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# Personality assessment with the Shedler-Westen assessment procedure 200 in a forensic sample: criterion validity and contribution to structured forensic clinical judgement

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## ABSTRACT

Current investigation focused on the criterion validity in a forensic sample of the Dutch language version of the Shedler-Westen Assessment Procedure (SWAP-200-NL), a personality assessment instrument completed by the examiner. We inquired into two areas: a) possible differences between a forensic and general mental health care population for SWAP-200-NL Personality Syndromes (PS) and Trait Dimensions (TD; N = 68), and b) explore criterion validity of SWAP-200-NL PS and TD scales for data from criminal records (N = 114). An ANOVA showed significantly higher scores for the forensic group on antisocial-psychopathic PS and psychopathy TD and lower scores on dysphoric, obsessional, high functioning depressive and avoidant PS than those for the general population. Furthermore, antisocial-psychopathic PS and psychopathy TD correlate negative with the age of first sentenced offence and positive with the number of sentenced offences in the past. Also, for the number of sentenced offences in probationary period we found significant mean differences for antisocial-psychopathic PS, and psychopathy and narcissistic TD. In contrast, criminal data showed inverse associations with scales representing obsessional, avoidant and depressive tendencies. In conclusion, present results support the differential diagnostic potential of the SWAP-200-NL and its clinical utility in forensic settings.

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Personality pathology is highly prevalent in forensic populations. Reviewing 62 surveys of prison populations, Fazel and Danesh (2002) found that 65% of men and 42% of women were classified with one or more personality disorders. Additionally, in forensic samples they found a presence of antisocial personality disorder in men of 47%, in women of 21%. Personality pathology in forensic samples is often characterized by traits that are linked to criminal behaviour, such as misperception of self and others, inappropriate strong emotional reactions, difficulties with impulse control, and long-standing interpersonal problems (Philipse et al., 2010). A review study of Yu et al. (2012) found an increased risk for committing a violent act for individuals with a personality disorder as compared to individuals without a personality disorder. The same was true for the risk of re-offending. Likewise, Miller and Lynam (2001) identified links between Big Five (Five Factor Model; Costa & McCrae, 1990) personality traits and criminal behaviour which, upon further study, has shown that individuals with a criminal history generally score low on agreeableness (i.e. more antagonistic, deceitful and manipulative), low on conscientiousness (i.e. difficulty in controlling impulses and endorsing non-traditional values) (Lynam & Derefinko, 2006; Miller & Lynam, 2001, 2003; Miller et al., 2001), and have high levels of facets of neuroticism relating to angry hostility and impulsiveness (Miller & Lynam, 2015; Widiger & Costa, 2012). Therefore, adequate diagnosis of personality disorders in forensic populations seems highly relevant to prevent recidivism of delinquent behaviour.

Performing personality assessment in forensic settings can be more challenging than in general clinical settings due to several related factors. Firstly, the interests of involved parties such as justice system representatives, lawyers, examiner, and examinee (suspect) are often oppositional. Moreover, for examinees in forensic settings, undergoing personality assessment is often court-ordered or otherwise involuntary. In addition, results may have far-reaching legal implications, such as a mandatory admission to a forensic psychiatric institution or chances for probation or parole. These aspects generally result in a suspicious attitude and limited trust between examinee and examiner (Cima-Knijff, 2003); consequently, the forensic setting is known to provoke malingering or, on the other hand, dissimulation and positive impression management (Cima-Knijff, 2003; Wygant & Lareau, 2015). Lastly, the validity of self-report personality inventories might be limited because examinees often lack self-insight (Huprich et al., 2011; Oltmanns & Turkheimer, 2006) and many of the instruments are prone to manipulation (De Ruiter & Greeven, 2000; Spaans et al., 2017; Wygant & Lareau, 2015).

Given the issues described above, it is imperative for forensic personality assessment to make use of multiple sources of information (American Psychiatric Association, 2013a) and include instruments that help to structure professional judgement (Singh et al., 2016), especially when it is likely that the

examinee will be ordered to treatment in a forensic psychiatric institution. In the current study, we focus on the applicability of the Dutch language version of the Shedler-Westen Assessment Procedure (SWAP-200) as an instrument of promising clinical value in this area. The Shedler-Westen Assessment Procedure (SWAP; Westen & Shedler, 1999a, 1999b) is a promising instrument in that it is scored by the examiner based on thorough knowledge of the examinee, through interview methods and consulting a variety of different sources, such as existing files on the examinee and interviews with other involved professionals. The SWAP aims to strengthen the reliability of professional judgement by combining it with actuarial methods. The data from this appear to be clinically rich outcome measures which incorporate relevant and widely used concepts many instruments lack and which clinicians generally *infer* from what examinees are saying and from how examinees are behaving, such as the use of specific defence mechanisms (Shedler, 2015; Shedler & Westen, 2007; Westen & Weinberger, 2004).

The SWAP is a personality assessment instrument containing 200 items to be scored in a fixed distribution by the clinician or examiner. Outcome measures involve three different types of scales: a prototype-matching approach in which item scores are matched with empirically derived personality syndromes also referred to as prototypes (Westen & Bradley, 2005), dimensional personality traits and categorical DSM-5 classifications (American Psychiatric Association, 2013b). Even though the labels of the personality syndrome and DSM-5 scales partially overlap, the content differs considerably. Personality syndromes are identified through Q-analysis, which clusters groups of patients with overlapping scoring patterns and entails rich descriptions of underlying constructs and processes explaining behavioural observations. For example, the personality syndrome Dysregulated also encompasses processes belonging to the borderline personality organization (cf Kernberg, 1984) and the personality syndrome hostile-externalizing combines processes like projection, externalization, distrust and passive-aggressiveness that overlaps with the paranoid personality disorder in DSM-5.

The current study uses Egger et al.'s (2012) Dutch translation of the SWAP-200, focusing on the applicability of the Dutch language version (SWAP-200-NL) within a forensic setting of pretrial forensic assessment. The aim is twofold: a) to observe if the SWAP-200-NL can identify forensic, possibly risk-prone profiles, and b) to explore criterion validity of SWAP-200-NL personality syndrome and trait dimension scales with data from the criminal record. Consistent with the literature (Fazel & Danesh, 2002; Miller & Lynam, 2003; Miller et al., 2001; Philipse et al., 2010), we expect that the forensic SWAP-200-NL profiles will show significantly higher scores on the antisocial-psychopathic, paranoid, dysregulated and hostile-externalizing personality syndrome scales and on the trait dimensions narcissism, psychopathy,

emotional dysregulation and hostility. We also expect the same scales to correlate positively with the number of sentenced offences, the number of sentenced offences in probationary period, and a young age of first sentenced offence. Moreover, we expect lower scores for the forensic profiles on the personality syndrome scales obsessional, psychological health, avoidant, dysphoric and high-functioning depressive, and on the trait dimensions schizoid, dissociation, psychological health and obsessiveness.

## Materials and Methods

### Participants

For the first part of the study, SWAP-200-NL profiles were collected for 86 examinees in a forensic setting. All subjects had been charged with a crime and were the subject of a court ordered psychological assessment. Because the number of women was too small to make reliable comparisons, only men were included ( $N = 68$ ). The mean age of the pretrial forensic group was 34.39 years (range 15–62 years;  $SD = 13.34$ ). Most examinees originated from the Netherlands (86%), followed by Morocco and the Netherlands Antilles (each 2%). An equal number of SWAP-200-NL profiles were extracted from data of a previous study by Lie Lie Sam et al. (2020) concentrating on individuals that attend outpatient mental health care institutions with personality-related symptoms. Matching occurred based on sex (male) and age. Mean age of the mental health group was 34.35 years (range 15–62 years;  $SD = 13.60$ ). The majority originated from the Netherlands (90%), 2% were from Morocco and 2% from Surinam. The 68 SWAP profiles in the mental health group were scored by 28 different examiners, 18% were men (for descriptives, see: Lie Sam et al., 2020). In the forensic group, 31 different examiners scored the 68 SWAP-200-NL profiles, 35% were men. There was no overlap in examiners between both samples. The forensic examiners were registered in the Dutch register of behavioural experts for court ordered psychological/psychiatric evaluations (NRGD).

For the second part of the study, SWAP-200-NL profiles were obtained for 114 examinees, who were also subject to court-ordered assessment. Both men and women were included. Data from their criminal history were collected. Examiners were the same as previously described. There were 18 exclusions because of absence of criminal records. From the remaining 96 examinees 86% were men. The average age was 35.03 years (range 16–64 years;  $SD = 12.55$ ). The examinees were mostly born in the Netherlands (80%), followed by the Netherlands Antilles (4%).

## **Procedure**

Experienced psychologists and psychiatrists with a minimum of three years of post-master clinical education, received three hours of training in all aspects of the theoretical underpinnings of the SWAP, the item content, scoring principles and the interpretation of the SWAP-scales. As part of a court ordered forensic assessment procedure (forensic group) or as part of a psychological assessment for indication for treatment (mental health group), the examiners interviewed the examinees using the Clinical Diagnostic Interview (CDI, see below for description). For all examinees, a SWAP-200-NL was completed as soon as possible after completing the interview. Since current investigation does not require active patient or examinee participation (necessary information was obtained via practices or interventions regularly adopted, without additional interventions burdening participants), the study is considered a non-interventional study. Overall, the study was carried out in accordance with the Declaration of Helsinki and the Guidelines for Good Clinical Practice established by the International Conference on Harmonisation (CPMP = ICH = 135 = 95).

## **Measures**

### ***Shedler-Westen Assessment Procedure, Dutch language version (SWAP-200-NL)***

The SWAP-200 was translated into Dutch (SWAP-200-NL; Egger et al., 2012) using forward-backward translation, a procedure described by Brislin (1986). The 200 items are based on relevant clinical literature from the past 50 years and feedback of expert clinicians (Shedler, 2015; Westen et al., 2012). An experienced examiner rates and ranks the items following a fixed distribution (q-sort method; Blagov et al., 2012). Information for scoring is collected either through a thorough clinical diagnostic interview (CDI; Westen & Muderrisoglu, 2003) or after completing a minimum of six psychotherapy sessions. More recent version of the SWAP available; the SWAP-II (Westen & Shedler, 2007). However, since the SWAP-200 has a stronger empirical base and is more commonly used in clinical practice, this study focused on the SWAP-200.

The psychometric properties of the SWAP-200 have proven to be acceptable for good in both the mental health care (Blagov et al., 2012; Lie Sam et al., 2020) and forensic populations (Blagov et al., 2011; Fowler & Westen, 2011; Marin-Avellan et al., 2005, 2014; Porcerelli et al., 2004). The interrater reliability of the SWAP-200 is above  $r = .80$  in all studies to date (Shedler, 2015; Westen & Muderrisoglu, 2003, 2006), the test-retest reliability between  $r = .68$  and  $r = .97$  (Cogan & Porcerelli, 2012; Shedler, 2015), and Cronbach's alpha for TD scores vary between  $.81$  and  $.97$  (Shedler & Westen, 1998). The diagnostic

scales of the SWAP have shown predictive validity with a wide range of external criterion variables (Shedler, 2015). The first study of the SWAP-200-NL identified four personality syndrome higher order factors that greatly overlapped commonly found personality constructs (Lie Sam et al., 2020).

### ***Clinical Diagnostic Interview (CDI)***

The CDI (Westen & Muderrisoglu, 2003) is a systematic clinical interview developed by Drew Westen. The design of the interview aims to systematize the process and encourages patients to tell narratives about their characteristics, their current lives and biographical information. The duration of the interview is approximately two and a half hours and can be conducted in consecutive sessions.

### ***Criminal data***

For the forensic population, criminal data were gathered from the criminal records. For each participant (a) the age of first sentenced offence was recorded ( $M = 25.88$ ; range = 13–60;  $SD = 11.42$ ) as well as (b) the number of sentenced offences in the past ( $M = 11.58$ ; range = 0–89;  $SD = 16.01$ ) and (c) the number of sentenced offences in probationary period ( $M = 1.54$ ; range = 0–18;  $SD = 3.33$ ). Criminal offences were diverse and entailed violent as well as nonviolent offences such as theft, abuse, domestic violence, sexual abuse, arson, trafficking of drugs and attempted murder. Minor nonviolent offenses such as traffic violations were not included. Of one participant, the age of first conviction was unknown.

### ***Statistical analysis***

An ANOVA was conducted to detect differences between the mental health group and the forensic group on the SWAP-200-NL personality syndrome and trait dimension scales. Partial eta squared was calculated to inform about effect size. The  $T$  values of the scales were used. Only those scales that met the following criteria are considered to be relevant: (1)  $p < .01$  (after Bonferroni correction), (2) partial eta squared  $>0.05$  (medium; Cohen, 1988) and (3) assumptions of normal distribution and homogeneity of variances (Levene's test) are not or only slightly violated.

The relationships between the age of first sentenced offence and the number of sentenced offences in the past with the SWAP-200-NL personality syndrome and trait dimension scales (in the forensic group) were investigated using Spearman correlation coefficient. The variables from the criminal record were not correlated with age, which led to the conclusion that there is no need to consider statistical correction for age. Due to a skewed distribution of

the number of sentenced offences in probationary period, we choose not to calculate correlations, but to dichotomize this variable (0 = no offences; N = 58; 1 = 1–18 offences; N = 39). We then performed an independent sample t-test to compare means.

### **Results: Differential qualities of the SWAP-200-NL**

The results are presented in Table 1. As expected, we found higher rates of antisocial-psychopathic personality syndrome, psychopathy trait dimension, and dissociation trait dimension in the forensic group. In contrast, the mental health group scored higher on high-functioning depressive personality syndrome, dysphoric personality syndrome, avoidant personality syndrome, obsessional personality syndrome and on dysphoria trait dimension, and psychological health trait dimension. The hypothesized differences for paranoid personality syndrome, dysregulated personality syndrome, Hostile-externalizing personality syndrome, and for Hostility trait dimension, emotional dysregulation trait dimension, schizoid trait dimension, and Obsessionality trait dimension were not confirmed.

**Table 1.** Differences with a small to medium effect size on SWAP-scales between a pretrial forensic group and a general mental health care group.

Personality syndroms and trait dimension scales	Forensic (N = 68)		Mental Health (N = 68)		F	Part. $\eta$
	M	SD	M	SD		
<i>Personality Syndromes</i>						
Antisocial-Psychopathic	60.08	10.25	51.39	9.17	27.128a	.17
Paranoid	46.52	8.14	45.78	9.50	.237	.002
Dysregulated	46.51	7.13	46.99	8.67	.121	.001
Hostile-Externalizing	51.65	8.59	47.84	9.65	5.928	.04
Obsessional	45.01	7.17	50.55	8.31	17.333a	.12
Psychological health	46.71	7.15	54.58	8.55	33.891a	.20
Avoidant	44.65	7.88	49.15	8.61	10.064a	.07
Dysphoric	41.41	7.76	47.01	8.79	15.517a	.10
High-functioning depressive	43.65	7.26	51.83	8.08	38.575a	.22
<i>Trait Dimensions</i>						
Narcissism	50.69	9.89	46.8	7.17	6.882	.049
Dysphoria	43.24	7.45	50.65	10.22	23.350a	.148
Psychopathy	63.54	11.09	54.23	10.72	24.771a	.16
Emotional dysregulation	47.56	8.22	48.62	8.04	.572	.004
Hostility	52.5	11.64	48.04	11.25	5.161	.037
Schizoid	55.86	9.03	51.32	10.92	6.982	.05
Dissociation	57.89	10.27	52.58	10.38	8.958a	.06
Psychological health	52.32	7.70	58.80	10.20	17.443a	.12
Obsessionality	46.04	6.18	49.28	8.66	6.337	.045

ap < .01



**Results: criterion validity of the SWAP-200**

Significant results are presented in Table 2. High scores on antisocial-psychopathic personality syndrome and psychopathic trait dimension are correlated with a younger age of first sentenced offence and with a higher number of sentenced offences in the past. On the other hand, high scores on Obsessional personality syndrome are correlated with an older age of first sentenced offence and with lower numbers of sentenced offences in the past. For the number of sentenced offences in probationary period we found significant mean differences (between the group with 0 vs the group with 1–18 sentenced offences in probationary period) for the Antisocial-psychopathic personality syndrome ( $M(0) = 55.40$ ,  $SD(0) = 10.72$  vs  $M(1-18) = 62.54$ ,  $SD(1-18) = 8.91$ ;  $T = -3.56$ ;  $p < 0.01$ ; Cohen's  $d = -0.71$ ), Psychopathy trait dimension ( $M(0) = 58.31$   $SD(0) = 11.21$  vs  $M(1-18) = 66.10$ ,  $SD(1-18) = 10.25$ ;  $T = -3.53$ ;  $p < 0.01$ ; Cohen's  $d = -0.72$ ) and Narcissistic trait dimension ( $M(0) = 47.04$   $SD(0) = 10.76$  vs  $M(1-18) = 51.97$ ,  $SD(1-18) = 9.68$ ;  $T = -2.68$ ;  $p < 0.01$ ; Cohen's  $d = -0.58$ ).

Obsessionality trait dimension, avoidant personality syndrome and Schizoid-schizotypal personality syndrome were only correlated with a higher age of first sentenced offence. In addition, avoidant personality syndrome, obsessional personality syndrome, and Obsessionality trait dimension correlated with a lower number of sentenced offences in the past. Finally,

**Table 2.** Significant Spearman correlations for SWAP-200-NL Personality Syndrome and Trait Dimension scales with criminal data in psychiatric forensic population.

SWAP-200-NL scales	Age first sentenced offence (N=96)	Number sentenced offences (N=97)
<i>Personality Syndromes</i>		
Antisocial-Psychopathic	-. <b>.355b</b>	<b>.453b</b>
Paranoid	-0.072	-0.25
Dysregulated	-.112	.094
Hostile-Externalizing	-.160	.171
Obsessional	<b>.363b</b>	<b>-.441b</b>
Psychological Health Index	.246a	<b>-.455b</b>
Avoidant	<b>.328b</b>	-.234a
Dysphoric	.150	-.235a
Schizoid-Schizotypal	.258a	.049
High-functioning depressive	.108	-.439b
<i>Trait Dimensions</i>		
Narcissism	-.158	.222a
Psychopathy	<b>-.451b</b>	<b>.546b</b>
Emotional dysregulation	-.115	.044
Hostility	-.229a	.170
Schizoid Orientation	.144	.227a
Psychological Health	.124	<b>-.398b</b>
Obsessionality	<b>.448b</b>	-.286b
Sexual Conflict	<b>.335a</b>	-.047

ap<.05

bp<.01

the scales that represent or incorporate psychological strengths (Psychological Health Index, High functioning depressive personality syndrome and psychological health trait dimension), like the capacity to love and effectively use individual abilities, are negatively correlated with the number of convictions in the past. For the number of sentenced offences in probationary period we found significant differences, again between 0 vs 1–18 sentenced offences in probationary period, for the Obsessional personality syndrome ( $M(0) = 47.34$   $SD(0) = 8.57$  vs  $M(1-18) = 41.36$ ,  $SD(1-18) = 6.14$ ;  $T = 3.99$ ;  $p < 0.01$ ; Cohen's  $d = -0.78$ ), High-functioning depressive personality syndrome ( $M(0) = 48.16$   $SD(0) = 8.07$  vs  $M(1-18) = 41.90$ ,  $SD(1-18) = 6.07$ ;  $T = 4.35$ ;  $p < 0.01$ ; Cohen's  $d = 0.85$ ), Psychological Health Index ( $M(0) = 50.74$   $SD(0) = 9.64$  vs  $M(1-18) = 44.32$ ,  $SD(1-18) = 6.34$ ;  $T = 3.96$ ;  $p < 0.01$ ; Cohen's  $d = 0.76$ ) and the Psychological Health trait dimension ( $M(0) = 57.96$   $SD(0) = 9.72$  vs  $M(1-18) = 50.30$ ,  $SD(1-18) = 7.73$ ;  $T = 4.31$ ;  $p < 0.01$ ; Cohen's  $d = 0.85$ ).

## Discussion

The aim of the present study was twofold, a) to investigate whether the SWAP-200-NL can differentiate between an outpatient mental health care population and a forensic population and b) to explore criterion validity of SWAP-200-NL personality syndrome and trait dimension scales with data from the criminal record. The results show several significant group differences and clear relations of SWAP personality syndromes and trait dimensions with data from criminal records.

Compared to the mental health group, the forensic group scored higher on the Antisocial-Psychopathic personality syndrome and on the Psychopathy trait dimension. Higher scores on these scales were also associated with an earlier age of first sentenced offence and with a higher number of sentenced offences in the past. Also significant group differences were found for the number of sentenced offences in probationary period (0 vs 1–18) for Antisocial psychopathic personality syndrome, Psychopathy trait dimension and Narcissistic trait dimension. Although these results seem obvious (prevalence studies have shown similar relationships before), with respect to forensic risk assessment and risk management, the magnitude of antisocial-psychopathic tendencies matter, whether or not these tendencies exceed the threshold of a personality disorder (Bonta & Andrews, 2017). Since the SWAP-200-NL offers dimensional measures, expressed in T-values, this instrument has forensic advantages above categorical classifications alone. Furthermore, although antisocial and psychopathic features are also more prevalent in forensic samples by means of self-report (Spaans et al., 2017), the apparent capability of the SWAP-200-NL to assist the clinical judgement in detecting

antisocial-psychopathic tendencies has supplemental value, since forensic assessors have to substantiate their conclusions multimethodologically.

The results on the Antisocial-psychopathic personality syndrome and on the Psychopathy trait dimension may have future relevance for treatment as well. The Risk-Need-Responsivity-Model (RNR-model; Bonta & Andrews, 2017) is generally accepted for guiding forensic treatment. According to this model, intensity of treatment should be in concordance with the risk of recidivism and treatment should be tailored to the individual needs and capabilities of offenders. In future research, it would be interesting to study if the antisocial-psychopathic personality syndrome and the psychopathy trait dimension can be broken down into constituting parts, as, for example, some parts will possibly stand out as a Need factor, where others will be more relevant as a responsivity factor.

Other scales of the SWAP-200-NL show group differences into the opposite direction and inverse relations to criminal data. Compared to the mental health group, the forensic group scored lower on the dysphoric personality syndrome, high-functioning depressive personality syndrome, obsessional personality syndrome, avoidant personality syndrome, Dysphoria trait dimension, dissociation trait dimension and psychological health trait dimension. Also, these scales showed inverse associations with aforementioned criminal variables (age of first sentenced offence, number of sentenced offences in the past). For the number of sentenced offences in the probationary period significant group differences (between 0 vs 1–18 sentenced offences) were found for the Obsessional personality syndrome, High functioning personality syndrome, psychological health index, and Psychological health trait dimension. It can be hypothesized that these aspects of personality functioning have a protective function against violent behaviour.

Regarding Dysphoric personality syndrome, High-Functioning Depressive personality syndrome, Obsessional personality syndrome and Avoidant personality syndrome, inhibition should be mentioned as a possible relevant factor. Although both internalizing and externalizing tendencies can have their pathways to violence (Howard, 2015), internalizing pathology is less often associated with criminal conduct. Future research could be focused on the question if the Dysphoric, High-functioning depressive, obsessional and avoidant personality syndromes have mediating effects on antisocial and psychopathic tendencies. It would be clinically relevant to know whether people who score high on the internalizing scales not only are generally less antagonistic and more willing to comply to rules, but also more responsive to forensic treatment.

The SWAP-200-NL scales that incorporate well-developed psychological strengths and possibilities for social adjustment (Psychological health index, psychological health trait dimension and high-functioning depressive personality syndrome) are negatively correlated with the number of sentenced

offences in the past. Also, significant group differences were found for the groups 0 versus 1–18 sentenced offences in probationary period, with higher mean scores for the first group. These findings are not surprising. In general, these scales cover for a large part healthy and adaptive functions and abilities like warm and healthy relationships, adherence to moral and ethical standards, empathy, an orientation on the larger community, finding meaning and satisfaction, the capability of hearing emotionally threatening information and benefit from it, as well as the ability to effectively set and pursue personal goals in life. These aspects of functioning have great resemblance with factors that are generally considered as protective for risk assessment like empathy, coping and conflict resolution skills, self-control, the presence of life goals, a social network and an intimate relationship (De Vogel et al., 2012). However, these scales, representing healthy adjustment, appear to be unrelated to the age of first sentenced offence. One possible explanation is that many of the items on these scales represent personal capabilities, like those mentioned above, that do not usually develop until (young) adulthood.

The current study did not show significant group differences or associations with criminal data for the hypothesized Paranoid personality syndrome, dysregulated personality syndrome, Hostile-externalizing personality syndrome, and for Hostility trait dimension, Emotional dysregulation trait dimension, Schizoid trait dimension, and Obsessionality trait dimension. This could be understood when the complexity of associations and methods of measurement are taken into account. While epidemiological surveys (Coid et al., 2006) tend to find associations of violent behavior with several DSM-5 personality disorders like Antisocial, Borderline, Narcissistic and Paranoid personality disorder, there are also several studies that find more limited associations. For example, Blackburn (2007), found only associations between criminal history and antisocial personality disorder, not for the other personality disorders. Furthermore, criminal and violent behaviours is found to be linked to phenomena associated with mental disorders like schizophrenia, psychosis and bipolar disorder (Douglas et al., 2009; Fazel et al., 2009, 2010; Witt et al., 2013). In another study, comparing violent with non-violent prison inmates, Watzke et al. (2006) mainly found associations with lifetime mental disorders, excluding personality disorders. Also, additional substance misuse is likely to increase the risk on violent behavior (Swanson, 1994). It is thus very likely that comorbidity plays a large part in the complexity of understanding these associations, which argues for the use of complex models (Duggan & Howard, 2009). In the current study we could not control for these variables.

Another limitation concerns the variety of criminal data used. Violent as well as nonviolent offences were included. Marin-Avellan et al. (2014) constructed with the SWAP-200 a risk scale that differentiates violent from non-violent patients in a forensic clinic. However, due to the heterogeneity of

criminal offences in the present study, the data don't allow for a comparison. Also, we did not address the heterogeneity of violence. It would be meaningful to look for more qualitative measures of criminal offending, for example, incorporating aspects as the severity of inflicted injury or the duration or perseverance of violence used. In this line of thinking the difference between sexual and non-sexual violence can also be mentioned, as well as the context of violence or the difference between instrumental vs. reactive aggression.

Also, females were excluded from the first study and very few participated in the second study. Consequently, the results might not be applicable to women. Recent research in a comparable forensic population in the Netherlands has shown that female offenders are, for example, more often characterized by borderline personality disorder (Muller & Kempes, 2016). This can partially explain that no group differences were found on the Borderline-Dysregulated personality syndrome. So, in future research it would be relevant to make a comparison based on gender.

A strength of this research is the study of SWAP-200 items in relation to criminal offending. Researchers have addressed these and comparable questions in the past (Marin-Avellan et al., 2014; Porcerelli et al., 2004; Shechter & Lang, 2011), but never in a population where the assessment procedure is mandatory in a pretrial court ordered psychiatric or psychological evaluation.

In summary, the results of this study suggest that the observer-rated SWAP-200-NL is a promising tool in forensic settings. While psychometric properties of the SWAP-200 are generally good, and the results of the first psychometric study of the SWAP-200-NL is promising, further research regarding the reliability and validity of the SWAP-200-NL in specific groups would be a welcome development.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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