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Schema modes in criminal and violent behaviour of forensic cluster B PD patients: A retrospective and prospective study

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Purpose. A clear understanding of an offender's criminal behaviour is a prerequisite for determining suitable treatment. In the literature, several specific frameworks or therapeutic approaches that aim to explicate criminal behaviour can be distinguished (e.g., cognitive analytic therapy, offence paralleling behaviour paradigm), but Schema Therapy (ST) is becoming an increasingly popular paradigm. According to forensic ST's theoretical framework, criminal and violent behaviour can be explained by an unfolding sequence of schema modes, or moment-to-moment states that represent emotions, cognitions, and behaviour. In this study, we examine the validity of this theory and the relationship between schema modes, psychopathy, and institutional violence.

Methods. Schema modes were assessed retrospectively from descriptions of patients' crimes in a sample of 95 hospitalized cluster B personality disordered offenders. Psychopathy was rated with the Psychopathy Checklist-Revised and institutional transgressions were coded from daily hospital reports.

Results. Our findings show that criminal behaviour is often preceded by schema modes that refer to feelings of vulnerability and abandonment, loneliness, and states of intoxication. Criminal behaviour itself is characterized by schema modes that refer to states of impulsivity, anger, and the use of overcompensatory strategies involving threats, intimidation, and aggression. Schema modes involving bullying and manipulation were

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positively correlated with the interpersonal facet of psychopathy; the vulnerable child mode was negatively correlated with the affective facet of psychopathy. The schema modes in this study moderately predicted later institutional transgressions.

Conclusions. Our findings suggest that the schema mode concept is of explanatory value in understanding criminal and violent behaviour.

Personality disorders (PDs) are highly prevalent in institutional settings with prevalence rates typically ranging from 50 to 90% (Blackburn, Logan, Donnelly, & Renwick, 2003; Leue, Borchard, & Hoyer, 2004; Timmerman & Emmelkamp, 2001). Although there is a well-established link between PD traits and violence in general (e.g., Cooke, 2010; Fountoulakis, Leucht, & Kaprinis, 2008; Nestor, 2002), PD offenders are associated with an even increased risk for institutional violence and re-offending compared with other offenders (e.g., offenders with psychotic disorders; Coid, Hickey, & Yang, 2007; Hiscoke, Långström, Ottosson, & Grann, 2003; Jamieson & Taylor, 2004; Langton, Hogue, Daffern, Mannion, & Howells, 2011; Leistico, Salekin, DeCoster, & Rogers, 2008).

A clear understanding of an offender's criminal behaviour is a prerequisite for determining suitable treatment. After all, forensic treatment focuses on psychopathology and the causes of crime; the ultimate goal is the reduction in risk for violent and criminal behaviour and thus to protect society against violent and criminal behaviour (e.g., De Ruiter & Hildebrand, 2007; Maden, Williams, Wong, & Leis, 2004; Van Marle, 2002). In the literature, several specific frameworks or therapeutic approaches that aim to explicate criminal (sexual) behaviour can be distinguished. For example, cognitive analytic therapy (CAT; Ryle, 1995; Ryle & Kerr, 2002) analyses an offender's index offence and its scenario in terms of the relationships between victim and perpetrator (Pollock, Stowell-Smith, & Göpfert, 2006). CAT analyses the 'reciprocal role procedure' (RRP) repertoires, or interactive patterns of intentions/motivations, feelings, thoughts, and behaviour that are evident in the patients' relationships and self-management. The most significant RRP is that between offender and victim, which represents the perpetrator's position in relation to the victim. For instance, in case of a theft, the offender's position (i.e., RRP) is to manipulate so that the victim can be exploited (Pollock *et al.*, 2006). A second framework that aims to explain criminal behaviour is the *Pathways model* (Ward *et al.*, 2004). According to this model, there are four explicit pathways that explain sexual offending that refers to an offender's overall coping responses: the avoidant/passive pathway, the avoidant/active pathway, the approach/automatic pathway, and the approach/explicit pathway (Ward *et al.*, 2004). A third framework for sexual criminal behaviour is the *integrated theory of sexual offending* (ITSO; Ward & Beech, 2006). According to the ITSO, sexual transgressions occur as a result of three main interacting factors: dysfunctional biological functioning (e.g., brain defects, genetic predispositions), ecological factors (e.g., societal triggers), and neuropsychological elements (e.g., motivation and social learning). The combination of these factors generates clinical symptoms such as cognitive distortions, emotional problems, and deviant arousal through which sexual offending occurs (Ward & Beech, 2006). A fourth framework for criminal and violent behaviour is the offence paralleling behaviour framework (OPB; Jones, 2004, 2010). The behaviours, beliefs, and affects in the lead up to the offence are believed to be similar to current behaviour because it has the same function or is driven by the same process (Daffern, Lawrence, *et al.*, 2007; Jones, 2010). A fifth framework is Schema Therapy's (ST) concept of *schema modes* or moment-to-moment emotional states which dominate a person's thinking, feeling, and behaviour (Rafaeli, Bernstein, & Young, 2011; Young, Klosko, & Weishaar, 2003). 'Schema modes' is a state-like concept that combines

maladaptive schemas and dysfunctional coping styles, therefore, schema modes represent emotions as well as a person's cognitions and behaviour at a particular point in time. Emotions and schema modes are not synonymous concepts. According to forensic ST's theoretical framework, the events leading up to and culminating in the commission of criminal and violent behaviour can be explicated by an unfolding sequence of schema modes (Bernstein, Arntz, & de Vos, 2007).

The focus of this article is on ST because it is becoming an increasingly popular paradigm for practitioners both in general psychiatric settings as well as in forensic settings (e.g., Lobbestael, van Vreeswijk, & Arntz, 2008). There are, nevertheless, several similarities between ST and other frameworks (e.g., CAT and OPB). For example, the sequence of schema modes is comparable with CAT's sequential RRP diagrams (Ryle, 1995; Pollock *et al.*, 2006) and OPB's chain of events (Jones, 2004, 2010), and ST is partly based on psychoanalytic (transactional) concepts (i.e., ego states; Berne, 1961; Watkins & Watkins, 1997). What distinguishes ST from other therapies or frameworks is that it has a more integrative focus compared to other therapies. For instance, CAT is described as integrative, but is actually more rooted in psychoanalytic object relations theory compared to ST which is rooted in psychoanalytic, cognitive (behavioural), and experiential theory. Also, unlike most other CBT- or CAT-oriented treatments that are applied to a diversity of disorders, ST was specifically developed as a treatment for PDs (Pollock *et al.*, 2006; Young *et al.*, 2003). A third difference is that ST focuses on internal processes, whereas CAT has an interpersonal focus (Pollock *et al.*, 2006; Young *et al.*, 2003). There is an increasing body of empirical evidence for ST and its schema mode concept in non-forensic patients (Arntz, Klokman, & Sieswerda, 2005; Bamelis, Renner, Heidkamp, & Arntz, 2011; Giesen-Bloo *et al.*, 2006; Farrell, Shaw, & Webber, 2009; Lobbestael, Arntz, & Sieswerda, 2005), but the validity of this concept in offender populations is still limited or absent.

This study is a first test of the validity of ST theory with regard to criminal and violent behaviour committed by forensic PD patients. According to this theory, criminal behaviour originates from a progression of schema modes. For example, these sequences can be triggered by painful feelings (e.g., loneliness, vulnerability), frustration, anger, or impulsivity. In other cases, they may involve deliberation and planning, for example, to obtain a desired goal. Once initiated, these patterns can take on a 'life of their own', as further modes are triggered, for example, attempts to quell painful feelings through drug or alcohol use, or overcompensatory attempts to cope with emotions, such as bullying, manipulating, or using predatory aggression. Four flow charts that provide a simplified explanation of how schema modes can lead from trigger to violence and crime are presented in Figure 1. In forensic patients, five specific 'forensic' schema modes are common. They refer to deception, predatory behaviour, intimidation, and aggression (Bernstein *et al.*, 2007; Keulen-de Vos, Bernstein, & Arntz, 2013). The angry protector mode is a state of indirect, controlled anger or hostility to protect a person from perceived threat or danger. Facial expression, critical comments, and non-verbal behaviour aim to keep emotional distance. Predator mode refers to a state of cold, ruthless, and premeditated aggression in which the individual focuses on callously eliminating a real or imagined threat, rival, or obstacle. Conning and manipulative mode is a state involving conning, lying, and manipulating others to achieve a specific goal. The paranoid overcontroller mode involves attempts to seek out and therefore control a source of danger or humiliation.

The aims of this study were to (1) compare schema modes observed in the events leading up to the crime and those observed during the crime, rated from crime
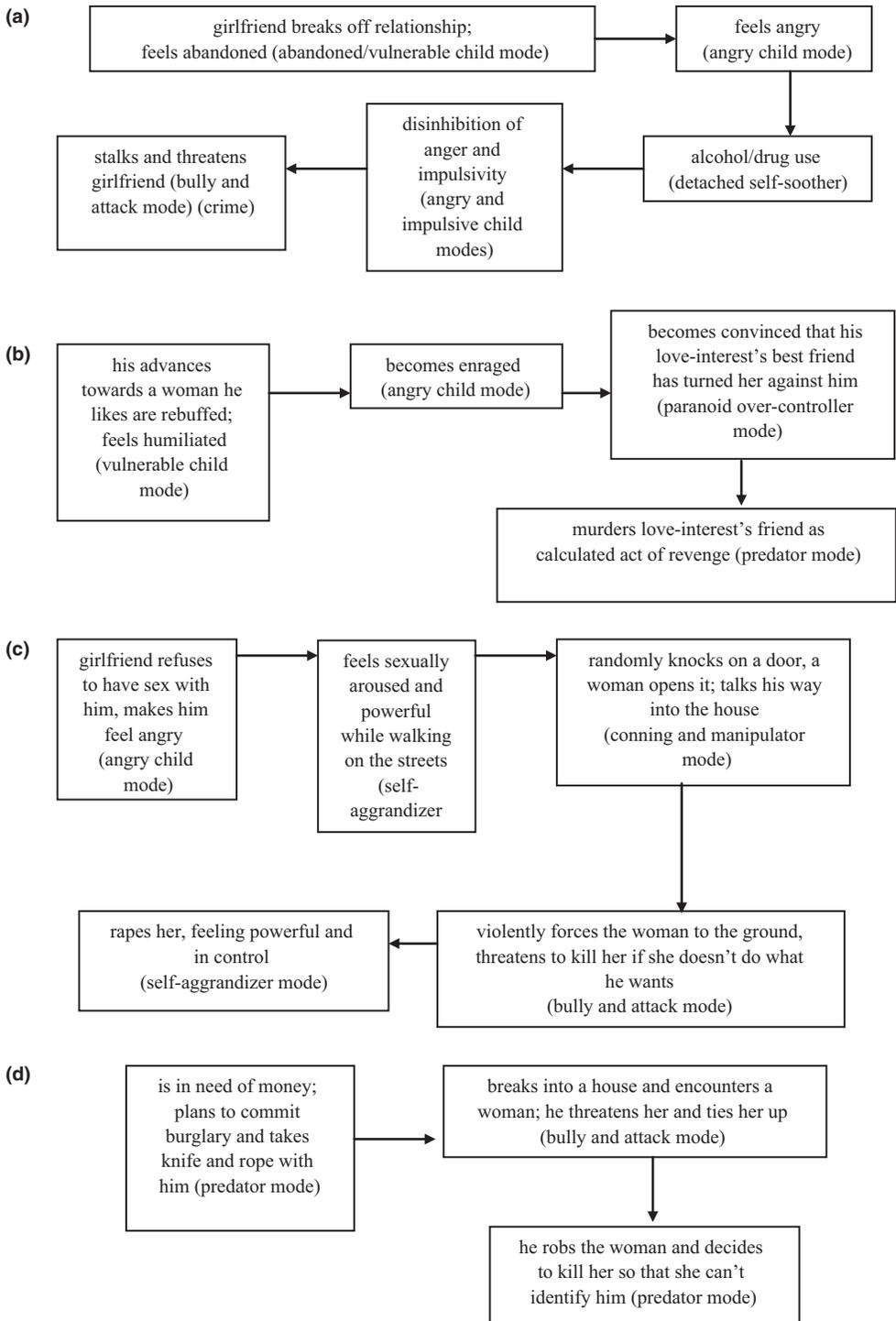
(a)

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┌─────────────────────────────────────┐      ┌──────────────────┐
│ girlfriend breaks off relationship;  │ ───▶ │ feels angry      │
│ feels abandoned (abandoned/vulnerable│      │ (angry child     │
│ child mode)                          │      │ mode)            │
└─────────────────────────────────────┘      └──────────────────┘
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girlfriend breaks off relationship; feels abandoned (abandoned/vulnerable child mode) → feels angry (angry child mode)

disinhibition of anger and impulsivity (angry and impulsive child modes)

stalks and threatens girlfriend (bully and attack mode) (crime)

alcohol/drug use (detached self-soother)

(b)

his advances towards a woman he likes are rebuffed; feels humiliated (vulnerable child mode) → becomes enraged (angry child mode) → becomes convinced that his love-interest's best friend has turned her against him (paranoid over-controller mode)

murders love-interest's friend as calculated act of revenge (predator mode)

(c)

girlfriend refuses to have sex with him, makes him feel angry (angry child mode) → feels sexually aroused and powerful while walking on the streets (self-aggrandizer → randomly knocks on a door, a woman opens it; talks his way into the house (conning and manipulator mode)

rapes her, feeling powerful and in control (self-aggrandizer mode) ← violently forces the woman to the ground, threatens to kill her if she doesn't do what he wants (bully and attack mode)

(d)

is in need of money; plans to commit burglary and takes knife and rope with him (predator mode) → breaks into a house and encounters a woman; he threatens her and ties her up (bully and attack mode)

he robs the woman and decides to kill her so that she can't identify him (predator mode)

Figure 1. Flow chart examples of how schema modes can lead from trigger to violence/crime.

descriptions in patients' charts; (2) examine the relationship between these mode ratings and the facets of psychopathy, based on the Psychopathy Checklist-Revised (PCL-R; Hare, 2003); and (3) examine the relationship between these schema modes and institutional violence, assessed prospectively using an incident classification system (Hildebrand, de Ruiter, & Nijman, 2004). Thus, we investigated several aspects of the construct validity of schema modes in forensic PD patients, including their role in the sequence of events leading up to and culminating in criminal and violent behaviour; relationship with psychopathy facets; and ability to predict future violence and other institutional incidents. We hypothesized that there will be more intense schema modes such as loneliness, anger, and vulnerability (i.e., 'child modes') and self-soothing behaviour (i.e., detached self-soother mode) in the events leading up to the crime than during the crime, and more overcompensatory modes (i.e., bully and attack, paranoid overcontroller, conning manipulator, and predator modes) during the crime than before the crime. This hypothesis is based on the ST model which postulates that criminal and violent behaviour often represents maladaptive attempts to cope with painful or unpleasant feelings (Bernstein *et al.*, 2007), and is consistent with previous research that has shown that negative emotions can ignite aggression (Ronel, 2011; Stuewig, Tangney, Heigel, Harty, & McCloskey, 2010). Next, we hypothesized positive correlations between overcompensatory schema modes rated during crimes and the interpersonal facet of psychopathy on the PCL-R because these constructs tap into similar interpersonal characteristics, such as self-aggrandizement, deceit, and manipulation (Hare, 2003). We also hypothesized that child modes rated in the period leading up to the crime would be positively correlated with the antisocial lifestyle and antisocial behaviour facets of psychopathy, consistent with our view that these modes play a prominent role in triggering criminal and aggressive behaviour. Finally, with regard to institutional incidents, we hypothesized that both child and overcompensatory modes rated during the events leading up to the crime and during the crime itself would predict institutional incidents at the start of treatment. This hypothesis is based on the idea that schema modes represent risk factors for future antisocial behaviour (Bernstein *et al.*, 2007), and is consistent with research indicating that prior criminal behaviour and emotional deficits are predictors of institutional misconduct (Bonta, Law, & Hanson, 1998; Gendreau, Goggin, & Law, 1997; Gray *et al.*, 2003).

Method

Setting

The study was conducted at seven forensic psychiatric inpatient facilities ('TBS[1] hospitals') in The Netherlands. Under Dutch criminal law, patients can be admitted involuntarily to forensic hospitals if the accountability for their crimes is judged to be diminished because they suffer from mental disorder(s). The average length of stay in TBS hospitals is 8–9 years (Brand & van Gemmert, 2009), during which patients engage in a multi-modal treatment regimen including psychotherapy, vocational training, and other services. Every 1–2 years the criminal court decides whether treatment should be prolonged/terminated. This depends on the risk for re-offending as described in an advice of the hospital by an independent committee of experts. The most common forms of psychopathology in TBS hospitals in The Netherlands are PDs, psychotic disorders,

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[1] *"Ter beschikking stelling" (TBS) can be translated as 'disposal to be treated on behalf of the state.'*

substance abuse disorders, paraphilias, and mental retardation (Emmerik, 2001; Hilde-brand & de Ruiter, 2004; Timmerman & Emmelkamp, 2001).

Sample

The sample consisted of 95 male offenders who were participating in a Dutch multicenter randomized clinical trial (RCT) on the effectiveness of ST versus treatment as usual (TAU) in forensic inpatients with Antisocial, Borderline, Narcissistic, or Paranoid PDs (Bernstein *et al.*, 2012). Patients gave informed written consent for all study procedures, and were randomly assigned to receive 3 years of either twice a week ST or once a week TAU. Patients were assessed at baseline and every consecutive 6 months over the 3-year course of treatment.

Inclusion criteria for the RCT were the presence of a DSM-IV-TR (APA, 2001), Antisocial, Borderline, Narcissistic, or Paranoid PD, or PD NOS with a minimum of five cluster B traits. Patients with (1) the presence of current psychotic symptoms, (2) schizophrenia or bipolar disorder, (3) current drug or alcohol dependence (but not abuse), (4) low intelligence (i.e., full scale IQ < 80), (5) serious neurological impairment (e.g., dementia), (6) an autistic spectrum disorder (e.g., autism, Asperger's disorder), or (7) paedophilia, exclusive type (i.e., a fixated sexual preference for children) were excluded from the study because they require specialized treatment that was beyond the scope of the RCT (e.g., Krampe *et al.*, 2006).

The mean age of the sample at the time of enrolment was 38.5 years (*SD* = 9.8). Mean age at the time of first conviction was 20.7 years (*SD* = 7.3). The average length of stay in a particular forensic psychiatric hospital was 27.6 months (*SD* = 17.2). Regarding the type of crime committed, 37 patients (38%) were convicted for (attempted) murder or (attempted) manslaughter, 27 patients (28.6%) for sexual offences, 27 patients (28.5%) for (attempted) aggravated assault, theft, and property crimes, and three patients (3.2%) for arson.

Among DSM-IV-TR Axis I disorders (APA, 2001), substance-related disorders were the most prevalent (74.7%, *n* = 71), followed by mood disorders (17.9%, *n* = 17), anxiety disorders (15.8%; *n* = 15), paraphilias (13.7%; *n* = 13), pathological gambling (10.5%; *n* = 10), and attention-deficit hyperactivity disorder (7.4%; *n* = 7). Among DSM-IV-TR Axis II disorders (APA, 2001), 57.9% (*n* = 55) of the patients were diagnosed with an Antisocial PD, 17.9% (*n* = 17) with a Borderline PD, 21.1% (*n* = 21) with a Narcissistic PD, 1.1% (*n* = 1) with a Paranoid PD, and 21.1% (*n* = 21) with a PD NOS with a minimum of five cluster B PD traits. Twenty-five patients (26.3%) were diagnosed with more than one PD: Nine patients were diagnosed with both Antisocial and Borderline PD, 11 with Antisocial and Narcissistic PD, two with Borderline and Narcissistic PD, two with Antisocial, Borderline, and Narcissistic PD, and one with Narcissistic and Paranoid PD. Average psychopathy score in this sample, as measured with the PCL-R (Hare, 2003), was 24.3 (*SD* = 6.7); about half of the sample (47.4%) had scores indicative of psychopathy when using a cut-off of ≥25. Fifteen patients (16.1%) had PCL-R scores of 30 or higher. Patients' mean full scale IQ, as measured with the Wechsler Adult Intelligence Scale-III (Wechsler, 1997), was 92.8 (*SD* = 10.9).

Measures

Diagnostic assessments for axis I and axis II disorders were conducted using the Dutch versions of the Structured Clinical Interview for DSM Axis I Disorders (SCID-I; First, Gibbon, Spitzer, Williams, & Benjamin, 1997) and Structured Interview for DSM-IV

Personality Disorders (SIDP-IV; Pfohl, Blum, & Zimmerman, 1995). Both instruments are widely used internationally and have demonstrated to have good psychometric properties in numerous studies (e.g., Damen, De Jong, & Van der Kroft, 2004; Skre, Onstad, Torgersen, & Kringlen, 1991; Torgersen *et al.*, 2008). In a subsample of 23 patients, the inter-rater reliabilities for the SIDP-IV main diagnoses in our study were intra-class correlation coefficients (ICCs) = .73 for Antisocial PD, .75 for Borderline PD, .92 for Narcissistic PD, and .80 for Paranoid PD. With regard to the SCID-I, there was perfect agreement (100% agreement) in a subsample of 14 patients for all diagnoses, expect for mood disorders and pathological gambling which reached 84% agreement.

MOS

The Mode Observation Scale (MOS; Bernstein, de Vos, & Van den Broek, 2009) is an observational instrument that assesses the *intensity* of schema modes. The MOS is typically used in clinical situations, such as individual or group therapy sessions. Ratings can pertain to entire situations/sessions or to parts of it, for example, the last 5 min. The MOS consists of 18 schema modes that are rated on a 5-point Likert scale (1 = *absent*; 5 = *extremely intense*). Schema mode domain scores can be calculated by taking the mean of corresponding schema modes within each domain. See Table 1 for detailed domain descriptions. The two main domain scores that were relevant for our study were the child mode and overcompensatory domain scores. Child modes refer to emotions such as loneliness, anger, and feelings of abandonment that are expressed in a child-like manner. Overcompensatory modes involve extreme attempts to compensate for these feelings and behaviours. The MOS has been specifically developed for forensic patients,

Table 1. Schema mode descriptions and their connection with criminal and violent behaviour

Schema modes	
Child modes	Involve feeling, thinking, and acting in a 'child-like' manner
Vulnerable child	Feels vulnerable, overwhelmed with painful feelings (e.g., shame, humiliation)
Angry child	Feels and expresses anger in response to perceived or real abandonment, or humiliation
Impulsive child	Acts impulsively to get needs met
Lonely child	Feels lonely and empty
Avoidant/coping modes	Involve attempts to protect oneself from pain
Detached self-soother	Uses repetitive, addictive, or compulsive behaviours to calm and sooth oneself
Overcompensatory modes	Involve extreme attempts to compensate for feelings of shame, loneliness, or vulnerability
Self-aggrandizer	Feels superior, looks down on others; acts in a self-important manner
Bully and attack	Uses threats, intimidation, aggression, or coercion to get what he wants
Conning and manipulative	Cons, lies, or manipulates in a manner designed to achieve a specific goal
Predator	Focuses on eliminating a threat/rival in a cold, ruthless, and calculating manner
Paranoid overcontroller	Attempts to protect oneself from a perceived or real threat by focusing attention, ruminating, or exercising extreme control

Note. The mode descriptions are adapted from Young *et al.* (2003).

and has shown good inter-rater reliability in a number of studies when rating videotapes of therapy sessions. In a recent study, the inter-rater agreement (ICC) for schema mode domains for average raters ranged from .65 to .86 (median = .76; Van den Broek, Keulen-de Vos, & Bernstein, 2011). These findings have been replicated in another study, where the ICC for average raters ranged from .40 to .99 (median = .96) for schema mode domains, and from .04 to .99 (median = .85) for the individual schema modes (Keulen-de Vos, Van den Broek, Bernstein, Vallentin, & Arntz, 2012).

The descriptions in the MOS manual reflect typical behaviours, emotions, and verbal expressions of particular modes that can be observed in therapeutic situations (e.g., therapy sessions). For this study, we adapted the MOS manual by including typical examples of how modes might be reflected in criminal behaviour, as observed in the descriptions of patients' crimes that are found in their charts. For example, for self-aggrandizer mode, we added 'patient describes his crime as an act of asserting dominance towards others' and 'patient comes across as superior' before or during his crimes. In another example, for predator mode, we added 'patient describes core feelings of hatred', 'patient describes that crime was planned in advance,' and 'aggression comes across as cold and ruthless' to the descriptions in the MOS manual.

When patients committed more than one crime, we made separate mode ratings for each crime. This was the case for 13 patients (13.7%) in our sample. Typically, these crimes were almost identical in terms of type of crime (e.g., robbery, rape, murder) and in terms of which modes were scored. For example, the events leading up to both crimes were rated with the same mode score. This was the case for all 13 patients; therefore, we averaged the ratings of the different crimes.

For reliability purposes, records of 26 were rated by two raters; all other 69 files were rated by a single rater. The ratings of charts that were rated by two raters were averaged for the analyses in this study. In the subsample of 26 patients, the single-rater, inter-rater agreement for the schema modes during the events leading up to the crime ranged from .54 to .91 (median = .74) for the child modes and from .26 to .97 (median = .90) for the overcompensatory schema modes. The inter-rater agreement for detached self-soother was .91. The ICC for the schema modes rated during the crimes ranged from .83 to .94 (median = .83) for the child modes and .78 to .85 (median = .81) for the overcompensatory modes. The ICC for detached self-soother was .82. The inter-rater reliabilities for the individual modes are presented in Table 2.

PCL-R

The PCL-R (Hare, 2003) is an instrument that diagnoses patient's levels of psychopathy based on a semistructured interview and file review (e.g., collateral information). The PCL-R consists of 20 items that are rated on a 3-point Lickert scale (0 = *item does not apply*, 1 = *item applies to a certain degree*, 2 = *item definitively applies*). The total score can range from 0 to 40. This instrument yields either a two- (Harpur, Hakstian, & Hare, 1988), three- (Cooke & Michie, 2001) or four-factor (Hare, 2003; Vitacco, Neumann, & Jackson, 2005) structure that shows which specific areas of functioning are impaired. In our study, we have chosen the four-factor model in which Factor 1 refers to interpersonal characteristics (e.g., superficial charm, grandiose sense of self), Factor 2 to affective features (e.g., lack of empathy, shallow affect), Factor 3 to lifestyle characteristics (e.g., impulsivity, irresponsibility), and Factor 4 to antisocial behaviour (e.g., lack of behavioural control in adulthood and childhood; Hare, 2003; Vitacco *et al.*, 2005). International research has shown that the PCL-R is a reliable and valid instrument (e.g., Bodholdt,

Table 2. Sample descriptives and comparisons

Schema modes	Events leading up to the crime				Crime				Paired samples *t*-test		
	%	*M*	SD	ICC	%	*M*	SD	ICC	*t*	df	*p*
Child domain	88.4	1.79	0.52	.70	57.9	1.44	0.52	.69	4.72	94	<.01
Vulnerable child	74.8	2.98	1.39	.76	0.0	1.00	0.00	.83	13.97	94	<.01
Angry child	33.8	1.63	1.03	.74	40.2	2.01	1.39	.81	−2.79	94	<.01
Impulsive child	6.3	1.11	0.42	.54	25.8	1.76	1.15	.94	−4.92	94	<.01
Lonely child	14.8	1.36	0.97	.91	1.1	1.02	0.21	[a]	3.07	94	<.01
Detached self-soother	68.5	2.97	1.54	.91	41.3	2.23	1.60	.82	5.02	94	<.01
Overcompensatory domain	44.2	1.20	0.28	.86	82.1	1.54	0.36	.84	−7.73	94	<.01
Self-aggrandizer	20.0	1.39	0.89	.90	19.0	1.40	0.90	.78	−0.10	94	.92
Bully and attack	3.3	1.05	0.30	[a]	62.3	2.50	1.35	.85	−9.91	94	<.01
Conning and manipulative	13.7	1.24	0.74	.94	17.0	1.38	0.98	.78	−1.85	94	.07
Predator	2.2	1.03	0.23	.26	20.1	1.36	0.79	.84	−3.94	94	<.01
Paranoid overcontroller	18.0	1.29	0.71	.97	3.2	1.07	0.42	[a]	3.56	94	<.01

Note. N = 95. % = percentage of patients who showed any evidence of modes, that is, scores of 2 or higher; ICC = intra-class coefficient.
[a]No variance.

Richards, & Gacono, 2000; Hare, Clark, Grann, & Thornton, 2000; Hemphill, Hare, & Wong, 1998; Hildebrand, de Ruiter, de Vogel, & van der Wolf, 2002; Wong & Hare, 2005). In a subsample of 83 ($n = 83$) patients, the ICC for average raters of the PCL-R total score in our study was .92 (Factor 1 = .82; Factor 2 = .80; Factor 3 = .89; Factor 4 = .91). Ratings were also internally consistent (Cronbach's alpha for the PCL-R total score = .80).

Incidents

Information on institutional violence was obtained from clinical data, such as daily bulletins and incident reports that were present at a particular hospital. We used an institutional violence scheme based on the scheme used by Hildebrand *et al.* (2004) and De Vogel (2005) to assign transgressions to four different categories: verbal abuse, verbal threat, physical violence, and violation of hospital rules. Recent research has shown excellent inter-rater agreement in a sample of a hundred incidents (observed agreement = 92%; Hildebrand *et al.*, 2004). In our study, the data were based on clinical data, therefore no inter-rater agreement information was available.

Procedure

Approval for the RCT was obtained by the Medical Ethical Committee of a University Hospital in the south of The Netherlands. The study presented in this study was also approved by the Ethical Committee of a University's Faculty of Psychology and Neuroscience in the south of The Netherlands. The PCL-R scores were either retrieved from existing diagnostic files or specifically determined for our study. The existing information was rated in consensus by two highly experienced raters, typically, the scores were determined by researchers, psychologists, heads of treatment, or other members of the treatment team. If the PCL-R scores were not included in existing patient files, the

scores were determined by research assistants with extensive training in this instrument. For the analyses in this study, the PCL-R consensus scores and incident ratings coded from daily hospital bulletins at the start of treatment were used. At that time, patients were admitted in the designated forensic hospital for approximately 28 months. In total, 95 institutional incidents were rated.

For this study, we used patient files of 95 patients who were enrolled in the RCT to extract the events and emotional states that lead up to the crime, and descriptions of the crime itself. The descriptions of patient's crimes that were found in their charts typically included statements given by the patient as well as police reports that included victims' and witnesses' statements. This enabled us to make inferences about modes based on their subjective aspects (e.g., patients' reflections on their own emotional states) and objective ones (e.g., accounts from victims and others who observed the patient).

Randomized clinical trial research assistants were asked to extract the aforementioned information. The raters (M.K and S.V.) were blind to any identifying and diagnostic information. The descriptions of the crime and events leading up to the crime were rated with the MOS. Also, the descriptions were rated on a 3-point scale (1 = *poor*; 2 = *moderate*; 3 = *excellent*) with regard to the quality of the information. With regard to the events leading up the crime, 77.9% of the cases were rated as containing excellent information, 20% as moderate, and 2.1% as poor. Of the descriptions of the criminal acts itself, 78.9% were rated excellent, 16.8% as moderate, and 4.2% as poor.

Prior to the study we have pilot tested whether it was feasible to assess schema modes based on descriptions of criminal behaviour and events leading up to this behaviour. Criminal records of 10 non-RCT patients were blindly rated with the MOS by two researchers (M.K and S.V.). A research assistant at one of the sites in our study provided this information anonymously. Inter-rater reliability analyses for the schema modes of the events leading up to the crime showed good ICC for average raters with ICC's ranging from .26 to .97 (median = .88). With regard to schema modes during criminal behaviour, ICC ranged from .89 to .99 (median = .95).

Statistical analyses

For the analyses reported here, we used the 5-point mode ratings that referred to the individual and domain ratings for the child modes, detached self-soother, and the overcompensatory modes because ST theory predicts that these modes are typically activated in forensic PD patients during criminal acts. The intensity of the other modes (e.g., internalized parent modes) was disregarded in the analyses because we wanted to limit the number of comparisons and because there were very few instances of these modes appearing in the descriptions of the events leading up to the crime and the descriptions of the crimes itself. For example, the intensity of most of these modes was rated as 1 (absent) of 5, with exception of the detached protector mode in the events leading up to the crime which was rated 3 (moderate) of 5 in five (5.3%) instances.

The level of absolute agreement between raters was assessed with reliability analyses using the ICC (Shrout & Fleiss, 1979) with a two-way mixed-effects model because the raters were the same for every patient. To test for significant differences in schema mode scores between 'events leading up to the crime' and the crime, we used paired samples *t*-tests with a two-tailed alpha of .05. We corrected our alpha for multiple comparisons according to the false discovery rate correction for 22 tests (11 Emotions × 2 Situations), using a *p*-value of $p < .0136$ (see Narum, 2006, p. 787). Statistical analyses examining the

skewness and kurtosis of our sample showed non-normal distribution for several schema modes. The relationship between schema modes and psychopathy was therefore examined using Spearman correlations. The predictive value of schema modes on institutional violence was examined using multivariate linear regression analyses, with various schema modes as independent variables and the total number of different incident types as dependent variable (e.g., total number of verbal aggression, verbal threat, physical violence, violation of hospital rules, total number of incidents). These regression analyses were repeated for both the schema modes that related to the events leading up to the crimes and the crime-related schema modes. All data were analysed with the Statistical Package for the Social Sciences (SPSS, 2009), version 17.0.

Results

Differences in schema modes

Table 2 presents the mean scores, standard deviations, the percentage of patients who showed evidence of schema modes (i.e., scores of 2 or higher), and comparisons of means for the MOS for both events leading up to the crime and criminal behaviour. Consistent with our hypothesis, paired samples t-tests showed that patients experienced significantly greater vulnerable child mode prior to the crime ($M = 2.98$, $SE = .14$) than when committing the crime ($M = 1.00$, $SE = .00$, $t(94) = 13.98$, $p < .01$, $r = .82$). Patients also experienced significantly more intense lonely child mode in the events leading up to the crime ($M = 1.36$, $SE = .10$) than during the criminal act ($M = 1.02$, $SE = .02$, $t(94) = 3.30$, $p = .005$, $r = .32$). In contrast, patients did experience significantly more angry child mode during the criminal acts ($M = 2.02$, $SE = .14$) than prior to it ($M = 1.03$, $SE = .11$, $t(94) = -2.79$, $p = .006$, $r = .27$). Also patients experienced more impulsive child modes during their criminal acts ($M = 1.76$, $SE = .12$) than the events preceding it ($M = 1.11$, $SE = .04$, $t(94) = -4.92$, $p < .01$, $r = .46$). Overall, the child domain mode score was significantly greater in the events leading up to the crime ($M = 1.80$, $SE = .05$), than during the criminal acts ($M = 1.45$, $SE = .05$, $t(94) = 4.72$, $p < .01$, $r = .45$). As expected, patients experienced more detached self-soother mode in the events leading up to the crime ($M = 2.97$, $SE = .16$), than during the criminal acts ($M = 2.23$, $SE = .16$, $t(94) = 5.02$, $p < .01$, $r = .46$).

Consistent with our hypotheses patients experienced greater overcompensatory schema modes when committing their crimes than in the events preceding this behaviour, however, only for two specific overcompensatory schema modes. Particularly, patients showed more bully and attack mode during the crimes ($M = 2.50$, $SE = .14$) than in the events leading up to the crimes ($M = 1.05$, $SE = .03$, $t(94) = -9.91$, $p < .01$, $r = .71$). Similar findings were found with regard to predator mode. More predatory behaviour was expressed during criminal behaviour ($M = 1.36$, $SE = .08$) than in the events leading up to the crimes ($M = 1.03$, $SE = .02$, $t(94) = -3.94$, $p < .01$, $r = .37$). There were no significant differences with regard to self-aggrandizer, and conning and manipulative mode. In contrast to our hypothesis, patients experienced more paranoid overcontroller mode in the events leading up to the crime ($M = 1.29$, $SE = .07$) than during their crimes ($M = 1.07$, $SE = .04$, $t(94) = 3.56$, $p < .01$, $r = .35$). Overall, the overcompensatory domain mode score was significantly greater during the criminal acts ($M = 1.54$, $SE = .04$), than during the events preceding this behaviour ($M = 1.20$, $SE = .03$, $t(94) = -7.73$, $p < .01$, $r = .62$).

Table 3. Spearman correlations between schema modes and psychopathy

| | | | | | Events leading up to the crime | | | | | | | |
	CD	VC	AC	IC	LC	DSS	OCD	SA	BA	CM	P	OC
Psychopathy												
PCL-R total score	−.21†	−.22*	−.21†	.11	−.02	.22†	−.28*	−.23*	.13	−.06	−.09	−.16
PCL-R Factor 1: interpersonal	−.12	−.24*	−.06	.08	.12	−.13	−.01	−.11	.26*	.26*	−.16	−.06
PCL-R Factor 2: affective	−.24*	−.38**	−.05	.02	−.08	.03	−.10	−.13	.16	.04	.08	−.01
PCL-R Factor 3: lifestyle	.06	.07	−.01	.16	.12	.32**	−.19	−.10	.02	−.12	.01	−.13
PCL-R Factor 4: antisocial	−.13	−.09	−.10	.07	−.03	.29*	−.22†	−.19	.07	−.19	−.07	−.01
Crimes												
Psychopathy												
PCL-R total score	−.04	a	−.02	−.10	.07	.17	−.00	−.26*	.21†	−.03	.16	−.18
PCL-R Factor 1: interpersonal	−.24*	a	−.10	−.26*	−.07	−.08	.11	−.09	.04	.36**	.01	−.19
PCL-R Factor 2: affective	−.02	a	.05	−.07	.02	.02	−.04	−.09	.01	.13	.06	−.17
PCL-R Factor 3: lifestyle	.07	a	.05	.02	.11	.30*	−.02	−.21	.19	−.06	.07	−.08
PCL-R Factor 4: antisocial	.07	a	.05	.01	.15	.20	−.05	−.20	.16	−.28*	.17	−.04

Note. N = 83. PCL-R consensus scores were missing in 12 patients.
PCL-R = Psychopathy Checklist-Revised; CD = child domain; VC = vulnerable child; AC = angry child; IC = impulsive child; LC = lonely child; OCD = over-compensatory domain; DSS = detached self-soother; SA = self-aggrandizer; BA = bully and attack; CM = conning and manipulative; P = predator; OC = paranoid overcontroller. Significant correlations are shown in bold.
[a]No variance.
*p < .05; **p < .01; †.06 < p < .08.

Schema modes and psychopathy

Table 3 presents the Spearman correlations between schema modes rated in the events leading up to the crime and during the crime, and the PCL-R factors. There were different patterns of correlations for the relationships between schema modes and psychopathy facets in the events leading up to crimes and during the crimes. With regard to the events leading up to the crime, the vulnerable child mode was negatively related to the PCL-R total score and facets 1 and 2; the detached self-soother mode was positively related with facets 3 and 4; the self-aggrandizer mode was negatively related with the PCL-R total score; and the bully & attack and conning & manipulative modes were positively related to facet 1. In contrast, during the crime, the impulsive child mode was inversely correlated with facet 1; the detached self-soother mode was positively related to facet 3; the self-aggrandizer mode was positively correlated with the PCL-R total score, whereas conning and manipulative mode was positively related to facet 1 and inversely related to facet 4.

Modes and institutional incidents

Finally, we examined the relationship between modes, assessed retrospectively from descriptions of the events leading up to the crimes and patients' crimes, and incidents assessed prospectively during their institutional stay. We performed five multivariate linear regressions for the events leading up to the crime and the crimes itself, alternating verbal aggression, verbal threat, physical violence, violation of hospital rules, and total number of incidents as dependent variables, and the individual child, overcompensatory modes, and detached self-soother mode as predictor variables.

With regard to the schema modes rated in the events leading up to the crime, the results showed that the vulnerable child and angry child mode were significant predictors, explaining 16% of the variance (r^2 unadjusted) in physical violence, $F(4, 68) = 3.19$, $p = .02$. The child mode domain score was a significant predictor, explaining 5% of the variance (r^2 unadjusted) in violation of hospital rules, $F(1, 71) = 4.02$, $p = .05$, and 7% of the variance (r^2 unadjusted) in the total number of incidents, $F(1, 71) = 4.97$, $p = .03$.

Analyses of the schema modes rated in criminal behaviour revealed that detached self-soother mode was a significant predictor, explaining 6% of the variance (r^2 unadjusted) in violation of hospital rules, $F(1, 71) = 4.45$, $p = .04$. The child mode domain was a significant predictor, explaining 7% (r^2 unadjusted) of the variance in violation of hospital rules, $F(1, 71) = 5.22$, $p = .03$, and 6% (r^2 unadjusted) of the total number of incidents, $F(1, 71) = 4.19$, $p = .04$. The overcompensatory mode domain score was a significant predictor, explaining 6% of the variance in physical violence, $F(1, 71) = 4.17$, $p = .04$. Other predictors for the various kinds of institutional violence were non-significant.

Discussion

Our findings are largely consistent with ST's theoretical model as applied to forensic patients, which hypothesizes that schema modes play a role in the events leading up and culminating in crimes and acts of violence (Bernstein *et al.*, 2007; Keulen-de Vos *et al.*, 2013). With regard to our first hypothesis, we found that, as predicted, more child modes were evident in the events leading up to the crime, and more overcompensatory modes in the events during the crime itself. In particular, the vulnerable and lonely child modes and

the detached self-soother mode were more apparent in the events leading up to criminal behaviour than during the crime itself, whereas bully and attack and predator modes were more present during the crimes than during the events leading up to the crimes. Thus, although we cannot confirm a causal relationship from these retrospective data, it does appear that vulnerable feelings, such as shame or abandonment, and loneliness, often played a role in triggering crimes, a view that is consistent with the literature on reactive aggression (e.g., Fontaine, 2007; Miller & Lynam, 2006; Vitacco *et al.*, 2009). Furthermore, it appeared that as events leading up to crimes progressed, patients' emotional states were characterized by escalating levels of anger and impulsivity, culminating in states of 'hot' aggression (i.e., bully and attack mode) and 'cold' predatory aggression (i.e., predator mode) during the crimes themselves. Moreover, this escalation appeared to be fuelled by drug and alcohol use (i.e., detached self-soother mode), which began in the period leading up to the crime and often continued, although at somewhat diminished levels, during the crime. This progression from painful, inner-directed emotions (i.e., vulnerable and lonely child modes) to states that involve anger, impulsivity, and aggression is consistent with our model that views aggression as often serving an overcompensatory function (Bernstein *et al.*, 2007; Keulen-de Vos *et al.*, 2013). According to this view, states involving aggression compensate for other, contrary emotional states, such as those involving feelings of weakness, fear, humiliation, or helplessness. When someone switches into an aggressive schema mode, it dominates his thoughts, feelings, and behaviour to the exclusion of other, contrary emotions (Bernstein *et al.*, 2007; Keulen-de Vos *et al.*, 2013). Consistent with this model, high levels of vulnerable emotions were observed in the period leading up to crimes, but *not at all* during the commission of crimes, when more aggressive modes predominated. Similarly, the observation that more detached self-soother mode was present in the events leading up to crimes than during the crime itself is consistent with our view that drug and alcohol use often represent an ineffective means of coping with painful emotions which serve to further disinhibit aggression (Bernstein *et al.*, 2007; Kersten, 2012; Keulen-de Vos *et al.*, 2013).

Our hypothesis that the other overcompensatory modes – the self-aggrandizer, conning and manipulative, and paranoid overcontroller modes – would be more present during than before crimes was not confirmed by these data. In fact, the paranoid overcontroller mode was more apparent in the events leading up the crime than during the crime. There appears to be a typical sequence of events involving the paranoid overcontroller mode, as illustrated in Figure 1b. The sequence starts when patients experience vulnerable emotions (e.g., shame, abandonment), but rapidly flip into a state of anger and resentment (i.e., angry child mode), and then into a paranoid state (i.e., paranoid overcontroller mode), where the patient focuses attention on the person whom he concludes is to blame for his injuries ('I'm hurt, so someone must be responsible for it'). Once the patient determines the target for his anger, he typically flips into an aggressive mode, such as bully and attack or predator mode, in which he carries out the crime. Thus, the paranoid overcontroller belongs to the sequence of events leading up to the crime, but not to commission of the crime itself. This sequence may help to clarify previous findings about the way in which mistrust and paranoid ideation are linked to violence (e.g., Appelbaum, Robbins, & Monahan, 2000; Tremblay & Dozois, 2009).

Our findings partially confirmed the hypothesis that the overcompensatory modes in the events leading up to the crimes are related to the interpersonal facet of psychopathy. The bully and attack mode and the conning and manipulative mode showed significant positive correlations with this facet, whereas the other three overcompensatory modes

(i.e., predator, paranoid overcontroller, and self-aggrandizer) did not. Furthermore, our hypothesis that the angry and impulsive child modes rated during the events leading up to the crimes would be correlated with the lifestyle and antisocial facets of psychopathy was not confirmed.

In the literature, a distinction is frequently made between reactive and instrumental aggression (e.g., Fontaine, 2007; Miller & Lynam, 2006; Vitacco *et al.*, 2009). Typically, reactive aggression arises in response to provocation, frustration, whereas instrumental aggression is premeditated and unemotional (Stanford *et al.*, 2003; Vitacco *et al.*, 2009). Previous research has shown that psychopathic offenders typically display more instrumental or proactive aggressive behaviour than non-psychopathic offenders (e.g., Cima & Raine, 2009; Cornell *et al.*, 1996; Reidy, Shelly-Tremblay, & Lilienfeld, 2011; Woodworth & Porter, 2002). Perhaps in some cases, the psychopaths in our sample were not triggered by frustrations or other emotions, but instead used their aggression instrumentally. Consistent with this view, the vulnerable child mode rated during the events leading up to the crime was negatively related with the PCL-R total score and with the affective and interpersonal facets of psychopathy. This is consistent with the literature that often describes the typical psychopath as emotionally detached or fearless (e.g., Blair, Mitchell, & Blair, 2005; Patrick, 1998; Steuerwald & Kosson, 2000; Stillman & Baumeister, 2010). These findings underscore the need for individualized assessment and treatment in ST for offenders, as different modes reflect different motives behind criminality and aggression.

Our study showed that child and overcompensatory schema modes predicted institutional violence to a moderate degree. First, feelings of vulnerability and anger (i.e., vulnerable and angry child modes) experienced in the events leading up to criminal behaviour were predictive for the degree of physically aggressive behaviour. Second, the overall score for the overcompensatory modes (i.e., overcompensatory domain score) scored during criminal behaviour was a significant predictor for physical violence. A possible explanation of the predictive value of the vulnerable child mode is that painful feelings, such as vulnerability, ignite violent behaviour (Scheff, 2011; Stuewig *et al.*, 2010). The finding with regard to angry child mode is in concordance with studies showing that previous anger or aggression is an indicator for institutional violence (e.g., McDermott, Quanbeck, Busse, Yastro, & Scott, 2008; Vitacco *et al.*, 2009). For example, a study by Doyle and Dolan (2006) showed that anger, as measured by the Novaco Aggression Scale (Novaco, 1994), was a predictor for physical aggression in a sample of a 100 mentally disordered offenders. In addition, there may be similarities between the context of the events leading up to criminal behaviour and the institutional context. For example, anger and frustration may be triggered as a result of the rules that are imposed upon offenders by staff members, which might, in turn, lead to a (perceived) inability to control a patient's behaviour and elicit feelings of frustration in staff (Daffern, Howells, & Ogloff, 2007). If a patient has displayed overcompensatory behaviour during his crime, this may reflect a patient's main 'modus operandi' to cope with frustration. If this is the case, it is no surprise that this behaviour is a predictor for physical institutional violence.

The findings of this study should be considered in the light of certain limitations. First, our study has a retrospective design; it is based on file review, therefore we had no direct access to a patient's emotional states during the events leading up to the crime and the criminal act. Results might have differed if we had used other measures to assess emotional states before and during crimes, such as self-reports or interviews with patients. A related restriction is that we did not establish the schema modes that patients experienced *after* the crime. Therefore, we cannot make any inferences about the patient's level of empathy

or remorse. This information would provide important information for clinical practice. Second, the study investigated the *intensity* of the schema modes that were present prior and during the crime and not the process of schema mode switching itself. Schema mode switching is one of the key principles in ST, it assumes that PD patients rapidly switch between distinct schema modes (Rafaeli *et al.*, 2011; Young *et al.*, 2003). However, two recent studies revealed that cluster B PD offenders can be deliberately switched in a particular schema mode (i.e., vulnerable child) (Keulen-de Vos *et al.*, 2012; Van den Broek *et al.*, 2011). Third, the quality of the information on which the ratings are based varied to a certain extent, which could have led to measurement error. On the other hand, we judged the quality of the information on which the ratings were based to be moderate to excellent for all but a small number of cases. Fourth, no inter-rater agreement information was available for the incident ratings because these were based on clinical data which were not checked for reliability. In the future, multiple kinds of instruments (e.g., file review, self-reports, interview) should be used to evaluate patients' emotional states. Also, the schema mode concept should be compared to other theories and models for explaining criminal behaviour, such as CAT, OPB, the Pathways model, and ITSO (Jones, 2004, 2010; Ryle, 1995; Pollock *et al.*, 2006; Ward & Beech, 2006; Ward *et al.*, 2004). Finally, although these findings are consistent with our conjectures about the relation-ships between modes and crime, we can make no definite inferences regarding causality from these retrospective data. On the other hand, the fact that schema modes, assessed retrospectively from patients' charts, were associated with facet scores on the PCL-R, a well-validated lifetime assessment of psychopathy, and with prospective ratings of institutional incidents, supports the validity of the schema mode ratings in this study.

This study was the first to assess schema modes in criminal behaviour in forensic cluster B PD patients. The findings support ST's forensic framework that emotional triggers are often the precipitant for violent and criminal behaviour and that this behaviour can be explicated by an unfolding sequence of schema modes. It also suggests that vulnerable emotions may play a lesser role in the crimes of some patients with more of the affective and interpersonal features of psychopathy, whose crimes may more reflect instrumental motives. These findings have important implications for forensic clinical practice. From a clinical perspective, this study leads to a better, more nuanced and substantiated understanding of which maladaptive emotional states play a prominent role in criminal behaviour and institutional incidents. Knowledge about schema modes in offenders can enhance or influence existing treatment approaches or programmes, including, of course, ST. For example, the link between criminal behaviour and schema modes might be incorporated in specific offender programmes which aim to clarify a patient's pattern of criminal offending. In forensic ST, ameliorating maladaptive schema modes is one of the main goals of treatment, with the aim of reducing the patient's risk of recidivism. This study helps to substantiate the link between schema modes and criminal behaviour, providing support for this treatment approach. In future studies, including a multicenter RCT of ST for forensic patients that is currently in progress in The Netherlands (Bernstein *et al.*, 2012), we will test the hypothesis that reducing maladaptive schema modes leads to diminished risk of recidivism for this challenging group of patients.

Acknowledgements

References

American Psychiatric Association (2001). *Diagnostic and Statistical Manual of Mental Disorders, Text Revision (DSM-IV-TR)*. Washington, DC: Author.

Appelbaum, P. S., Robbins, P. C., & Monahan, J. (2000). Violence and delusions: Data from the MacArthur Violence Risk Assessment Study. *American Journal of Psychiatry*, *157*, 566–572. doi:10.1176/appi.ajp.157.4.566

Arntz, A., Klokman, J., & Sieswerda, S. (2005). An empirical test of the schema mode model of borderline personality disorder. *Journal of Behavior Therapy and Experimental Psychiatry*, *36*, 226–239. doi:10.1016/j.jbtep.2005.05.005

Bamelis, L. L. M., Renner, F., Heidkamp, D., & Arntz, A. (2011). Extended schema mode conceptualizations for specific personality disorders: An empirical study. *Journal of Personality Disorders*, *25*, 41–58. doi:10.1521/pedi.2011.25.1.41

Berne, E. (1961). *Transactional analysis in psychotherapy: A systematic individual and social psychiatry*. New York, NY: Grove Press.

Bernstein, D. P., Arntz, A., & de Vos, M. E. (2007). Schema-Focused Therapy in forensic settings: Theoretical model and recommendations for best clinical practice. *International Journal of Forensic Mental Health*, *6*, 169–183.

Bernstein, D. P., de Vos, M. E., & Van den Broek, E. P. A. (2009). *Mode Observation Scale* (MOS). Unpublished manuscript.

Bernstein, D. P., Nijman, H., Karos, K., Keulen-de Vos, M. E., de Vogel, V., & Lucker, T. (2012). Treatment of personality disordered offenders in the Netherlands: Initial findings of a multicenter randomized clinical trial on the effectiveness of Schema Therapy. *International Journal of Forensic Mental Health*, *11*, S312–S324. doi:10.1080/14999013.2012.746757

Blackburn, R., Logan, C., Donnelly, J., & Renwick, S. (2003). Personality disorders, psychopathy and other mental disorders: Co-morbidity among patients at English and Scottish high security hospitals. *The Journal of Forensic Psychiatry and Psychology*, *14*, 111–137. doi:10.1080/1478994031000077925

Blair, J. R. J., Mitchell, D., & Blair, K. (2005). *The psychopath: Emotion and the brain*. Oxford, UK: Blackwell Publishing Ltd.

Bodholdt, R. H., Richards, H. R., & Gacono, C. B. (2000). Assessing psychopathy in adults: The Psychopathy Checklist-Revised and Screening version. In C. B. Gacono (Ed.), *The clinical and forensic assessment of psychopathy: A practitioner's guide* (pp. 55–86). Mahwah, NJ: Lawrence Erlbaum.

Bonta, J., Law, M., & Hanson, K. (1998). The prediction of criminal and violent recidivism among mentally disordered offenders: A meta-analysis. *Psychological Bulletin*, *123*, 123–142. doi:10.1037/0033-2909.123.2.123

Brand, E. F. J. M., & van Gemmert, A. A. (2009). *Toenemende verblijfsduur in de tbs. De ontwikkeling van de gemiddelde duur in de laatste 20 jaar*. [Increasing length of stay in 'TBS'. Developments over the last 20 years]. The Hague, The Netherlands: Ministry of Justice Department.

Cima, M., & Raine, A. (2009). Distinct characteristics of psychopathy relate to different subtypes of aggression. *Personality and Individual Differences*, *47*, 835–840. doi:10.1016/j.paid.2009.06.031

Coid, J. W., Hickey, N., & Yang, M. (2007). Comparison of outcomes following after-care from forensic and general adult psychiatric services. *British Journal of Psychiatry*, *190*, 509–514. doi:10.1192/bjp.bp.106.023044

Cooke, D. J. (2010). Personality disorders and violence: Understand violence risk – An introduction to the special section 'personality disorders and violence'. *Journal of Personality Disorders*, *24*, 539–550. doi:10.1521/pedi.2010.24.5.539

Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopathy: Towards a hierarchical model. *Psychological Assessment*, *13*, 171–188. doi:10.1037/1040-3590.13.2.171

Cornell, D. G., Warren, J., Hawk, G., Statford, E., Oram, G., & Pine, D. (1996). Psychopathy in instrumental and reactive violent offenders. *Journal of Consulting and Clinical Psychology*, *64*, 783–790. doi:10.1037/0022-006X.64.4.783

Daffern, M., Howells, K., & Ogloff, J. (2007a). What's the point? Towards a methodology for assessing the function of psychiatric inpatient aggression. *Behavior Research and Therapy*, *45*, 101–111. doi:10.1016/j.brat.2006.01.011

Daffern, M., Lawrence, J., Howells, K., Shine, J., Mikton, C., & Tunbridge, V. (2007b). Editorial: Refining the definition of offence paralleling behavior. *Criminal Behavior and Mental Health*, *17*, 265–273. doi:10.1002/cbm.671

Damen, K. F. M., De Jong, C. A. J., & Van der Kroft, P. J. A. (2004). Interrater reliability of the Structured Interview for DSM-IV Personality in an opioid-dependent patient sample. *European Addiction Research*, *10*, 99–104. doi:10.1159/000077697

De Ruiter, C., & Hildebrand, M. (2007). Risk assessment and treatment in Dutch forensic psychiatry. *Netherlands Journal of Psychology*, *63*, 166–175.

De Vogel, V. (2005). *Structured risk assessment of (sexual) violence in forensic clinical practice*. Dissertation Manuscript. Amsterdam, The Netherlands: Dutch University Press.

Doyle, M., & Dolan, M. (2006). Evaluating the validity of anger regulation problems, interpersonal style, and disturbed mental state for predicting inpatient violence. *Behavioral Sciences and the Law*, *24*, 783–798. doi:10.1002/bsl.739

Emmerik, J. (2001). *De terbeschikkingstelling in maat en getal*. [TBS in numbers]. The Hague, The Netherlands: Ministry of Justice Department.

Farrell, J. M., Shaw, I. A., & Webber, M. A. (2009). A schema-focused approach to group psychotherapy for outpatients with borderline personality disorder: A randomized clinical trial. *Journal of Behavior Therapy and Experimental Psychiatry*, *40*, 317–328. doi:10.1016/j.jbtep.2009.01.002

First, M., Gibbon, M., Spitzer, R., Williams, J., & Benjamin, L. (1997). *User's guide for the Structured Clinical Interview for the DSM-IV Axis I Disorders (SCID-I)*. Washington, DC: American Psychiatric Press.

Fontaine, R. G. (2007). Disentangling the psychology and law of instrumental and reactive subtypes of aggression. *Psychology, Public Policy, and Law*, *131*, 143–165. doi:10.1037/1076-8971.13.2.143

Fountoulakis, K. S., Leucht, S., & Kaprinis, G. S. (2008). Personality disorders and violence. *Current Opinion in Psychiatry*, *21*, 84–92. doi:10.1097/YCO.0b013e3282f31137

Gendreau, P., Goggin, C. E., & Law, M. A. (1997). Predicting prison misconducts. *Criminal Justice and Behavior*, *24*, 414–431. doi:10.1177/0093854897024004002

Giesen-Bloo, J., van Dyck, R., Spinhoven, P., van Tilburg, W., Dirksen, C., van Asselt, T., . . . Arntz, A. (2006). Outpatient psychotherapy for borderline personality disorder: A randomized clinical trial of schema focused therapy versus transference focused psychotherapy. *Archives of General Psychiatry*, *63*, 649–658. doi:10.1001/archpsyc.63.6.649

Gray, N. S., Hill, C., McGleish, A., Timmons, D., MacCulloch, M. J., & Snowden, R. J. (2003). Prediction of violence and self-harm in mentally disordered offenders: A prospective study of the efficacy of HCR-20, PCL-R, and psychiatric symptomatology. *Journal of Consulting and Clinical Psychology*, *71*, 443–451. doi:10.1037/0022-006X.71.3.443

Hare, R. D. (2003). *The Hare Psychopathy Checklist—Revised manual* (2nd ed.). Toronto, ON: Multi-Health Systems.

Hare, R. D., Clark, D., Grann, M., & Thornton, D. (2000). Psychopathy and the predictive validity of the PCL-R: An international perspective. *Behavioral Sciences and the Law*, *18*, 623–645. doi:10.1002/1099-0798(200010)18:5%3c623:AID-BSL409%3e3.0.CO;2-W

Harpur, T. J., Hakstian, A. R., & Hare, R. D. (1988). Factor structure of the Psychopathy Checklist. *Journal of Consulting and Clinical Psychology*, *56*, 741–747. doi:10.1037/0022-006X.56.5.741

Hemphill, J., Hare, R., & Wong, S. (1998). Psychopathy and recidivism: A review. *Legal Criminology Psychology*, *3*, 141–172. doi:10.1111/j.2044-8333.1998.tb00355.x

Hildebrand, M., & de Ruiter, C. (2004). PCL-R psychopathy and its relation to DSM-IV Axis I and II disorders in a sample of male forensic psychiatric patients in the Netherlands. *International Journal of Law and Psychiatry*, *27*, 233–248. doi:10.1016/j.ijlp.2004.03.005

Hildebrand, M., de Ruiter, C., de Vogel, V., & van der Wolf, P. (2002). Reliability and factor structure of the Dutch language version of Hare's Psychopathy Checklist-Revised. *International Journal of Forensic Mental Health*, *1*, 139–154.

Hildebrand, M., de Ruiter, C., & Nijman, H. (2004). PCL-R psychopathy predicts disruptive behavior among male offenders in a Dutch forensic psychiatric hospital. *Journal of Interpersonal Violence*, *19*, 13–29. doi:10.1177/0886260503259047

Hiscoke, U. L., Långström, N., Ottosson, H., & Grann, M. (2003). Self-reported personality traits and disorders (DSM-IV) and risk of criminal recidivism: A prospective study. *Journal of Personality Disorders*, *17*, 293–305. doi:10.1521/pedi.17.4.293.23966

Jamieson, L., & Taylor, P. (2004). A re-conviction study of special (high security) hospital patients. *British Journal of Criminology*, *44*, 783–802. doi:10.1093/bjc/azh054

Jones, L. (2004). Offence paralleling behavior (OPB) as a framework for assessment and intervention with offenders. In A. Needs & G. Towels (Eds.), *Applying psychology to forensic practice*. (pp. 34–63) Malder, MA: Blackwell.

Jones, R. (2010). History of the offence paralleling behavior construct and related concepts. In M. Daffern, L. Jones & J. Shine (Eds.), *Offence paralleling behavior: A case formulation to offender assessment and intervention* (pp. 3–24). Chichester, UK: John Wiley & Sons Ltd.

Kersten, T. (2012). Schema Therapy for personality disorders and addiction. In M. van Vreeswijk, J. Broersen & M. Nadort (Eds.), *The Wiley-Blackwell handbook of Schema Therapy: Theory, research and practice* (pp. 415–424). Chichester, UK: Wiley-Blackwell Publishers.

Keulen-de Vos, M. E., Bernstein, D. P., & Arntz, A. (2013). Schema Therapy for aggressive offenders with personality disorders. In R. C. Tafrate & D. Mitchell (Eds.), *Forensic CBT: A practitioner's guide* (pp. 66–83). Chichester, UK: Wiley-Blackwell Publishers.

Keulen-de Vos, M. E., Van den Broek, E. P. A., Bernstein, D. P., Vallentin, R., & Arntz, A. (2012). *Evoking emotional states in personality disordered offenders: an experimental pilot study of drama therapy techniques*. Manuscript submitted for publication.

Krampe, H., Wagner, T., Stawicki, S., Bartels, C., Aust, C., Kroener-Herwig, B., ... Ehrenneich, H.. (2006). Personality disorders and chronicity of addiction as independent outcome predictors in alcoholism treatment. *Psychiatric Services*, *57*, 708–712. doi:10.1176/appi.ps.57.5.708

Langton, C. M., Hogue, T. E., Daffern, M., Mannion, A., & Howells, K. (2011). Personality traits as predictors of inpatient aggression in a high-security forensic psychiatric setting: Prospective evaluation of the PCL-R and IPDE dimension ratings. *International Journal of Offender Therapy and Comparative Criminology*, *55*, 392–415. doi:10.1177/0306624X10370828

Leistico, A. R., Salekin, R. T., DeCoster, J., & Rogers, R. (2008). A large-scale meta-analysis relating the hare measures of psychopathy to antisocial conduct. *Law and Human Behavior*, *32*, 28–45. doi:10.1007/s10979-007-9096-6

Leue, A., Borchard, B., & Hoyer, J. (2004). Mental disorders in a forensic sample of sexual offenders. *European Psychiatry*, *19*, 123–130. doi:10.1016/j.eurpsy.2003.08.001

Lobbestael, J., Arntz, A., & Sieswerda, S. (2005). Schema modes and childhood abuse in borderline and antisocial personality disorders. *Journal of Behavior Therapy and Experimental Psychiatry*, *36*, 240–253. doi:10.1016/j.jbtep.2005.05.006

Lobbestael, J., van Vreeswijk, M. F., & Arntz, A. (2008). An empirical test of schema mode conceptualizations in personality disorders. *Behavior Research and Therapy*, *46*, 854–860. doi:10.1016/j.brat.2008.03.006

Maden, A., Williams, J., Wong, S. C. P., & Leis, T. A. (2004). Treating dangerous and severe personality disorder in high security: Lessons from the Regional Psychiatric Centre, Saskatoon, Canada. *The Journal of Forensic Psychiatry and Psychology*, *15*, 375–390. doi:10.1080/1478994042000268853

McDermott, B. E., Quanbeck, C. D., Busse, D., Yastro, K., & Scott, C. L. (2008). The accuracy of risk assessment instruments in the prediction of impulsive versus predatory aggression. *Law and Human Behavior*, *26*, 759–777. doi:10.1002/bsl.842

Miller, J. D., & Lynam, D. R. (2006). Reactive and proactive aggression: Similarities and differences. *Personality and Individual Differences*, *41*, 1469–1480. doi:10.1016/j.paid.2006.06.004

Narum, S. R. (2006). Beyond Bonferroni: Less conservative analyses for conservation genetics. *Conservation Genetics*, 7, 783–787. doi:10.1007/s10592-005-9056-y

Nestor, P. G. (2002). Mental disorder and violence: Personality dimensions and clinical features. *American Journal of Psychiatry*, *159*, 1973–1978. doi:10.1176/appi.ajp.159.12.1973

Novaco, R. W. (1994). Anger as a risk factor for violence. In J. Monahan & H. J. Steadman (Eds.), *Violence and mental disorder: Developments in risk assessment* (pp. 21–59). Chicago, IL: University of Chicago Press.

Patrick, C. J. (Ed.). (1998). *Handbook of psychopathy*. New York, NY: The Guilford Press.

Pfohl, B., Blum, N., & Zimmerman, M. (1995). *Structured Interview for DSM-IV Personality: SIDP–IV*. Iowa City, IA: University of Iowa College of Medicine.

Pollock, P. H., Stowell-Smith, M., & Göpfert, M. (2006). *Cognitive analytic therapy for offenders: A new approach to forensic psychotherapy*. London, UK: Routledge.

Rafaeli, E., Bernstein, D. P., & Young, J. (2011). *Schema Therapy: Distinctive features*. New York, NY: Routledge.

Reidy, D. E., Shelly-Tremblay, J. F., & Lilienfeld, S. O. (2011). Psychopathy, reactive aggression and precarious proclamations: A review of behavioral, cognitive and biological research. *Aggression and Violent Behavior*, *16*, 512–524. doi:10.1016/j.avb.2011.06.002

Ronel, N. (2011). Criminal behavior, criminal mind: Being caught in a 'criminal spin'. *International Journal of Offender Therapy and Comparative Criminology*, *55*, 1208–1233. doi:10.1177/0306624X11384946

Ryle, A. (1995). *Cognitive analytic therapy: Developments in theory and practice*. Chichester, UK: Wiley.

Ryle, A., & Kerr, I. B. (2002). *Introducing cognitive analytic therapy: Principles and practice*. Chichester, UK: Wiley.

Scheff, T. J. (2011). Social-emotional origins of violence: A theory of multiple killing. *Aggression and Violent Behavior*, *16*, 453–460. doi:10.1016/j.avb.2011.03.007

Shrout, P. A., & Fleiss, J. L. (1979). Intraclass correlation: Uses in assessing rater reliability. *Psychological Bulletin*, *86*, 420–428.

Skre, I., Onstad, S., Torgersen, S., & Kringlen, E. (1991). High interrater reliability for the Structured Clinical Interview for DSM-III-R Axis I (SCID-I). *Acta Psychiatrica Scandinavica*, *84*, 167–173. doi:10.1111/j.1600-0447.1991.tb03123.x

SPSS (2009). *SPSS 17.0 for Windows* [computer software]. Chicago, IL: Author.

Stanford, M. S., Houston, J. S., Mathias, C. W., Villemarette-Pittman, J. R., Helfritz, L. E., & Conklin, S. M. (2003). Characterizing aggressive behavior. *Assessment*, *10*, 183–190. doi:10.1016/j.psychres.2006.11.001

Steuerwald, B. L., & Kosson, D. S. (2000). Emotional experiences of the psychopath. In C. B. Gacono (Ed.), *The clinical and forensic assessment of psychopathy: A practioner's guide* (pp. 111–135). Mahwah, NJ: Lawrence Erlbaum.

Stillman, T. F., & Baumeister, R. F. (2010). Guilty, free and wise: Determinism and psychopathy diminish learning from negative emotions. *Journal of Experimental Social Psychology*, *46*, 951–960.

Stuewig, J., Tangney, J. P., Heigel, C., Harty, L., & McCloskey, L. (2010). Shaming, blaming and maiming: Functional links among the moral emotions, externalization of blame, and aggression. *Journal of Research in Personality*, *44*, 91–102. doi:10.1016/j.jrp.2009.12.005

Timmerman, I. G. H., & Emmelkamp, P. M. G. (2001). The prevalence and comorbidity of axis I and axis II pathology in a group of forensic patients. *International Journal of Offender Therapy and Comparative Criminology*, *45*, 198–213. doi:10.1177/0306624X01452006

Torgersen, S., Czajkowksi, N., Jacobsen, J., Reichborn-Kjennerud, T., Roysamb, E., Neale, M. C., & Kendler, K. S. (2008). Dimensional representations of DSM-IV cluster B personality disorder in a population based sample of Norwegian twins: A multivariate study. *Psychological Medicine*, *38*, 1617–1625. doi:10.1017/S0033291708002924

Tremblay, P. F., & Dozois, D. J. A. (2009). Another perspective on trait aggressiveness: Overlap with early maladaptive schemas. *Personality and Individual Differences*, *46*, 569–574. doi:10.1016/j.paid.2008.12.009

Van den Broek, E., Keulen-de Vos, M. E., & Bernstein, D. P. (2011). Arts therapies and schema focused therapy: A pilot study. *The Arts in Psychotherapy*, *38*, 325–332. doi:10.1016/j.aip.2011.09.005

Van Marle, H. J. C. (2002). The Dutch Entrustment Act (TBS): Its principles and innovations. *International Journal of Forensic Mental Health*, *1*, 83–92. doi:10.1080/14999013.2002.10471163

Vitacco, M. J., Neumann, C. S., & Jackson, R. L. (2005). Testing a four-factor model of psychopathy and its association with ethnicity, gender, intelligence, and violence. *Journal of Consulting and Clinical Psychology*, *73*, 466–476. doi:10.1037/0022-006X.73.3.466

Vitacco, M. J., van Rybroek, G. J., Rogstad, J. E., Yahr, L. E., Tomony, J. D., & Saewert, E. (2009). Predicting short-term institutional aggression in forensic patients: A multi-trait method for understanding subtypes of aggression. *Law and Human Behavior*, *33*, 308–319. doi:10.1007/s10979-008-9155-7

Ward, T., & Beech, A. (2006). An integrated theory of sexual offending. *Aggression and Violent Behavior*, *11*, 44–63. doi:10.1016/j.avb.2005.05.002

Ward, T., Bickley, J., Webster, S. D., Fisher, D., Beech, A., & Eldridge, H. (2004). *The self-regulation model of the offence and relapse process: A manual: Vol. 1. Assessment*. Victoria, BC: Pacific Psychological Assessment Corporation.

Watkins, H. H., & Watkins, J. G. (1997). *Ego states: Theory and therapy*. New York, NY: W-W Norton & Co Ltd.

Wechsler, D. (1997). *WAIS-III, Nederlandstalige bewerking, technische handleiding*. [WAIS-III, Dutch version manual]. Lisse, The Netherlands: Swets Test.

Wong, S., & Hare, R. (2005). *Guidelines for a psychopathy treatment program*, Toronto: Multihealth Systems.

Woodworth, M., & Porter, S. (2002). In cold blood: Characteristics of criminal homicides as a function of psychopathy. *Journal of Abnormal Psychology*, *111*, 436–445. doi:10.1037/0021-843X.111.3.436

Young, J. E., Klosko, J., & Weishaar, M. (2003). *Schema Therapy: A practitioner's guide*. New York, NY: Guilford Press.