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Validation of the schema mode concept in personality disordered offenders

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Purpose. A core element of Schema Therapy (ST) is 'schema modes' or fluctuating emotional states. ST assumes that particular personality pathology consists of specific combinations of maladaptive schema modes. There is confirmatory evidence for the modes hypothesized to be central to borderline and narcissistic personality disorder (PD) in non-forensic patients. In this study, we tested three aspects of the construct validity of schema modes in cluster-B personality disordered offenders, examining its factorial validity, and the relations among personality disorders and violence risk.

Method. Our sample consisted of 70 offenders who were diagnosed with an antisocial, borderline, or narcissistic PD. Schema modes were assessed with the *Schema Mode Inventory* (SMI), personality disorders with the *Schedule for Nonadaptive and Adaptive Personality-Forensic Version* (SNAP-FV), and violence risk with the *Historical, Clinical, and Risk management scheme* (HCR-20^{V2}).

Results. When controlling for the two other PDs, three schema mode factors distinguished antisocial PD as a disorder involving both low scores on internalizing and high scores on externalizing modes, and borderline PD as involving high scores on internalizing modes. Furthermore, the externalizing *schema modes* were a significant predictor for violence risk inside the hospital.

Conclusions. The hypothesized mode models were partially supported for all three PDs. The findings thus provide some support for the construct validity of schema modes in a forensic sample.

Emotional disturbances or rapid emotional shifts are central to many personality disorders. For example, borderline PD is characterized by rapid and dramatic shifts in

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emotions, whereas antisocial PD is characterized by irritability and psychopathy by a lack of emotions (American Psychiatric Association, 2013; Hare, 2003). Personality disorders are among the largest diagnostic groups in most correctional settings. Some studies report prevalence rates up to 90% (Blackburn, Logan, Donnelly, & Renwick, 2003; Lindsay *et al.*, 2006). The cluster-B personality disorders (i.e., antisocial, borderline, narcissistic, histrionic PD) are the most prevalent PDs and are often the most problematic because they are associated with institutional transgressions, high risk for recidivism, and poor treatment outcome (Coid, Hickey, & Yang, 2007; Jamieson & Taylor, 2004; Langton, Hogue, Daffern, Mannion, & Howells, 2011; Leistico, Salekin, DeCoster, & Rogers, 2008). A recently introduced promising treatment for offenders with PDs is Schema Therapy (ST; Young, Klosko, & Weishaar, 2003). Schema Therapy is an integrative therapy that combines elements from different therapeutic approaches. For example, certain techniques and theoretical concepts are derived from cognitive-behavioural traditions, whereas other techniques and concepts are psychoanalytically oriented or originate from attachment theories, Gestalt or experiential therapies. The original main concepts of ST are early maladaptive schemas and coping styles. Early maladaptive schemas are self-defeating cognitive themes about the self and others. They are deeply entrenched patterns or traits, central to one's sense of self. A schema is not just a belief, but part of one's identity, part of one's self-awareness. When these schemas are triggered, they can give rise to strong emotions. Schema Therapy defines three coping styles that are used to deal with such emotions: overcompensating or acting as if the opposite of the schema is true; acting as if the schema is true; and avoiding persons or situations that trigger a particular schema. These coping styles are usually dysfunctional in the long run and bear similarities to the biological responses of fight–flight–freeze.

Schema modes

Over time, Young *et al.* (2003) have developed a more compact theoretical framework for personality disorders. They defined a third concept: schema modes. Schema modes are responses to developmental experiences of unmet needs that continue to impact on the individual in later life. These developmental needs are in the domains of attachment, autonomy and having the experience of parenting where limits were set in a reasonable manner. The need to be protected from abuse, to be soothed or to be able to soothe oneself in the context of experiences involving extremely painful physical or emotional feelings. The unmet need evidenced by abusive/cruel self-directed criticism or demands is evidenced in the way the individual has internalized their abusive manner of relating. Originally, 11 individual schema modes were distinguished. Over time, others have proposed and reported evidence for additional modes (Bamelis, Renner, Heidkamp, & Arntz, 2011; Lobbestael, van Vreeswijk, & Arntz, 2008). Schema modes can be distinguished in several domains, referring to their origin. Child modes involve extremely painful physical and emotional feelings. Two examples of child modes are the vulnerable and angry child. When experiencing child modes, individuals act, feel, and think the same way they did when they were a child. The child modes are distinct from 'regression' (i.e., psychoanalytic theory), and the name of the domain is not intended to infantilize the individual. Rather, the mode domain name was chosen because of it references basic childhood emotional needs (i.e., secure attachment, autonomy, realistic limits) that have been neglected or frustrated (Young *et al.*, 2003). Avoidant coping modes involve attempts to protect oneself from painful physical and emotional feelings by avoiding

aversive stimuli and situations. Parent modes refer to experiences of abusive parenting where limits were set. The continuation of the abusive aspect of the relationship with these caregivers is evidenced in the way the individual has internalized their abusive manner of relating either by self-directed criticism or demands on oneself. Overcompensatory modes are extreme overreactions to painful physical and emotional feelings (Rafaeli, Bernstein, & Young, 2011; Young *et al.*, 2003). A list of all maladaptive schema modes is listed in Table 1.

Modes can fluctuate from time to time. Healthy individuals are able to understand and regulate these fluctuations so they are milder and less frequent, whereas individuals who suffer from psychopathology are less cognizant of when one mode changes into another,

Table 1. List of schema mode definitions

Child modes	
Vulnerable child	Feels vulnerable, overwhelmed with painful feelings, such as anxiety, depression, grief, or shame/humiliation
Angry child	Feels and expresses anger in an excessive way in response to perceived or real mistreatment, abandonment, humiliation, or frustration
Impulsive child	Acts impulsively to get needs met
Lonely child	Feels lonely and empty, as if no one can understand him, sooth or comfort him, or make contact with him
Avoidant coping modes	
Detached protector	Uses emotional detachment to protect one from painful feelings; is unaware of his feelings, feels 'nothing'
Detached self-soother/ self-stimulator	Uses repetitive, 'addictive', or compulsive behaviours, or self-stimulating behaviours to calm and sooth oneself
Compliant surrender	Gives in to the real or perceived demands or expectations of other people in a anxious attempt to avoid pain or to get one's needs met
Angry protector	Uses a 'wall of anger' to protect oneself from others who are perceived as threatening; keeps others at a safe distance through controlled displays of anger
Parent modes	
Punitive parent	Internalized, critical or punishing parent voice; directs harsh criticism towards the self; induces feelings of shame or guilt
Demanding parent	Directs impossibly high demands towards the self
Overcompensatory modes	
Self-aggrandizer	Feels superior, special, or powerful; looks down on others
Bully and attack	Uses threats, intimidation, aggression, or coercion to get what he wants
Conning and manipulator	Cons, lies, or manipulates in a manner designed to achieve a specific goal
Predator	Focuses on eliminating a threat, rival, obstacle, in a cold, ruthless, and calculating manner
Over-controller	Attempts to protect oneself from a perceived or real threats by focusing attention, ruminating, exercising extreme control, or using order, repetition, or rituals
Healthy modes	
Healthy adult	Reflects on himself and his situation in a balanced, realistic manner. Is aware of his needs and feelings; realistically appraises situations
Playful child	Acts in a playful, free and spontaneous manner; experiences genuine pleasure in people or activities

Note. Adapted from Keulen-de Vos *et al.* (2014).

and thus are less able to regulate them. Patients with PD are marked by distinctive combinations of maladaptive schema modes. Schema Therapy holds a dynamic view of personality disorders. The schema mode model for borderline PD, for example, is primarily characterized by (1) feelings of abandonment and abuse (Vulnerable Child mode); (2) uncontrolled anger and impulsivity (Angry and Impulsive Child mode); (3) self-punitive behaviour (Punitive Parent mode); and (4) feelings of emptiness and detachment (Detached Protector mode; Arntz & van Genderen, 2009; Young *et al.*, 2003). Patients diagnosed with borderline personality disorder tend to fluctuate between these modes.

There is already some validation of the schema mode concept in non-forensic patients (Arntz, Klokman, & Sieswerda, 2005; Lobbestael, Arntz, & Sieswerda, 2005; Lobbestael *et al.*, 2008). For example, Lobbestael *et al.* (2008; $n = 489$) showed that the proposed schema mode model for borderline PD characterized patients with this diagnosis as did also several other modes (e.g., Detached Self-Soother and Compliant Surrenderer modes).

A decade ago, ST was introduced to and adapted for *forensic* patients with PDs. Bernstein and colleagues have added five forensic modes that are often seen in forensic patients with PD: Angry Protector, Conning and Manipulative, Predator, and two Over-Controller modes (Bernstein, Arntz, & de Vos, 2007; Keulen-de Vos, Bernstein, & Arntz, 2014). They suggest that antisocial and especially psychopathic offenders make prominent use of these forensic modes. For example, psychopathy is proposed to be primarily characterized by cold and ruthless aggression (Predator mode), deceit and manipulation (Conning and Manipulative mode), and aggression to assert dominance (Bully and Attack mode). According to ST-theory, criminal and violent behaviour can be explained in terms of sequences of schema modes. Events preceding the criminal/violent act often trigger painful emotions stemming from childhood situations in which they felt abandoned, lonely, hurt, etc. When these child modes are triggered, one of the aforementioned coping styles is used to deal with such painful emotions. The treatment specifically focuses on those schema modes that are seen as risk factors for aggressive, impulsive, and criminal behaviour.

Although ST is increasingly being used in forensic settings, we are aware of only two studies that have attempted to validate the schema mode concept in forensic settings. In the study by Lobbestael *et al.* (2008), 45 patients were admitted in a forensic psychiatric hospital, whereas 444 patients were admitted in non-forensic inpatient and outpatient facilities. They found that borderline patients with PD were characterized by the aforementioned schema mode model. Keulen-de Vos, Bernstein, and Duggan (2016), Keulen-de Vos, Bernstein, Vanstipelen, *et al.* (2016), and Keulen-de Vos, van den Broek, Bernstein, Valentin, and Arntz (2016) recently showed that vulnerable emotions seem to be involved in triggering criminal behaviour and institutional transgressions in forensic patients with cluster-B personality disorders. Descriptions of patients' crimes and the events leading up to the crime were rated for schema modes in a sample of 95 hospitalized cluster-B PD offenders. The results showed that 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 overcompensatory modes, especially Bully and Attack and Predator mode, were more present during the crimes themselves than during the events leading up to the crimes. Also, child and overcompensatory modes moderately predicted later institutional transgressions (Keulen-de Vos, Bernstein, *et al.*, 2016; Keulen-de Vos, Bernstein, Vanstipelen, *et al.*, 2016; Keulen-de Vos, van den Broek, *et al.*, 2016). Because schema modes are one of the theoretical pillars on which ST is based, and the primary target when working with offenders with cluster-B PDs, further research on the schema mode concept is urgently needed.

Present study and hypotheses

In this study, we followed up on Keulen-de Vos, Bernstein, *et al.* (2016), Keulen-de Vos, Bernstein, Vanstipelen, *et al.* (2016), and Keulen-de Vos, van den Broek, *et al.* (2016) and further tested the construct validity of the schema mode concept. According to ST's theoretical framework, criminal and violent behaviour can be explicated by the unfolding sequence of schema modes. Next, different PDs are characterized by different combinations of schema modes. Also, schema modes represent psychological risk and protective factors and therefore relate to violence risk both within and outside a correctional setting (e.g., institutional transgressions, risk for recidivism, respectively). Thus, schema modes are a key component in a network of relations with other variables (Embretson, 1983). This is consistent with Campbell and Fiske's (1959) argument that inferences about a construct can be made by relating it to other behaviours or constructs. See Figure 1 for a graphic illustration of the hypothesized network of schema mode relations. In this study, three aspects of construct validity were examined.

First, we examined the relations of schema modes with PDs and psychopathy. Specifically, because of their high prevalence in offenders, we focused on antisocial PD, borderline PD, narcissistic PD, and psychopathy and tested the hypothesis that different mode models distinguish offenders who meet criteria for these PDs. We hypothesized that all three PDs would be characterized by the Detached Self-Soother mode; that antisocial PD and borderline PD would also be characterized by the Vulnerable, Angry, and Impulsive Child modes, and the Detached Protector, and Bully and Attack modes; that antisocial PD and narcissistic PD would additionally be characterized by the Self-Aggrandizer mode; and that three modes would characterize a single PD: Overcontroller for antisocial PD and both Lonely and Enraged Child for narcissistic PD. These mode models are consistent with Young's theoretical framework and supported by research in non-forensic samples (Arntz *et al.*, 2005; Lobbestael *et al.*, 2005, 2008). Furthermore, with regard to psychopathy, we expected that (1) overcompensatory modes would be correlated positively with the interpersonal facet (i.e., grandiose sense of self, conning, and manipulation) as overcompensatory modes, such as the Self-Aggrandized and Conning and Manipulation modes refer to maladaptive interpersonal patterns of behaviour; (2) the Happy Child mode would be negatively correlated with the affective facet (i.e., lack of remorse, lack of emotional depth, lack of empathy) because the Happy Child mode refers to acting in a fun-loving manner, and experiencing and expression of genuine pleasure; (3) the Angry and (4) Impulsive Child modes would be positively

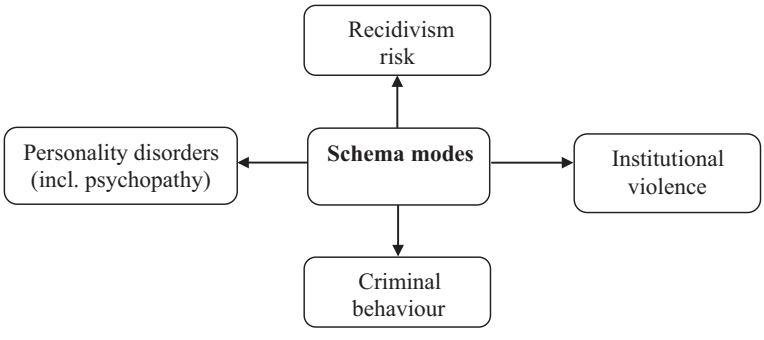

Figure 1. Network of schema mode relationships in personality disordered offenders. *Note.* Criminal behaviour has been investigated in the study by Keulen-de Vos, Bernstein, *et al.* (2016), Keulen-de Vos, Bernstein, Vanstipelen, *et al.* (2016), and Keulen-de Vos, van den Broek, *et al.* (2016).

correlated with the lifestyle (i.e., impulsivity, irresponsible behaviour) and antisocial facets (i.e., lack of behavioural control, criminal versatility), and the Bully and Attack mode would be positively correlated with the antisocial facet, because these facets and modes represent the same behaviour; and (5) the Healthy Adult mode would be negatively correlated with the lifestyle and antisocial facets because this particular mode refers to self-reflection, responsible behaviour and considering how to get one's needs met in an adaptive manner. Second, we examined whether a higher-order factor structure of schema modes was of explanatory value in distinguishing among modes, and whether these factors would show a differential pattern of correlations with the PDs that we measured. Third, we examined the relations between schema modes and recidivism risk because forensic patients with PD have a higher risk of violence and recidivism than other forensic patients (Jeandarme, Habets, Oei, & Bogaerts, 2016). Personality pathology was assessed with both a self-report and observer-report instrument (Schedule for Nonadaptive and Adaptive Personality-Forensic Patient and Informant Versions; SNAP-FP & SNAP-FI, respectively; Keulen-de Vos *et al.*, 2011). Schema modes were assessed with the Schema Mode Inventory (SMI; Young *et al.*, 2007) and violence risk with the Historical, Clinical, and Risk management schema (HCR-20; Webster, Douglas, Eaves, & Hart, 1997).

Method

Setting

This study was conducted at seven forensic hospitals in The Netherlands. By Dutch criminal law, patients can be admitted involuntarily to forensic care if they have committed a serious offence, carrying a punishment of at least 4 years of imprisonment, and if their accountability for the crimes is judged to be diminished because they suffer from (1) mental disorder(s). Every 1 to 2 years, the criminal court decides whether treatment should be prolonged or terminated, depending on the risk for reoffending as described by an independent committee of experts (Van Marle, 2002).

Sample

The sample consisted of 88 male offenders. Patients who were diagnosed with an antisocial PD, borderline PD, narcissistic PD, paranoid PD, or PD Not-Otherwise-Specified (PD NOS) with at least five cluster-B PD criteria were included in the study. Exclusion criteria were (1) 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) a *DSM-IV* autistic spectrum disorder, and (7) paedophilia.

The mean age of the sample was 38 years (SD = 9.8, range 20–65); the average length of stay was 24.9 months (SD = 12.8, range 6–74 months). Regarding the type of crime committed, eight patients (9.1%) were convicted for (attempted) murder and 22 (25%) for (attempted) manslaughter, 24 patients (27.2%) for sexual offences, two patients (2.3%) for property crimes, 24 patients (27.2%) for (attempted) aggravated assault, and three patients (3.4%) for arson. Among *DSM-IV-TR* axis I disorders (American Psychiatric Association, 2000), substance-related disorders were the most prevalent (80.7%, n = 71), followed by mood disorders (18.2%, n = 16), anxiety disorders (14.8%, n = 13), paraphilia (12.5%, n = 11), pathological gambling (10.2%, n = 9), and ADHD (6.8%, n = 6). Seven patients (8.0%) were diagnosed with an obsessive–compulsive disorder.

Thirty-two patients (36.4%) had more than one axis I disorder. Among *DSM-IV-TR* axis II disorders (American Psychiatric Association, 2000), 61.4% (n = 54) of the patients were diagnosed with antisocial PD, 19.3% (n = 17) with borderline PD, and 22.7% (n = 20) with narcissistic PD. One patient (1.1%) was diagnosed with paranoid PD. Seventeen patients (19.3%) were diagnosed with PD-NOS with a minimum of five cluster-B PD criteria. Twenty-six patients (29.5%) were diagnosed with more than one PD: nine patients were diagnosed with both antisocial PD and borderline PD; 13 with antisocial PD and narcissistic PD; two with borderline PD and narcissistic PD; one with antisocial PD, narcissistic PD, and paranoid PD; and two with antisocial PD, borderline PD, and narcissistic PD. The average psychopathy score in this sample was 24.6 (SD = 6.5, range 11–37); 17 patients (19.1) had scores indicative of psychopathy using a cut-off of ≥30. Patients' mean full-scale IQ (WAIS-III; Wechsler, 1997) was 92.9 (SD = 11.0, range 80–126).

Measures

The *SCID-I* (First, Gibbon, Spitzer, Williams, & Benjamin, 1997) and *SIDP-IV* (Pfohl, Blum, & Zimmerman, 1995) were used to assess axis I and II disorders, respectively. The inter-rater reliability for the SCID-I diagnoses in our study in a subsample of 14 patients was 100% agreement for all diagnoses assessed, except for mood disorders and pathological gambling, which each had 84% agreement. In a subsample of 23 patients, the inter-rater reliabilities for the main SIDP-IV diagnoses in our study, were ICCs = .73 for antisocial PD, .75 for borderline PD, .92 for narcissistic PD, .80 for Paranoid PD, and .80 for PD-NOS.

Schedule for Nonadaptive and Adaptive Personality-Forensic Versions

The Schedule for Nonadaptive and Adaptive Personality-Forensic Versions (SNAP-FV; Keulen-de Vos *et al.*, 2011; SNAP-2; Clark, Simms, Wu, & Casillas, in press) is a self- and observer-report instrument that assesses personality trait characteristics associated with personality disorder, and is specifically developed for offender samples. We administered the informant version to three staff members who knew the patients well. These staff members were typically the patient's primary psychotherapists, other therapists such as arts therapists, psychiatric nurses, or the ward's treatment coordinators. The SNAP-FV showed good reliabilities with internal consistencies of the patient scales ranging from .79 to .83, whereas the informant scales showed Cronbach's alphas ranging from .81 to .92. The inter-rater reliabilities between the patient and information report were low to moderate (Keulen-de Vos *et al.*, 2011). In this study, we created a composite score consisting of the mean of all six personality trait scales patient and informant SNAP scales. The inter-rater reliabilities between the patient and information report were low to moderate with ICCs ranging from .12 to .40. This level of self-informant agreement is consistent with that reported in the literature (Klonsky, Oltmanns, & Turkheimer, 2002; Ready & Clark, 2002).

Psychopathy Checklist-Revised

The Psychopathy Checklist-Revised (PCL-R; Hare, 2003) assesses a patient's levels of psychopathy based on 20 items that are rated on a 3-point Likert-type scale (0 = *item does not apply*, 1 = *item applies to a certain degree*, 2 = *item definitively applies*). Total scores can range from 0 to 40. The items of the PCL-R can be divided into different facets, and in our study, we used the 4-facet model: Facet 1 refers to interpersonal characteristics

(e.g., grandiose sense of self), Facet 2 to affective features (e.g., lack of empathy), Facet 3 to lifestyle characteristics (e.g., impulsivity), and Facet 4 to antisocial behaviour (Hare, 2003; Vitacco, Neumann, & Jackson, 2005). The psychometric properties of the PCL-R have been well established (Bodholdt, Richards, & Gacono, 2000; Hare, Clark, Grann, & Thornton, 2000; Hildebrand, de Ruiter, de Vogel, & van der Wolf, 2002). In a subsample of 37 patients, the intraclass correlation coefficient for the PCL-R total score in our study was .95 (Facet 1 = .82; Facet 2 = .77; Facet 3 = .89; Facet 4 = .93). Ratings were also internally consistent (Cronbach's alpha for the total score = .80).

Historical, Clinical, and Risk management schema

The Historical, Clinical, and Risk management schema (HCR-20, second version [V2]; Webster *et al.*, 1997) assesses risk for future violence in adult offenders. It contains 20 items that are divided across three subscales: historical, clinical, and risk management subscale. Each item is rated on a 3-point Likert-type scale ranging from 0 (absent) to 2 (definitely present). These items guide the rater to arrive at a final risk judgement (low, moderate, high; Webster *et al.*, 1997). For our study, the raters were asked to provide a final risk judgement for two types of situations: (1) the risk of future violence within the hospital ('risk judgement inside hospital'); and (2) the risk of future violence if the mandatory treatment order ('TBS'[1]) would be terminated immediately ('risk judgement outside hospital'). The HCR-20^{V2} has demonstrated excellent psychometric properties in multiple samples (De Vogel, 2005; Douglas & Reeves, 2010). In a subsample of 16 patients, the intraclass correlation coefficient of the HCR-20^{V2} risk judgement within the hospital was .81. There was perfect agreement for ratings of violence risk level outside of the hospital.

Schema Mode Inventory – short version

The Schema Mode Inventory – short version (SMI-R; Young *et al.*, 2007) contains 124 items that are associated with 16 schema modes; all items are rated on a 6-point frequency scale (1 = *never*; 6 = *always*). In a recent study, the SMI-R proved to be a reliable and valid instrument for assessing schema modes. For example, internal consistencies for the subscales were good to excellent, with Cronbach's alpha ranging from .76 to .96. Also, concurrent and construct validity with the Young Schema Questionnaire and Childhood Trauma Questionnaire was supported (Lobbestael, van Vreeswijk, Spinhoven, Schouten, & Arntz, 2010). With permission of J. Lobbestael, the first author of the short version of the SMI, we created an even shorter version of the instrument to reduce administration time. After factor analysis, we selected the five items that loaded highest per schema mode. The adapted SMI (SMI-FV) consisted of 80 items. Internal consistencies for the subscales in our study were good to excellent, with Cronbach's alpha ranging from .69 to .90.

Balanced Inventory of Social Desirable Responding

The Balanced Inventory of Social Desirable Responding (BIDR; Paulhus, 1991) is a self-report questionnaire developed to assess social desirability. It contains 40 items that are rated on a 7-point Likert-type scale (1 = *not true*; 7 = *very true*) and that are divided into two scales: self-deception and impression management. Self-deception refers to an

[1] *TBS stands for treatment on behalf of the state. It's a Dutch mandatory treatment order that can be imposed by a judge.*

unconscious process to deny deviant thoughts and feelings so that one is favourably portrayed. Impression management refers to the tendency to use inflated self-descriptions deliberately so that one is perceived favourably by others (Paulhus, 1991). The BIDR has proven to be a valid and reliable instrument for identifying socially desirable responding in various samples including forensic samples, with reliability coefficients ranging from .70 to .86. (Cervellione, Lee, & Bonanno, 2009; Lanyon & Carle, 2007; Li & Bagger, 2007).

Procedure

Approval for the study was obtained from the Medical Ethical Committee of an Academic Hospital in The Netherlands. Patients gave informed consent for participating in the study. The SCID-I, SIDP-IV, PCL-R, and HCR-20^{V2} were conducted by psychologists or research assistants with extensive training in these instruments.

Statistical analyses

We chose not to analyse schema mode models for paranoid PD and PD-NOS because of the small sample sizes of these disorders. Because of the known tendency of forensic patients to have responses biases such as socially desirable responding and malingering, we investigated response biases as a preliminary step in analysing the data. We calculated Pearson correlations between the BIDR scales and the SMI-FV total, the SNAP-FP total, and the SNAP-FI total scores. Results revealed significant relation between the SMI-FV total score and impression management ($r = -.48$, $p < .01$) and the total score of the BIDR ($r = -.45$ with $p < .01$) in a subsample of 50 patients. We had BIDR scores in only 50 patients because the BIDR was added to the test battery after the start of the study. There were no significant relations between the SNAP-FP total score and the BIDR scales, but the SNAP-FI total score was negatively associated with Self-Deception ($r = -.35$, $p < .05$). Results also revealed non-significant relations between the BIDR and the SNAP overall composite score (i.e., *M* of SNAP-FP and SNAP-FI). Based on these results, we decided to trim the data 10% to reduce tendencies to over-report and under-report pathology (Keselman, Othman, Wilcox, & Fradette, 2004; Wilcox, 1998). Consequently, our sample size was reduced to seventy ($n = 70$) patients. Furthermore, we used the BIDR impression management scale as a covariate in our regression analyses. We decided to use the SNAP-FV total composite score (i.e., mean of the SNAP-FP and SNAP-FI scores) for our further analyses so that both patient and informant scores were equally weighted, providing equal representation of patient and informant perspectives. Aggregating the two sets of ratings is expected to lead to more valid estimates of PD pathology.

To test for significant correlations between schema mode scores and PD pathology, we corrected our alpha for multiple comparisons according to the FDR (false discovery rate) correction for 42 tests (14 modes × 3 PDs), using a $p < .01156$. For significant correlations between schema mode scores and violence risk, we corrected for 28 tests (14 modes × 2 HCR-20^{V2} scores), using a $p < .01273$. In our analyses for psychopathy, we used a $p < .01020$ (14 modes × 5 PCL-R scores; Narum, 2006, pp. 787). Next, relations between schema modes and PDs were examined using Pearson correlations and linear regression analyses. Also, a factor analysis with varimax rotation was carried out to examine the degree to which variables were inter-related. Finally, we tested which factors were related to and predictive of which PDs using Pearson correlations and linear regression analyses. All data were analysed with the Statistical Package for the Social Sciences (SPSS, 2011), version 20.0.

Results

Schema modes and personality disorders

Table 2 displays the correlations of the schema modes with the SNAP-FV personality disorder scale scores, PCL-R scores, and HCR-20^{V2} recidivism-risk judgements. Of our hypotheses concerning PDs, 50% were significant at $p < .01$ with medium effect sizes ranging from .41 to .63 ($M = .46$); the remaining 50% of effect sizes mostly ranged from trivial to medium ($M = .24$; range −.08 to .36), including two at trend level. In addition, there were four unexpected correlations with medium effect sizes that were significant at $p < .02$ ($M = .44$; range .36–.49). Concerning psychopathy, the two hypotheses supported were as follows: Impulsive Child mode related significantly to both the lifestyle ($r = .49$, $p < .01$) and antisocial factors ($r = .34$, $p < .01$). Finally, none of the schema modes was related to the HCR-20^{V2} risk judgements either within or outside the hospital.

Consistent with our hypotheses, antisocial PD and borderline PD correlated significantly positively with the Angry Child, Impulsive Child, Detached Protector, and Bully and Attack modes, and antisocial PD correlated significantly positively with the Self-Aggrandizing mode. However, contrary to our hypotheses, Vulnerable Child mode was not significantly related to antisocial PD or borderline PD; antisocial PD was not significantly related to the Overcontroller mode; none of the PDs examined related significantly to the Detached Self-Soother mode; and none of the hypotheses for narcissistic PD was supported. In addition, borderline PD unexpectedly related significantly to the Compliant Surrenderer, Demanding Parent, Self-Aggrandizer, and Overcontroller modes.

Next, we performed separate linear regressions with antisocial PD, borderline PD, and narcissistic PD as the dependent variable, respectively. The independent variables were the mode variables that had significant Pearson correlations with the specific PD diagnoses. Furthermore, when a SNAP-FV PD scale was entered as a dependent variable, the other two PD scales and the BIDR impression management scale were entered as covariates. Results are displayed in Table 3. With regard to antisocial PD, the results showed that, when controlling for borderline PD, narcissistic PD, and impression management, the combination of five schema modes was a significant predictor, explaining 71% (r^2 unadjusted) of the variance, $F(8, 24) = 7.31$, $p < .01$. The Impulsive Child mode was the only individual predictor ($\beta = -.41$, $t = 1.96$, $p = .025$) at a trend level of significance. The contribution to the explained variance in borderline PD, when controlling for antisocial PD, narcissistic PD, and impression management, was 72% (r^2 unadjusted), $F(11, 21) = 4.77$, $p < .01$. Demanding Parent mode was the only significant individual predictor ($\beta = .18$, $t = 2.18$, $p = .04$). The schema modes explained 45% (r^2 unadjusted) of the variance in narcissistic PD, $F(5, 29) = 4.77$, $p = .003$, when controlling for antisocial PD, borderline PD and impression management. Detached Self-Soother mode was the only significant individual predictor ($\beta = .19$, $t = 2.40$, $p = .023$).

Higher-order structure, personality disorders, and recidivism risk

Next, an exploratory principal components analysis with varimax rotation was conducted. The analyses yielded three components or factors with eigenvalues >1, accounting for 76.1% of the total variance. The first component accounted for 29.4%, whereas components 2 and 3 accounted for 27.9 and 18.7%, respectively. Table 4

Table 2. Correlations between personality disorders, violence risk and schema modes

	SMI													
	VC	AC	IC	LC	DP	DSS	CS	PP	DPa	SA	BA	OC	HA	HC
Personality disorders														
SNAP antisocial PD	−.08	.51**	.63**	−.11	.47**	.18	.18	−.21	.13	.43**	.49**	.32	−.01	−.31
SNAP borderline PD	.31	.46**	.57**	.31	.56**	.30	.49*	−.00	.49*	.42**	.41**	.36*	−.01	−.26
SNAP Narcissistic PD	.06	.25	.14	.19	.32	.35†	.18	.20	.18	.36†	.27	.27	.04	−.14
Psychopathy														
PCL-R total score	−.24	.14	.26	−.14	.23	−.08	−.06	−.28	−.04	.13	.27	.10	−.07	−.29
PCL-R facet 1: interpersonal	−.22	.05	−.09	.10	.04	−.22	−.15	.05	−.08	−.04	.13	−.10	−.04	−.20
PCL-R facet 2: affective	−.22	.08	−.04	−.22	.25	−.09	−.10	−.12	−.13	.19	.02	.21	−.06	−.20
PCL-R facet 3: lifestyle	.01	.20	.49**	.11	.33†	.14	.16	−.13	.12	.16	.23	.22	−.06	−.15
PCL-R facet 4: antisocial	−.09	.07	.34**	.02	.18	.01	−.00	−.17	.06	.11	.15	.18	−.04	−.22
Recidivism risk														
HCR-20^{V2} judgement inside hospital	−.06	.18	.20	−.01	.00	−.09	.00	−.04	−.06	.09	.16	.11	−.15	−.14
HCR-20^{V2} judgement outside hospital	.10	.05	.08	.05	−.12	−.06	−.01	−.01	.07	.02	.04	.12	−.05	−.08

Note. $N = 70$. VC, vulnerable child; AC, angry child; IC, impulsive child; LC, lonely child; DP, detached protector; DSS, detached self-soother; CS, compliant surrenderer; AP, angry protector; CP, complaining protector; DPa, demanding parent; SA, self-aggrandizer; BA, bully and attack; CM, conning and manipulative; P, predator; OC, overcontroller; HA, healthy adult; HC, happy child.
*$p \leq .0167$; †$.0167 < p < .02$; **$p \leq .01$; $rs \geq .33$.

Table 3. Summary of linear regression for modes predicting personality disorders

	B	*SE B*	β
(a) Antisocial PD			
Step 1			
Borderline PD	.76	.14	.60**
Narcissistic PD	.22	.13	.19
Step 2			
Borderline PD	.60	.14	.54**
Narcissistic PD	.34	.12	.36**
Impression management	−.08	.07	−.14
Step 3			
Borderline PD	.41	.16	.38*
Narcissistic PD	.40	.12	.42**
Impression management	−.10	.06	−.18
Angry child	−.30	.11	−.41*
Impulsive child	.15	.08	.30†
Detached protector	.08	.07	.18
Self-aggrandizer	.04	.08	.08
Bully and attack	−.03	.10	−.04
(b) Borderline PD			
Step 1			
Antisocial PD	.65	.15	.69**
Narcissistic PD	−.08	.15	−.09
Step 2			
Antisocial PD	.67	.16	.70**
Narcissistic PD	−.08	.15	−.09
Impression management	.02	.07	.05
Step 3			
Antisocial PD	.75	.19	.79**
Narcissistic PD	−.25	.16	−.28
Impression management	.12	.07	.24
Angry child	.17	.17	.24
Impulsive child	−.07	.09	−.16
Detached protector	.01	.08	.02
Compliant surrender	.06	.13	.15
Demanding parent	.18	.08	.55*
Self-aggrandizer	.05	.09	.12
Overcontroller	−.09	.08	−.22
Bully and attack	−.09	.10	−.17
(c) Narcissistic PD			
Step 1			
Antisocial PD	.61	.21	.58**
Borderline PD	−.10	.22	−.09
Step 2			
Antisocial PD	.63	.22	.60**
Borderline PD	−.12	.23	−.11
Impression management	.03	.08	.07
Step 3			
Antisocial PD	.60	.20	.57**
Borderline PD	−.34	.22	−.30

Continued

Table 3. (*Continued*)

	B	*SE B*	β
Impression management	.12	.07	.26
Detached self-soother	.19	.08	.40*
Self-aggrandizer	.10	.08	.19

Note. (a) $R^2 = .55$ for Step 1. $\Delta R^2 = .02$ for Step 2. $\Delta R^2 = .14$ for Step 3.
(b) $R^2 = .42$ for Step 1. $\Delta R^2 = .00$ for Step 2. $\Delta R^2 = .30$ for Step 3.
(c) $R^2 = .28$ for Step 1. $\Delta R^2 = .00$ for Step 2. $\Delta R^2 = .17$ for Step 3.
$^{\dagger}.05 < p < .06$; $*p < .05$; $**p < .01$.

Table 4. Schema mode factor scores

	Factor		
Schema modes	1	2	3
Bully and attack	.893		
Impulsive child	.857		
Angry child	.834		
Self-aggrandizer	.753		
Overcontroller	**.685**		.468
Detached protector	**.574**	.552	
Vulnerable child		.884	
Lonely child		.866	
Punitive parent		.837	
Detached self-soother		.741	
Compliant surrenderer	.471	**.710**	
Demanding parent	.460	**.712**	.408
Healthy adult			.816
Happy child			.958

Note. $N = 70$. Factor 1 eigenvalue = 4.4, % variance = 29.4, $\alpha = .88$. Factor 2 eigenvalue = 4.2, % variance = 27.9, $\alpha = .88$. Factor 3 eigenvalue = 2.8, % variance = 18.7, $\alpha = .78$. α = Cronbach's alpha that results when the marker modes are aggregated into a scale. Bold numbers indicate the factor where an item is assigned to in case of loadings on both factors.

displays the factors, corresponding variables, and factor loadings. Factor 1 consists of seven marker items that refer to feelings of vulnerability, loneliness, internalized self-criticism, and other attempts to ameliorate these painful feelings. The highest loadings were for Vulnerable Child (.88), Lonely Child (.87), and Punitive Parent modes (.84). The weakest marker-variable loading was for the Detached Protector mode (.56). We labelled this factor *Internalizing*. Factor 2 was composed of five items that address anger, impulsivity, and self-aggrandizing or overcompensatory behaviour in response to painful feelings. The highest loadings were for the Angry Child (.83), Impulsive Child (.86), and Bully and Attack modes (.89); the weakest marker-variable loading was for the Overcontroller mode (.69). We labelled this factor *Externalizing Factor*. Finally, we labelled factor 3 *Healthy* because it consisted of two items that referred to healthy self-reflection and self-expression with loadings for Happy Child (.96) and Healthy

Table 5. Correlations between schema mode factors, recidivism risk, and personality disorders

	SMI		
	Factor 1: internalize	Factor 2: externalize	Factor 3: healthy
Personality disorder			
SNAP antisocial PD	−.06	.68**	−.21
SNAP borderline PD	.34†	.60**	−.13
SNAP narcissistic PD	.23	.29	.02
Psychopathy			
PCL-R total score	−.22	.32†	−.25
PCL-R facet 1: interpersonal	−.10	.01	−.15
PCL-R facet 2: affective	−.26	.18	−.19
PCL-R facet 3: lifestyle	.10	.39**	−.20
PCL-R facet 4: antisocial	−.03	.24	−.14
Recidivism risk			
HCR-20 estimate inside hospital	−.07	.17	−.21
HCR-20 estimate outside hospital	−.01	.04	−.07

Note. $N = 70$. **$p < .01$; *$p \leq .0167$; †$.0167 < p < .02$.

Adult (82). However, this 'factor' simply represents a strong correlation between these two modes.

We computed Pearson correlations between the SMI-FV factor scores and the SNAP-FV PD scales to examine their relations with each other. The results are displayed in Table 5. Antisocial PD and borderline PD were significantly correlated with the externalizing SMI-FV factor ($r = .68$ and $r = .60$, both $p < .01$, respectively). The internalizing SMI-FV factor was related to borderline PD at a trend level of significance ($r = .34, p < .02$). There were no significant correlations between the SMI-FV factors and narcissistic PD, nor between the SMI-FV healthy factor and the SNAP-FV PD scales. With regard to psychopathy, the PCL-R lifestyle facet was positively correlated with the externalizing SMI factor, but the other PCL-R factors were unrelated to this SMI-FV factor, so the overall relation between the PCL-R (i.e., the total score) and the externalizing SMI-FV factor was only at a trend level of significance ($p = .02$). There were no significant correlations between the any PCL-R scores and the internalizing and healthy SMI-FV factors.

Pearson correlations also were computed to examine relations between the SMI-FV factor scores and the HCR-20^{V2} risk judgements, but none was significant.

Next, we performed linear regression analyses to determine whether the three SMI factors were predictive of the three SNAP-FV PD scales and the two HCR-20^{V2} risk judgements (within and outside hospital). When a SNAP-FV PD scale was entered as independent variable, the other two PD scales and the BIDR impression management scale were entered as covariates. Five simultaneous regressions were performed alternating antisocial PD, borderline PD, narcissistic PD, the HCR-20^{V2} risk judgements within and outside the hospital, as the dependent variable and the SMI factor scores as predictors. We hypothesized that antisocial PD would be predicted by the externalizing factor, borderline PD by both the internalizing and externalizing factors, and narcissistic PD by the externalizing factor. In addition, we hypothesized that the HCR-20 risk judgements would be predicted by the externalizing factor. Results are displayed in Table 6.

Table 6. Summary of linear regression for mode factors predicting personality disorders

	B	*SE B*	β
(a) Antisocial PD			
Step 1			
Borderline PD	.59	.14	.56**
Narcissistic PD	.33	.12	.35*
Step 2			
Borderline PD	.58	.14	.55**
Narcissistic PD	.32	.12	.34*
Impression management	−.07	.07	−.14
Step 3			
Borderline PD	.65	.11	.62**
Narcissistic PD	.38	.08	.40**
Impression management	−.08	.05	−.15
Internalizing factor	−.17	.03	−.53**
Externalizing factor	.11	.05	.26*
Healthy factor	−.10	.02	−.35**
(b) Borderline PD			
Step 1			
Antisocial PD	.66	.15	.69**
Narcissistic PD	−.08	.15	−.09
Step 2			
Antisocial PD	.67	.16	.70**
Narcissistic PD	−.08	.15	−.09
Impression management	.02	.07	.05
Step 3			
Antisocial PD	.89	.15	.93**
Narcissistic PD	−.33	.12	−.36**
Impression management	.09	.05	.18
Internalizing factor	.20	.04	.66**
Externalizing factor	−.04	.06	−.09
Healthy factor	.07	.03	.26*
(c) Narcissistic PD			
Step 1			
Antisocial PD	.59	.22	.56*
Borderline PD	−.12	.24	−.11
Step 2			
Antisocial PD	.60	.23	.56*
Borderline PD	−.13	.24	−.11
Impression management	.01	.09	.02
Step 3			
Antisocial PD	1.18	.26	.58**
Borderline PD	−.75	.26	−.67**
Impression management	.10	.08	.18
Internalizing factor	.24	.07	.69**
Externalizing factor	−.06	.09	−.13
Healthy factor	.13	.05	.43*
(d) HCR-20 judgement inside hospital			
Step 1			
Impression management	−.20	.20	−.18

Continued

Table 6. (*Continued*)

	B	*SE B*	β
Step 2			
Impression management	−.16	.20	−.14
Internalizing factor	−.07	.14	−.11
Externalizing factor	.07	.19	.07
Healthy factor	−.25	.11	−.41*
(e) HCR-20 judgement outside hospital			
Step 1			
Impression management	.01	.09	.01
Step 2			
Impression management	.04	.09	.09
Internalizing factor	.06	.06	.20
Externalizing factor	.01	.09	.02
Healthy factor	−.07	.05	−.26

Note. (a) $R^2 = .53$ for Step 1. $\Delta R^2 = .02$ for Step 2. $\Delta R^2 = .28$ for Step 3.
(b) $R^2 = .42$ for Step 1. $\Delta R^2 = .00$ for Step 2. $\Delta R^2 = .32$ for Step 3.
(c) $R^2 = .24$ for Step 1. $\Delta R^2 = .00$ for Step 2. $\Delta R^2 = .29$ for Step 3.
(d) $R^2 = .03$. $\Delta R^2 = .17$ for Step 2.
(e) $R^2 = .00$. $\Delta R^2 = .12$ for Step 2.
*$p < .05$; **$p < .01$.

With regard to antisocial PD, when controlling for borderline PD, narcissistic PD, and impression management, the results showed that low scores on the internalizing ($\beta = -.17, t = -5.12, p < .01$) factor, high scores on the Externalizing ($\beta = .11, t = 2.50$, $p = .02$) factor, and low scores on Healthy SMI-FV factor ($\beta = -.10, t = -4.11, p < .01$) were significant predictors for antisocial PD, explaining 83% (r^2 unadjusted) of the variance, $F(6, 25) = 20.9$, $p < .01$. The negative correlation of antisocial PD with the internalizing factor net of its overlap with borderline PD and narcissistic PD contrasts with its virtually zero zero-order correlation with this factor, and therefore represents a suppressor effect due to the high interrelation of the antisocial and borderline PD scores (Watson, Clark, Chmielewski, & Kotov, 2013). High scores on the internalizing ($\beta = .20$, $t = 5.31, p < .01$) factor and high scores on the Healthy SMI-FV factor ($\beta = .07, t = 2.11$, $p = .05$) were significant predictors for borderline PD when controlling for antisocial PD, narcissistic PD and impression management, explaining 75% (r^2 unadjusted) of the variance, $F(6, 25) = 12.5$, $p < .01$. With regard to the HCR-20^{V2} risk judgements for violence risk within the hospital, analyses showed that the SMI factors explained 20% (r^2 unadjusted) of the variance, which was not significant, $F(4, 27) = 1.66$, $p = .18$. With regard to the HCR-20^{V2} risk judgements for violence risk outside the hospital, analyses showed that the SMI factors explained only 12% (r^2 unadjusted) of the variance, which was also not significant, $F(4, 27) = .90, p = .48$.

Discussion

Our study examined the construct validity of the schema mode concept in an offender sample with cluster-B PDs. The findings revealed the existence of a 3-factor higher-order structure of schema modes. Half the hypothesized schema mode models were supported for antisocial PD, borderline PD, and narcissistic PD, with a few more hypothesized

relations showing trend levels. Similar to those with antisocial PD, borderline patients with PD scored significantly higher on Angry Child, Impulsive Child, Detached Protector, and Bully and Attack modes, but not to the other hypothesized internalizing mode (i.e., Vulnerable Child mode). Narcissistic PD was not significantly related to the predicted internalizing modes (i.e., Detached Self-Soother, Self-Aggrandizer mode, and Lonely Child modes). There are a number of striking differences between our findings and findings in non-forensic settings. For example, the schema mode model for borderline PD in non-forensic settings includes the Punitive Parent mode, whereas, in our study, Punitive Parent mode did not correlate with borderline PD. Perhaps this can be explained by the fact that offenders with borderline PD often have co-morbid antisocial traits and display externalized or other-directed aggression whereas non-forensic borderline patients with PD usually display primarily self-directed or self-damaging behaviour (Howard, McCarthy, Huband, & Duggan, 2013). These externalizing traits may also affect the degree to which an individual is aware of underlying emotions (i.e., Vulnerable and Lonely Child modes). For example, offenders may be so severely detached from their emotions that they hardly experience any feelings (Bernstein *et al.*, 2007; Day, 2009). This is also consistent with our finding that both antisocial and borderline PD were associated with high scores on the Detached Protector mode. Also, potential underlying emotional states may not be triggered when using a self-report to assess schema modes. For example, offenders may be more prone to social-desirability response styles than non-forensic patients (Haywood, Grossman, & Hardy, 1993; Keulen-de Vos *et al.*, 2011).

As hypothesized, impulsivity (i.e., Impulsive Child mode) was positively correlated with the lifestyle and antisocial facets of psychopathy. The other hypotheses were not corroborated: There were no significant relations between the overcompensatory modes, Happy Child, Bully and Attack, or Healthy Adult modes and the various psychopathy factors. Perhaps the lack of relation between the Happy Child mode (i.e., spontaneity and play) with the affective facet of psychopathy may be explained by a person x situation interaction. In the face of incarceration/hospitalization, some individuals with psychopathic characteristics may retain their play and spontaneity while others may not. Another explanation may be that the psychopathic patients in our sample are a heterogeneous group; there may be individual differences on this particular schema mode in those with psychopathic tendencies. The lack of relation between the overcompensatory modes (i.e., Self-Aggrandizer, Bully and Attack, Predator, Conning and Manipulation, Overcontroller) and the interpersonal facet of psychopathy is surprising. Perhaps, this is because they are admitted to a very structured, unique environment in which these modes are not needed/less relevant. When in Angry Child mode, an individual is feeling and expressing anger excessively and uncontrollably in response to frustration, abandonment, hurt, or humiliation (Young *et al.*, 2003). Perhaps the lack of relation between the antisocial and interpersonal facets of psychopathy is explained by fact that these facets are not necessarily linked to behaviour in response to emotional pain. The lack of inverse relationship between the Healthy Adult mode (i.e., expression of healthy, balanced self-reflection) and Bully and Attack mode, and the antisocial and lifestyle facet of psychopathy is also surprising and cannot be readily explained.

The results of the regression using factor-based scores show a distinction between antisocial PD as a disorder involving externalizing emotional states, and borderline PD as involving high internalizing states. This split is in concordance with the DSM-IV/-5 characterization of borderline and antisocial PD (American Psychiatric Association, 1994, 2013). For example, borderline PD is characterized by instability of interpersonal

relationships, self-image and affects, and marked impulsivity which refer predominantly to a patient's internal world. Antisocial PD, however, is primarily characterized by disregard and violation of the rights of others.

Our findings partly did not confirm the hypothesis that schema modes were related to violence risk judgements. The individual schema modes were unrelated to recidivism risk, and the mode factors did not predict higher judgements of violence risk both inside and outside the hospital, when impression management was controlled for. Patients may have presented an unduly positive image of themselves in terms of schema modes which does not correspond with the general risk assessment that is based on collateral information. This is in line with other studies that found that offenders may be prone to impression management (Allard & Grann, 2000; Keulen-de Vos *et al.*, 2011).

The study has several limitations. First, the SNAP-FV was administered to both patients and informants, whereas the SMI-FV was administered to patients only. Patients may under- or over-report their maladaptive emotional states. Second, our sample size is relatively small, and most patients were diagnosed with antisocial PD. Third, the relation among schema modes, personality pathology, and violence risk was examined using a cross-sectional design. Finally, we used categorical scores for personality pathology assessed by the SNAP-FV. Some scholars have challenged the categorical construct of personality pathology and have – instead – suggested a dimensional model of personality (Clark, 2007; Livesley & Jackson, 2009; Vall *et al.*, 2015). Because dimension-based conceptualization may be much more useful, future studies should analyse personality dimensions and schema modes. Also, future studies with a longitudinal design and various types of instruments (i.e., self-reports, observer-reports, physiological assessments [e.g., heart rate, skin conductance]) are necessary to make definitive statements about the predictive value of schema modes in PDs, and the value of schema modes in predicting violence risk.

This study was one of the first to examine three aspects of the construct validity of the schema mode concept in a forensic population. These findings have important theoretical and clinical implications. From a theoretical perspective, the findings contributed to the empirical evidence for one of Schema Therapy's most central theoretical frameworks in forensic settings. From a clinical perspective, the study contributes to a more accurate framework and understanding of an offender's PD pathology because it alerts therapists to those modes that are specific for different PDs. A better understanding of mode conceptualizations in an offender's personality pathology can set the stage for adjusting particular interventions for specific PDs.

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