *Structural Equation Modelling, 6*, 1-55.
- Harrison, D.A., & Martocchio, J.J. (1998)**
 Time for absenteeism: A 20-year of origins, offshoots, and outcomes. *Journal of Management, 24*, 305-350.
- Holbrook, T.L., Hoyt, D.B., Stein, M., & Sieber, W.J. (2001)**
 Perceived threat to life predicts posttraumatic stress disorder after major trauma: Risk factors and functional outcome. *The Journal of Trauma: Injury, Infection and Critical Care, 51*, 287-293.
- Kaspersen, M., Matthisen, S.B., & Gøtestam, K.G. (2003)**
 Social network as moderator in the relation between trauma reaction and trauma exposure: A survey among UN soldiers and relief workers. *Scandinavian Journal of Psychology, 44*, 415-423.
- Kessler, R.C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C.B. (1995)**
 Posttraumatic stress disorder in a national comorbidity survey. *Archives of General Psychiatry, 52*, 1048-1060.

Kline, R.B.

Principles and practice of structural equation modeling (2nd ed.). New York: Guildford Press.

Lipsky, S., Field, C.A., Caetano, R., & Larkin, G.L. (2005)

Posttraumatic stress disorder symptomatology and comorbid depressive symptoms among abused women referred from emergency department care. *Violence and Victims, 20*, 645-659.

Littlechild, B. (2005)

The nature and effects of violence against child-protection social workers: Providing effective support. *British Journal of Social Work, 35*, 387-401.

Lowe, G.S., Schellenberg, G., & Shannon, H.S. (2003)

Correlates of Employees' Perceptions of a Healthy Work Environment. *American Journal of Health Promotion, 17*, 390-399.

Miller, M.W. (2000)

Personality and the aetiology and expression of PTSD: A three-factor model perspective. *Clinical Psychology: Science and Practice, 10*, 373-393.

Mitani, S., Fujita, M., Nakata, K., & Shiraawa, T. (2005)

Impact of post-traumatic stress disorder and job-related stress on burnout: A study of fire service workers. *Journal of Emergency Medicine, 31*, 7-11.

Pedersen, S., & Denollet, J. (2004)

Validity of the type D personality construct in Danish post-MI patients and healthy controls. *Journal of Psychosomatic Research, 57*, 265-272.

Penney, L.M., & Spector, P.E. (2005)

Job stress, incivility, and counterproductive work behavior (CWB): The moderating role of negative affectivity. *Journal of Organizational Behavior, 26*, 777-796.

Pines, A.M. (2004)

Adult attachment styles and their relationship to burnout: A preliminary, cross-cultural investigation. *Work and Stress, 18*, 66-80.

Reeves, C., O'Leary-Kelly, A.M. (2007)

The effects and the costs of intimate partner violence for work organizations. *Journal of Interpersonal Violence, 22*, 327-344.

Schaufeli, W.B., & Peeters, M.C.W. (2000)

Job stress and burnout among correctional officers: A literature review. *International Journal of Stress Management, 7*, 19-48.

Shelvin, M & Miles, J. (1997)

The multiplicative effects of sample size reliability and model specification on the behaviour of GFI and RMSEA in confirmatory factor analysis.

Preddvor: Paper presented at the International Conference on Applied Statistics, September.

Simpson, J.A., Rholes, W.S., Oriña, M.M., & Grich, J. (2002)

Working models of attachment, support giving, and support seeking in a stressful situation. *Personality and Social Psychology Bulletin, 28*, 598-608.

- Shapinsky, A.C., Rapport, L.J., Henderson, M.J., Axelrod, B.N. (2005)**
Civilian PTSD Scales: Relationships with trait characteristics and everyday distress. *Assessment*, 12, 220-230.
- Stadnyk, B. (2004)**
Posttraumatic stress disorder, violence and quality of life in Saskatchewan correction workers. Unpublished manuscript.
- Swanberg, J., Macke, C., & Logan, T.K. (2007)**
Working women making it work: Intimate partner violence, employment, and workplace support. *Journal of Interpersonal Violence*, 22, 292-311.
- Tacq, J. (1997)**
Multivariate analysis techniques in social science research: From problem to analysis. Thousand Oaks, CA: Sage Publications.
- Tanaka, J.S., & Huba, G.J. (1989)**
A general coefficient of determination for covariance structure models under arbitrary GLS estimation. *British Journal of Mathematical and Statistical Psychology*, 42, 233-239.
- Ullman, J.B. (2006)**
Structural equation modelling. In B.G. Tabachnick & L.S. Fidell (Eds.), *Using Multivariate Statistics*, (5th ed.; pp. 653-771). Boston: Allyn & Bacon.
- Ullman, S.E., Townsend, S.M., Filipas, H.H., & Starzynski, L.L. (2007)**
Structural models of the relations of assault severity, social support, avoidance coping, self-blame, and PTSD among sexual assault survivors. *Psychological of Women Quarterly*, 31, 23-37.
- Van Emmerik, J.H., Euwema, M.C., & Bakker, A.B. (2007)**
Threats of workplace violence and the buffering effect of social support. *Group & Organization Management*, 32, 152-175.
- Verschuren, P.J.M. (1991)**
Structurele modellen tussen theorie en praktijk. Utrecht: Aula-Paperbacks.
- Vranceanu, A.M., Hobfoll, S.E., & Johnson, R.J. (2007)**
Child multi-type maltreatment and associated depression and PTSD symptoms: The role of social support and stress. *Child Abuse & Neglect*, 31, 71-84.
- Waerden, A., Cook, L., & Vaughan, J.J. (2003)**
Adult attachment, alexithymia, symptom reporting and health-related coping. *Journal of Psychosomatic Research*, 341-347.
- Walsh, B.R., & Clarke, E. (2003)**
Post-trauma symptoms in health workers following physical and verbal aggression. *Work and Stress*, 17, 170-181.
- Watson, D., Clark, L.A. (1992)**
On traits and temperament: General and specific factors of emotional experience and their relation to the five-factor model. *Journal of Personality*, 60, 441-476.

Winstanley, S., & Whittington, R. (2002)

Anxiety, burnout and coping styles in general hospital staff exposed to workplace aggression: a cyclical model of burnout and vulnerability to aggression. *Work and Stress*, 16, 302-315.