

The Predictive Value of the SWAP-200-NL Scales in Relation to Criminal Data

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Abstract

The prevalence of personality disorders (PDs) in forensic populations is high. PDs might be predictive for criminal behaviour and therefore it is interesting to study PDs in the context of risk assessment. The current study investigates whether the Dutch language version of the Shedler-Westen Assessment Procedure (SWAP-200-NL), an instrument that assesses personality pathology, has predictive value on criminal data. It is investigated to what extent the number of convictions, the number of days of detention, and the age of first conviction are explained by the SWAP-200-NL scales. To do so, 34 forensic mental health experts completed the SWAP-200-NL for defendants they were assessing. Information about the number of convictions, the number of days of detention, and the age of first conviction was acquired by studying criminal records. Various multiple regression analyses with bootstrapping were carried out to assess the predictive values of the SWAP-200-NL scales. Results suggest that the psychopathy factor scale accounts for 16% of the variability in the number of convictions and a combination of oedipal conflict factor, psychopathy factor, and schizoid orientation factor explain 43% of the variability in the age of first conviction. The scales do not account significantly for variability in the number of days of detention. In conclusion, the SWAP-200-NL may be used to make chary predictions about the age of first conviction. Future research should extend and define the model of the age of first conviction in the context of risk assessment.

Keywords: SWAP-200-NL, personality disorders, forensic population, criminal data, risk assessment.

Assessing the Predictive Value of the SWAP-200-NL Scales in Relation to Criminal Data

Within forensic populations many people suffer from mental disorders. Brink (2005) states in his review that in incarcerated populations 55% up to 80% of the prisoners have one or more mental disorders. Most of the prisoners are diagnosed with a personality disorder (PD); Fazel and Danesh (2002) found that 65% of the imprisoned males and 42% of the imprisoned females are diagnosed with a PD. Antisocial PD was most frequently seen with a prevalence of 47% in male offenders and 21% in female offenders. Torgersen, Kringlen, and Cramer (2001) found that in the general population the prevalence of PDs is about 13% and that of antisocial PD is less than one percent. So, the prevalence of PDs in forensic populations is high compared to the general population. Due to this and to the fact that it is the most common mental disorder in forensic populations, PDs might add to criminal behaviour and thus be predictive for criminal behaviour. More research on the predictive value of PDs on criminal behaviour is important. The findings will add to the understanding of delinquency and may be used in risk assessment and risk control as people with high-risk profiles can be monitored and so first-time offence and recidivism can be reduced.

Researching mental disorders in the forensic population is, nonetheless, complicated. Convicts might simulate or dissimulate symptoms of mental disorders in order to respectively avoid detention or to avoid mandatory psychiatric treatment (Ganellen, 2007; Gunn & Taylor, 2014; Paulhus & Vazire, 2009; Spaans et al., 2016). Additionally, they might lack self-insight (Ganellen, 2007; Oltmanns & Turkheimer 2006). Self-report questionnaires should therefore be avoided. Clinical observation alone also has disadvantages since the clinician's view is not standardized and may vary across cases and clinical practitioners (Westen & Weinberger, 2004). Hilton and Simons (2001) and Singh and Fazel (2010) add to this, reporting that clinical observation is not most accurate in risk assessment. Westen and

Wengerger (2004) state that when the clinician's view is quantified appropriately, it can be reliable and valid.

A promising available tool for quantifying clinical observations is the Shedler-Westen Assessment Procedure (SWAP-200). The SWAP-200 is an instrument that assesses personality pathology and consists of 200 personality-descriptive statements that are filled out by a clinician (Shedler, 2009). After filling out the statements, software generates three personality profiles and a Psychological Health Index. The first personality profile is named DSM-IV Personality Disorders and represents correspondence to formal axis II DSM-IV PD diagnoses. The second profile is named SWAP Personality Syndromes and provides a profile on an alternative set of twelve personality syndromes. This set of personality syndromes was developed through Q-analysis and identifies naturally occurring groups of patients with PDs. The personality syndromes deviate slightly from the DSM-IV PDs. The third profile named Trait Dimensions provides scores on twelve personality factors that were identified through factor analysis on the 200 items. All the three profiles have a dimensional (contrary to categorical) approach to personality pathology. This means that the profiles capture all personality disturbances even though these might not reach clinical thresholds. Lastly, a score on the Psychological Health Index is generated. The Psychological Health Index gives an impression of the average level of functioning relative to patients with a DSM-IV PD diagnosis. In conclusion, the SWAP-200 is an extensive instrument and may therefore be promising in the study of risk assessment.

Relating to the study of risk assessment, four studies on the SWAP-200 and delinquent behaviour are available. To begin with, Marin-Avellan, McGauley, Campbell, and Fonagy (2014) reported on violent and acquisitive offences, time spent in detention, and

severe incidents in a high-security hospital during a one-year follow-up. Second, Porcerelli, Cogan, and Hibbard (2004) reported on partner-related violence. Third, Shechter and Lang (2011) reported on personnel safety risks. Lastly, Smits et al. (2018) reported on the Dutch language version of the SWAP-200, the SWAP-200-NL, and the age of first sentenced offence, the number of sentenced offences, and the number of sentenced offences in probation periods. All four studies concluded that antisocial/psychopathic personality pathology is associated with more delinquent behaviour. Also, three studies (Porcerelli et al., 2004; Shechter & Lang, 2011; Smits et al., 2018) reported on narcissistic personality pathology and two studies (Porcerelli et al., 2004; Shechter & Lang, 2011) on borderline/emotionally dysregulated personality pathology in relation to more offence. In contrast, two studies (Porcerelli et al., 2004; Smits et al., 2018) reported on avoidant personality pathology, depressive/dysphoric personality pathology, and obsessive personality pathology and two studies (Shechter & Lang, 2011; Smits et al., 2018) on a high psychological health in relation to less offence. Finally, one study (Smits et al., 2018) reported on hostility, sexual conflict, and schizoid/schizotypal personality pathology and one study (Porcerelli et al., 2004) on histrionic personality pathology in relation to more offence. Thus, antisocial/psychopathic, narcissistic, and borderline/emotionally dysregulated personality pathology seem to be associated with relatively more delinquent behaviour, while internalising disorders and a high psychological health seem to be associated with less delinquent behaviour. Noteworthy is that the study of Marin-Avellan et al. (2014) is the only study that reported on the predictive value of the SWAP-200 scales and that the study of Smits et al. (2018) is the only study that researched the SWAP-200-NL within a forensic population. Research on the predictive value of the SWAP-200-NL scales on delinquent behaviour is thus lacking.

The current study investigates whether the SWAP-200-NL scales have predictive value on delinquent behaviour. The results will provide insights in whether these scales could be used in risk assessment. Two measures relating to delinquent behaviour are used: the number of convictions and the number of days of detention. The number of convictions includes all offences and thus captures the general recidivism rate. The number of days of detention intends to give an impression on the degree of involvement in severe and complex delinquency. Additionally, it is explored whether the SWAP-200-NL scales have a predictive value on the age of first conviction as information about the age of first conviction could be useful for monitoring purposes. Based on the studies of Marin-Avellan et al. (2014), Porcerelli et al. (2004), Shechter and Lang (2011), and Smits et al. (2018) four hypotheses were formed. First of all, it is hypothesised that the number of convictions and the number of days of detention will be higher for persons with antisocial/psychopathic, narcissistic, or borderline/emotionally dysregulated personality pathology. Second, relatively fewer convictions and days of detention are expected for persons with internalising personality pathology or a high psychological health. Third, a relatively young age of first conviction is expected for persons with antisocial/psychopathic, narcissistic, or borderline/emotionally dysregulated personality pathology. Finally, a relatively old age of first conviction is expected for persons with internalising personality pathology or a high psychological health. The hypotheses were tested within a Dutch forensic population.

Method

Measures

SWAP-200-NL. The SWAP-200-NL is the Dutch language version of the SWAP-200 and was developed by Egger, Van der Heijden, Derksen, and Kuijpers in 2012 (Egger, Van der Heijden, Derksen, and Kuijpers, 2012). The SWAP-200-NL is an instrument which

assesses personality disorders, syndromes, and factors and consists of 200 personality-descriptive items. Examples of items are: ‘tends to act impulsively, without regard for consequences’, ‘tends to be conscientious and responsible’, and ‘lacks close friendships and relationships’. A clinician scores the items on an eight-point Likert scale ranging from *not descriptive* to *most descriptive* for the patient. After completion, software generates three personality profiles, named the DSM-IV Personality Disorders, the SWAP Personality Syndromes, and the Trait Dimensions. Additionally, the software generates a Psychological Health Index. In Appendix A examples of the three personality profiles and the Psychological Health Index are given. The reliability of the SWAP-200 is adequate to excellent (Cogan & Porcerelli, 2012; Westen & Muderrisoglu, 2003, 2006; Westen & Shedler, 1999) and validity is moderate to high (Bradley, Hilsenroth, Guarnaccia, & Westen, 2007; Westen & Muderrisoglu, 2003; Westen & Shedler, 1999). In the forensic population the SWAP-200 has shown to be reliable too (Marin-Avellan, McGauley, Campbell, & Fonagy, 2005). The concurrent validity was moderate in the forensic population (Marin-Avellan et al., 2014).

Crime-related variables. Information about the number of convictions, the number of days of detention, and the age of first conviction is gathered from criminal records using a self-developed manual (see Appendix B).

Demographic data. Demographic data, including sex, date of birth, and country of birth, were drawn from criminal records. Level of education was provided by the clinician. The level of education was categorized according to the Dutch educational system and categories include: ‘basisonderwijs’ (primary education), ‘vmbo’ (pre-vocational secondary education), ‘vmbo-t’ (pre-vocational secondary education-theoretical learning path), ‘havo’

(higher secondary education), 'vwo' (advanced secondary education), 'mbo' (vocational education), 'hbo' (higher education at a university of applied sciences), 'wo' (higher education at a research university), or other.

Procedure

The study was carried out within the Netherlands Institute for Forensic Psychiatry and Psychology (NIFP), which is a national independent center of expertise for forensic psychiatry and psychology and serves the Ministry of Justice. Clinicians (psychiatrists and psychologists) could sign themselves up to participate in the study. Thirty-four experienced and well-educated forensic clinicians (two psychiatrists and 32 psychologists) who all had had at least 3 years of post-master clinical education and are all registered in the Netherlands Register of Court Experts (NRGD) participated in this study. All of them received 3 hours of training in which they learned about the SWAP-200-NL and how to use it. For attending the training, the clinicians gained Dutch accreditation points. Trained clinicians were asked to use the SWAP-200-NL on a regular basis. Whenever a clinician completed the SWAP-200-NL as part of a court-ordered forensic assessment procedure, the outcomes were gathered, anonymized, and stored in a datafile. The clinician was contacted and asked for consent to use the data. Also, the clinician was asked to provide additional information about the defendant, which was required in order to obtain the criminal record. From the criminal record, the number of convictions and the number of days of detention were scored using a self-developed manual (see Appendix B). The age of first conviction was extracted from the criminal record too. The data were anonymized and integrated into the datafile. The data were analysed using IBM SPSS Statistics 25. The study was approved by the Scientific Research Committee of the Reinier van Arkel Group and the Scientific Research Participation Committee of the Vincent van Gogh Institute for Psychiatry.

Sample Characteristics

One hundred six defendants were assessed. Seventeen defendants had to be excluded since their criminal records could not be obtained. Three additional defendants were excluded because they were declared of unsound mind and were detained under a hospital order (the penalty of placement into a psychiatric hospital cannot be translated to days of detention). Eighty-six defendants were left and the mean age was 34.81 years ($SD = 12.35$, age range 16.21–64.32 years). Of the 86 defendants 86% were male and this number is representative for forensic mental health populations (e.g. Andersen, 2004, Coid, Kahtan, Gault, & Jarman, 2000; Nicholls, Brink, Greaves, Lussier, & Verdun-Jones, 2009; Wurst et al., 2003). Eighty-three percent of the 86 defendants were born in the Netherlands, 4% in Morocco, 2% in Netherlands Antilles, 2% in Suriname, and 9% in countries not yet listed. The highest level of education that the defendants had completed was for 29% primary education, for 31% pre-vocational secondary education, for 7% pre-vocational secondary education-theoretical learning path, for 4% higher secondary education, for 19% vocational education, and for 7% higher education at a university of applied sciences. Four percent had had some other form of education. Eighty-five percent of the defendants were multiple offenders and 15% of the defendants had not yet been convicted of a crime. Since 15% of the defendants had never been convicted of a crime, the sample size for the analyses on the age of first conviction was 73.

Statistical Analysis

To determine if the number of convictions, the number of days of detention, and the age of first conviction can be predicted by the SWAP-200-NL scales, multiple regression analyses were run. Prior to this, the data were inspected.

Data inspection. During data inspection the assumptions that a multiple regression analysis makes were evaluated. The assumptions that were evaluated are the assumption of linearity between independent variables and dependent variables, no multicollinearity between the independent variables, independence of the residuals, normality of the residuals, linearity of the residuals, and homoscedasticity of the residuals. Also, the data were inspected for outliers and influential cases. Extreme outliers ($|SD| > 5$) were adapted to five standard deviations above or below the mean. This is based on the guide of Allen & Bennet (2012). Additionally, correlational statistics for current age and the number of convictions, and current age and the number of days of detention were calculated to see if any statistical correction for age had to be applied.

Multiple regression analyses. Twelve multiple regression analyses with input-method 'stepwise' were run. Four multiple regressions were computed on each dependent variable: one for the dependent variable with the DSM-IV Personality Disorders scale, one for the dependent variable with the SWAP Personality Syndromes scale, one for the dependent variable with the Trait Dimensions scale, and one for the dependent variable with the Psychological Health Index scale. Since twelve multiple regression analyses were run, a Bonferroni correction was applied. Analyses of variance of which the significance level was .004 (i.e. the significance level of .05 divided by 12) or smaller were considered significant. The input-method 'stepwise' was used to identify models that only include predictors that add considerably to the predictive power of the model. A predictor is added to the model if it significantly ($p \leq .05$) adds to the explained variance of the model. A predictor is removed from the model if the removal test reveals that the predictor accounts – due to adding other predictors to the model – for a nonsignificant amount ($p \geq 0.10$) of variance. The term 'best model' is used to describe the regression model that accounts for the most variability in

outcome measure but that only includes predictors of either one of the three personality profiles' scales or the Psychological Health Index that were selected through above described method. Because the assumptions of homoscedasticity and normality of residuals were violated the outcomes of the stepwise multiple regression analysis could however be distorted and predictors could be significant that are actually nonsignificant. To investigate if the outcome would remain similar when the model was tested by bootstrapping (which is robust to violations of the assumptions of homoscedasticity and normality of residuals), bootstrapped p-values of each regression coefficient were calculated (the number of samples in bootstrapping was a thousand). Significant bootstrapped p-values ($p \leq 0.05$) indicate that a predictor contributes significantly to the regression model and nonsignificant bootstrapped p-values ($p > 0.05$) indicate that a predictor does not contribute significantly to the regression model. Significant predictors should therefore be included in the model, while nonsignificant predictors should be excluded from the model. The term 'final model' is used to describe a regression model that accounts for the most variability in outcome measure, but that only includes the predictors of the best model of which the bootstrapped p-values are significant.

Results

Data Inspection

Two assumptions, the assumption of normality of residuals and homoscedasticity of residuals, were violated. Bootstrapping was applied. Additionally, an extreme outlier – a participant who was sentenced to jail for 10220 days (28 years) – was identified. The average time of detention without this defendant was 388.68 days ($SD = 676.75$), thus the participant scored 15.52 standard deviations above the mean. The defendant's score on the number of days of detention was adapted to five standard deviations above the mean to lessen its impact. In addition, current age did not correlate significantly with either the number of

convictions or the number of days of detention. Therefore, no statistical correction for age was administered.

Multiple Regression Analyses

Number of convictions. To begin with, the best DSM-IV Personality Disorders model predicting the number of convictions is a model that is made up of obsessive-compulsive PD. The model accounts for 10% of the variability, $R = .319$, $F(1, 84) = 9.49$, $p = .003$. This is a medium effect, $f^2 = .114$. Unstandardized and standardized regression coefficients of the predictor are reported in Table 1, as well as the bootstrapped p-value. The bootstrapped p-value of the predictor is significant, what indicates that the predictor contributes significantly to the model. The final model is therefore the same as the best model. Second, the best SWAP Personality Syndromes model is a model that is made up of obsessional personality. The model accounts for 14% of the variability, $R = .372$, $F(1, 84) = 13.49$, $p < .001$. This is a medium effect, $f^2 = .160$. From the bootstrapped p-value in Table 1 can be concluded that the predictor contributes significantly to the model, thus the final model is equal to the best model. Third, the best Trait Dimensions model is a model that is made up of the psychopathy factor. The model accounts for 16% of the variability, $R = .396$, $F(1, 84) = 15.62$, $p < .001$. This is a medium effect, $f^2 = .186$. The predictor contributes significantly to the model, thus the final model is the same as the best model. Lastly, the Psychological Health Index accounts for 11% of the variability, $R = .335$, $F(1, 84) = 10.63$, $p = .002$ and this is a medium effect, $f^2 = .126$. The predictor contributes significantly to the model, thus the final model is the same as the best model. In conclusion, the psychopathy factor predicts the number of convictions the best.

Days of detention. The DSM-IV Personality Disorders scale, the SWAP Personality

Syndromes scale, the Trait Dimension scale, and the Psychological Health Index all do not account for more variability in the days of detention than the mean does.

Age of first conviction. First, the best DSM-IV Personality Disorders model predicting the age of first conviction is a model that is made up of obsessive-compulsive PD. The model accounts for 22% of the variability, $R = .464$, $F(1, 71) = 19.51$, $p < .001$. This is a large effect, $f^2 = .276$. The predictor contributes significantly to the model, thus the final model is equal to the best model. Second, the best SWAP Personality Syndromes model is a model that is made up of antisocial psychopathic personality, high functioning depressive personality, and obsessional personality. The model accounts for 36% of the variability, $R = .603$, $F(3, 69) = 13.12$, $p < .001$. This is a large effect, $f^2 = .570$. All predictors contribute significantly to the model, thus the final model is equal to the best model. Third, the best Trait Dimensions model is a model that is made up of the oedipal conflict factor, psychopathy factor, and schizoid orientation factor. The model accounts for 43% of the variability, $R = .656$, $F(3, 69) = 17.38$, $p < .001$. This is a large effect, $f^2 = .754$. All predictors contribute significantly to the model, thus the final model is equal to the best model. Lastly, the Psychological Health Index does not account for more variability in the age of first conviction than the mean does. In conclusion, the combination of the oedipal conflict factor, psychopathy factor, and schizoid orientation factor predict the age of first conviction the best.

Discussion

The aim of this study was to assess the predictive value of the SWAP-200-NL scales in relation to criminal data. Results suggest that 16% of the variance in the number of convictions is explained by the psychopathy factor and that the variance in the number of days

Table 1

Unstandardized (B) and Standardized (β) Stepwise Regression Coefficients and Bootstrapped P-values of B (p) for Each Predictor of All the Best Models

Outcome measure	Scale	Predictor	B	p	β
Number of convictions	DSM-IV Personality Disorders	Obsessive-compulsive personality disorder ^a	-0.67	.002	-0.32
	SWAP Personality Syndromes	Obsessional personality ^a	-0.69	.003	-0.37
	Trait Dimensions	Psychopathy factor ^b	0.55	.002	0.40
	Psychological Health Index	Psychological health index ^c	-0.56	.001	-0.34
Age of first conviction	DSM-IV Personality Disorders	Obsessive-compulsive personality disorder ^a	0.68	.001	0.46
	SWAP Personality Syndromes	Antisocial psychopathic personality ^b	-0.69	.001	-0.66
		High functioning depressive personality ^a	-0.82	.001	-0.60
		Obsessional personality ^a	0.42	.002	0.33
	Trait Dimensions	Oedipal conflict factor ^c	0.37	.028	0.35
		Psychopathy factor ^b	-0.44	.002	-0.44
		Schizoid orientation factor ^c	0.50	.001	0.43

Note. $N = 86$ for the number of convictions and the number of days of detention, and $N = 73$ for the age of first conviction.

^a Based on the studies of Kreuger (1999) and Regier, Kuhl, and Kupfer (2013) it can be concluded that this is an internalising disorder.

^b Based on the studies of Kreuger (1999) and Regier, Kuhl, and Kupfer (2013) it can be concluded that this is an externalising disorder.

^c Based on the studies of Kotov et al. (2010), Kreuger (1999), and Regier, Kuhl, and Kupfer (2013) it can be concluded that this is neither an internalising or externalising disorder.

of detention is not better explained by the SWAP-200-NL scales than by the mean. Also, the combination of the oedipal conflict factor, psychopathy factor, and schizoid orientation factor explain 43% of the variance in the age of first conviction. Moreover, the results imply that, for example, persons who score high on the oedipal conflict factor and schizoid orientation factor have their criminal debut later in life but do not have fewer sentenced offences on their criminal records compared to persons who score low on the oedipal conflict factor and schizoid orientation factor. Also, persons who score high on the schizoid orientation factor and low on the oedipal conflict factor might have their criminal debut at the same time as persons who score moderately on both the schizoid orientation factor and the oedipal conflict factor. Thus, the results emphasize that offenders can be heterogeneous in personality pathology and that combinations of personality factors better describe offenders than a single categorical diagnosis. This conclusion is in agreement with the conclusion of Blackburn and Coin (1999) about offenders with personality pathology. The results that have been found are largely in line with the hypotheses; antisocial/psychopathic personality pathology is associated with more convictions and younger age of first conviction, obsessive (compulsive) personality pathology (internalising personality pathology) is associated with fewer convictions and a higher age of first conviction, and a high psychological health is associated with fewer convictions. Results on high functioning depressive personality and the number of days of detention however, differ from what was expected.

Results on high functioning depressive personality differ from what was expected as high functioning depressive personality is classified as an internalising disorder but it shows a negative relationship with the age of first conviction. The negative relationship might, however, be explained by an additional relationship that depression and hostility have. Previous studies have found namely that people who experience depression show more hostile behaviour than healthy people (Biaggio & Godwin, 1987; Lemaire & Clopton, 1981;

Weissman, Klerman, & Paykel, 1971). Also, people who experience depression are less likely than nondepressed people to suppress their anger (Biaggio & Godwin, 1987). An additional correlational analysis on high functioning depressive disorder and hostility factor confirms the suggested positive relationship in the current study. It may be concluded that depression is an internalising disorder but that externalising symptoms like hostility and anger often accompany depression. It can be hypothesized that these accompanying externalising symptoms lead to being convicted at a younger age. Future research on this relationship is suggested.

The fact that no relationship was found between the number of days of detention and the SWAP-200-NL scales is neither in line with the hypotheses. It was hypothesized that the number of days of detention would be positively related to antisocial/psychopathic, narcissistic, and borderline/emotionally dysregulated personality pathology, and negatively related to internalising personality pathology and a high psychological health. The hypotheses were based on the assumption that court would impose more days of detention for more severe and complex delinquency. The relationship between the number of days of detention and delinquency seems, however, to be more complex than this; imprisonment is also imposed for other reasons. For example, imprisonment can be imposed as a means of punishment for recidivism related to many inferior offences, recidivism within the probation period or because convicts do not pay fines. The relationship between the number of days of detention and delinquency is therefore ambiguous, whereby presumably no relationship was found between the number of days of detention and the SWAP-200-NL scales. It is recommended that in future research more straightforward and valid variables are used.

The results provide thorough insights into the predictive value of the SWAP-200-NL scales. The explained variance in the number of convictions is 16% and for the age of first

conviction 43%. As human behaviour is in general difficult to predict, explained variance in human behaviour usually falls beneath 50% (Frost, 2018). Sixteen percent of explained variance in the number of conviction is not per se much, although 43% of explained variance in the age of first conviction is considerable, also in comparison to the predictive value of instruments developed for risk assessment. For example, the Hare Psychopathy Checklist: Screening Version, the Violence Risk Appraisal Guide, and the Historical Clinical Risk Management-20 (historical part) explain to the utmost 27% of the variance in frequency of violent behaviour (Doyle, Dolan, & McGovern, 2002). Additionally, tools predicting sexual recidivism such as the Static-99 and Minnesota Sexual Offender Screen Tool account for respectively 33% and 45% to 50% in variance (Janus & Prentky, 2003). The combination of the oedipal conflict factor, psychopathy factor, and schizoid orientation factor deserve therefore attention in risk assessment. The combination of the predictors could be used to make chary predictions about the age range in which individuals will be likely to be convicted for the first time. This information could be taken into account by clinicians when deciding whether or not to start monitoring or interfering in an individual's life. Future research should focus on identifying the boundaries of the age ranges or the different age categories (for example minors and majors) that can be best used in the practice of risk assessment.

Like all scientific research, this study has limitations. One of those limitations is the inclusion of the number of days of detention, as previously discussed. Another limitation of the study is that female and male offenders were treated as one group rather than two separate groups. Bergman and Andershed (2009) found namely that males initiate their offending earlier in life than females do and that males are more often than females on a persistent offending-trajectory. Additionally, Muller and Kempes (2015) found that female offenders are more often characterized by borderline PD and are more often depressed than

male offenders. Thus, the sexes have different developmental patterns of offending. If male and female offenders are analysed separately, chances are high that the explained variances of the number of convictions and the age of first conviction would increase significantly. Additionally, since no distinction was made between male and female offenders and female offenders are a minority, personality features and pathology that are characteristic for female offenders are underrepresented in the final models. Due to this, the results could be less applicable to women than they are to men. Unfortunately, the sample size of this study was not large enough to run separate analyses on the two subgroups. Future research should focus on analysing male and female offenders separately.

Another area of interest for future research is on combining the significant predictors of the four scales of the SWAP-200-NL to construct a model that explains even more variance. For example, a model constructed of the oedipal conflict factor, psychopathy factor, schizoid orientation factor, and psychological health index might explain more variance in the age of first conviction than the combination of oedipal conflict factor, psychopathy factor, and schizoid orientation factor alone. Careful analysis is needed since there might be overlap in items between scales and in constructs. Also, it may be of interest to investigate if the SWAP-200-NL could differentiate between offenders inclined toward different types of offences, such as violent offences, sexual offences, or acquisitive offences. Results will add to the understanding of delinquency and might improve the focus of prevention programmes.

A last suggestion for future research, technical in nature, is on the statistical functions of IBM SPSS Statistics 25. As some of the assumptions that multiple linear regression analysis makes were violated in this study, bootstrapping was applied. IBM SPSS Statistics 25 provides an option within the regression function to calculate bootstrapped p-values when using the input-method 'enter'. When using the input-method 'stepwise' however, this

function is disabled. The bootstrapped p-values had therefore to be calculated in a laborious way. A suggestion for future research is on enabling this function within new versions of IBM SPSS Statistics to improve the usability of the program.

In conclusion, the results suggest that offenders can be heterogeneous in personality pathology. The SWAP-200-NL scales explain a part of the variance in the number of convictions but fail to account for significantly more variance than the mean does in the number of days of detention. For age of first conviction a substantial amount of the variance is explained. The corresponding model for the age of first conviction deserves attention in the field of risk assessment and should be further studied. Future research should focus on extending the model by including sex and other key variables, as well as on defining age ranges that can be used by clinicians. Constructive research could take the model to the next level within the study of risk assessment.

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Appendix A

Examples of the DSM-IV Personality Disorders Profile, the SWAP Personality Syndromes Profile, the Trait Dimensions Profile, and the Psychological Health Index

The SWAP-200 software generates three personality profiles and the Psychological Health Index. In this appendix the three personality profiles and the Psychological Health Index of one of the defendants who was assessed in this study are depicted. In Figure A1 the DSM-IV Personality Disorder Profile is depicted. Personality disorder T-scores of 60 and higher indicate the presence of a personality disorder (PD) and personality disorder T-scores between 55 and 60 indicate the presence of significant features of a PD. Figure A1 also includes the Psychological Health Index. A T-score of 50 on the Psychological Health Index indicates an average level of functioning relative to patients with a DSM-IV personality diagnosis, and scores of 60 and higher indicate the presence of significant psychological resources and capacities such as the capacity to use talents and abilities effectively and productively. In Figure A2 the SWAP Personality Syndromes Profile is depicted. Q-Factor T-scores of 60 and higher indicate the presence of a personality syndrome and Q-Factor T-scores between 55 and 60 indicate the presence of significant features of a personality syndrome. Lastly, in Figure A3 the Trait Dimensions Profile is depicted. Factor T-scores of 60 and higher indicate the presence of a personality factor, and Factor T-scores between 55 and 60 indicate the presence of significant features of a personality factor.

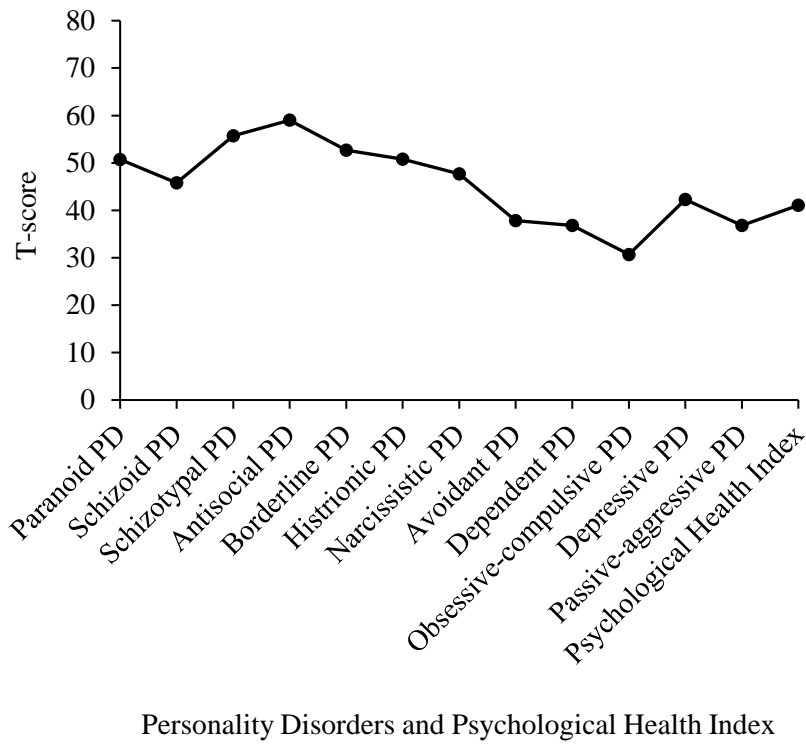


Figure A1. DSM-IV Personality Disorder Profile and Psychological Health Index.

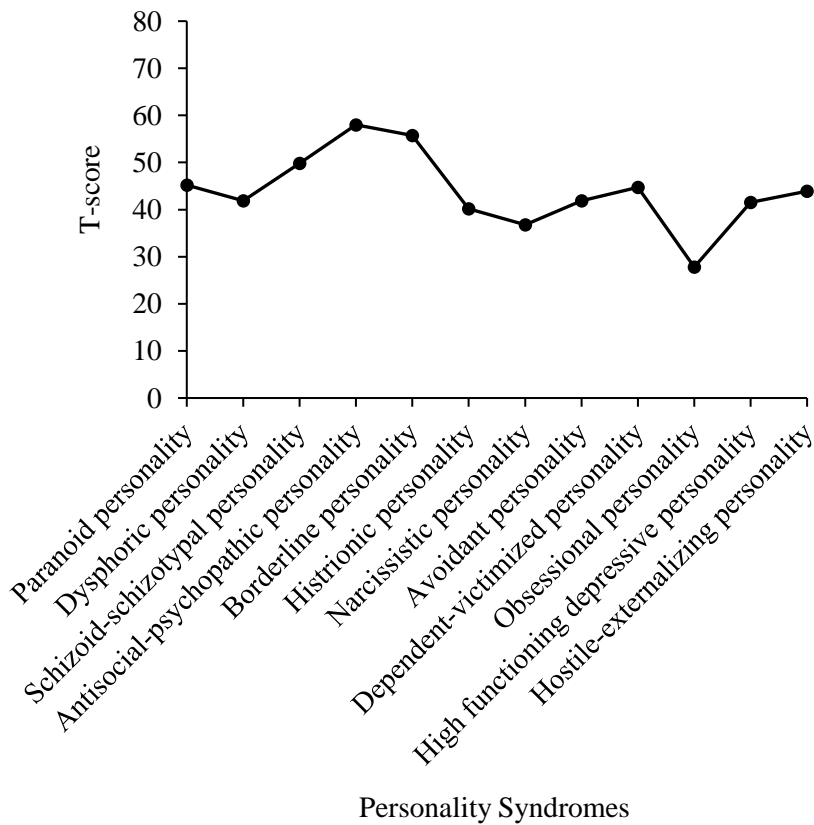


Figure A2. SWAP Personality Syndrome Profile.

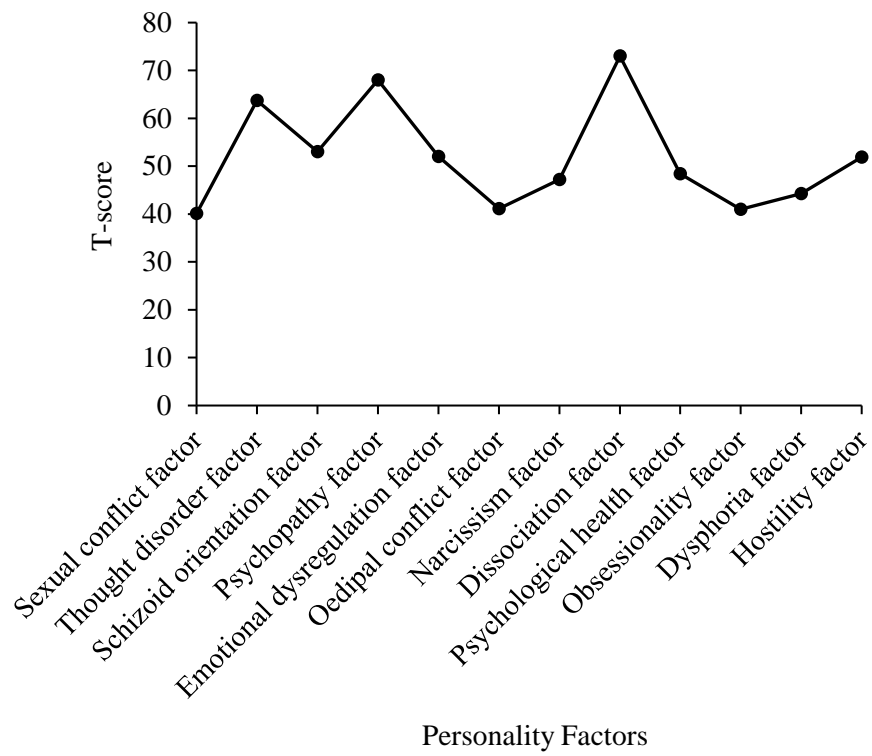


Figure A3. Trait Dimensions Profile.

Appendix B

Manual for Scoring the Date of First Conviction, the Number of Convictions, and the Number of Days of Detention

This manual was developed for scoring the date of first conviction, the number of convictions, and the number of days of detention from the criminal records, which be ambiguous. The manual ensures replicability of the study and can be used as a guideline for future studies.

In Table B1 an overview is given of the statuses that cases can have in criminal records. Also, a guideline is provided for how to score those statuses. When a case has the status ‘irrevocable’ or ‘penal order’ it is important to look at the corresponding penalty. An overview of the penalties as well as a guideline for how to score the date of first conviction, the number of convictions, and the number of days of detention, is given in Table B2. For determining the total amount of the number of days of detention, definitions of units of time are set in Table B3.

Table B1

Guideline for Scoring Statutes in Criminal Records

Status	Action
Irrevocable	Take this case into account for determining the date of first conviction. ^a Take this case into account for determining the number of convictions. Take this case into account for determining the number of days of detention.
Revocable	Do not take this case into account for determining the date of first conviction. Do not take this case into account for determining the number of convictions. Do not take this case into account for determining the number of days of detention.
Objection lodged	Do not take this case into account for determining the date of first conviction. Do not take this case into account for determining the number of convictions. Do not take this case into account for determining the number of days of detention.
Summoned	Do not take this case into account for determining the date of first conviction. Do not take this case into account for determining the number of convictions.
Penal order	Take this case into account for determining the date of first conviction. Take this case into account for determining the number of convictions.
Transaction completed	Take this case into account for determining the date of first conviction. Take this case into account for determining the number of convictions.
Nolle prosequi	Do not take this case into account for determining the date of first conviction. Do not take this case into account for determining the number of convictions.
Declared inadmissible	Do not take this case into account for determining the date of first conviction. Do not take this case into account for determining the number of convictions.
Case in transmission	Do not take this case into account for determining the date of first conviction. Do not take this case into account for determining the number of convictions.

^a If a case becomes irrevocable on, for example, 01-01-2019 but the court convicted the person on 15-12-2018, the date of first conviction will be 15-12-2018.

Table B2

Guideline for Scoring Penalties

Penalty	Action
(Juvenile) detention	Take this case into account for determining the date of first conviction. Take this case into account for determining the number of convictions. Take this case into account for determining the number of days of detention.
Fine	Take this case into account for determining the date of first conviction. Take this case into account for determining the number of convictions.
Placed on probation ^a	Take this case into account for determining the date of first conviction. Take this case into account for determining the number of convictions. Do not take this case into account for determining the number of days of detention.
Found guilty, no penalty	Take this case into account for determining the date of first conviction. Take this case into account for determining the number of convictions.
Acquittal	Do not take this case into account for determining the date of first conviction. Do not take this case into account for determining the number of convictions.
Dismissal of criminal charges due to mental illness	Exclude the defendant from further analysis as placement into a psychiatric hospital cannot be translated to the number of days of detention.

Note: When more than one penalty is imposed for a case, count it still as just *one* conviction.

^a In case of a probational nolle prosequi do not take this case into account for determining the date of first conviction, the number of convictions, or the number of days of detention.

Table B3

Definitions of Units of Time

Term	Definition
1 week	7 days
2 weeks	2 x 7 days
3 weeks	3 x 7 days
4 weeks	4 x 7 days
1 month	30 days
12 months	12 x 30 days
1 year	365 days

Additional Notes

A few additional notes have to be made:

- When case A is added to case B, count offence A as a conviction if case B is counted as a conviction. The date of first conviction is the date of conviction of case B. When case B is not counted as a conviction, neither will case A be counted as a conviction.
- When someone is convicted for a main offence and subsidiary offences count only the main offence as a conviction when determining the number of convictions. When someone is convicted for subsidiary offences but no main offence, all the subsidiary offences for which the person is convicted are counted as convictions.
- When 'execution of case A' is noted, have a look at the probational penalty of case A and take this penalty into account when determining the number of days of detention.
- If a penalty is, for example, '120 hours community service, subsidiary 60 days of detention', do not count the subsidiary penalty to the total amount of days of detention except for cases in which explicitly is noted that the person did not conform to the imposed penalty and therefore both penalties were imposed.