Risk and Protective Factors for Inpatient Youth Violence

The Predictive Value of the SAVRY and the SAPROF-YV
in Youth with and without a Psychiatric Disorder

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Abstract

In 2015, 1437 young people entered a JJI in the Netherlands. Many violent incidents occur in the JJIs, which reduce the internal safety in the JJIs. Risk assessment instruments can help to identify the risk and protective factors for future violence for a particular person. Consequently, forensic treatment will be more effective, because the treatment is completely specialized for that particular detainee. This will lead to less recidivism or violent behaviour. This pilot study investigated the effect of having a DBD/ASPD on showing violent incidents in a JJI and the risk and protective factors of the SAVRY and SAPROF-YV. In addition, it was examined if risk and protective factors could predict the occurrence of a violent incident in a JJI in youth with and without a DBD/ASPD. This study examined the patient file of 37 detainees (23 with DBD/ASPD), mean age 17.35 years old. Risk and protective factors were scored retrospectively based on patient file information, using the SAVRY and SAPROF-YV. These instruments were scored at the start of the treatment. The registered violent incidents of the following five months were used. Despite the small sample size, it can be cautiously concluded that detainees with a DBD/ASPD might have significantly more risk than the group without DBD/ASPD. In addition it seems that the risk factors could predict the occurrence of an incident for the total sample. Due to the preliminary nature of this study no hard conclusion can be drawn, however these results are promising for future (prospective) research.

1. Introduction

In 2015, 1437 young people between the ages of 12 and 23 years old entered a juvenile justice institution (JJI) in the Netherlands (Dienst Justitiële Inrichtingen, 2016). The JJIs have two main tasks: ensuring the security of the society and preparing the youth for a successful return to the society (Dienst Justitiële Inrichtingen, 2014). Unfortunately, more than half (54,8%) of the youngster who stayed in a JJI in 2011, committed a new violent offense within 2 years after discharge (Dienst Justitiële Inrichtingen, 2016). Besides violent behaviour after discharge, it is not unusual that these youths show violence inside the JJIs as well. In 2016, 14% of the juvenile detainees had a registered violent incident against another juvenile detainee and 27% of the juvenile detainees also used violence against staff (Vermanen, 2016). These violent incidents reduce the internal safety in the JJIs.

Another concern is that these juvenile detainees bear a substantial amount of mental disorders. Teplin, Abram, McClelland, Dulcan, and Mericle (2002) showed that many youth in detention have one or more psychological or psychiatric disorders. Nearly two thirds of the 1170 males and nearly three quarters of the 656 females who participated met diagnostic criteria for one or more disorders. Different studies found that disruptive behaviour disorders (DBD) are the most prevalent disorders in juvenile detainees (Pliszka, Sherman, Barrow & Irick, 2000; Teplin et al., 2002). The diagnostic and statistical manual of mental disorders fourth edition (DSM-IV) divides DBD into different disorders, including conduct disorder (CD) and oppositional defiant disorder (ODD; American Psychiatric Association, 1994). ODD is a milder form of CD, with an earlier onset. Children with ODD often develop CD (American Psychiatric Association, 1994). In short, DBD are common in youth prisons.

Children, who show antisocial behaviour from early childhood, are at great risk of continuing to show this behaviour into adolescence and even adulthood (Emmelkamp & Kamphuis, 2007). Rey, Morrisyates, Singh, Andrews, and Stewart (1995) showed that 36% of people who suffer from CD also developed an antisocial personality disorder (ASPD) later in life. In addition, a CD diagnosis before the age of 15 years is a requirement for an ASPD diagnosis (American Psychiatric Association, 1994). Gelhorn, Sakai, Price, and Crowly (2007) researched the DSM-IV CD criteria in the nationally representative sample from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). They found that 75% of people with a CD, met also criteria for an ASPD. According to the DSM-IV,

people who are diagnosed with ASPD have to be at least 18 years old (American Psychiatric Association, 1994).

There is an increasing number of people who are 18 years or older who are hospitalized in a JJI. Since 1 April, 2014, the adolescent criminal law is applied in the Netherlands. As a result, even 23-year-old young adults can be judged according the juvenile justice system. The judge chooses to do this when someone seems either mentally or emotionally underdeveloped (Dienst Justitiële Inrichtingen, 2016). Due to the increasing number of adolescents it is expected that the adult disorder ASPD occur often in a JJI as well.

DBD (CD/ODD) and ASPD have something in common; they are associated with violence or risk of violence. According to the DSM-IV, a child who suffers from CD, for example starts physical fights (with the use of a weapon), sets fire deliberately, and vandalizes and destroys others' belongings. Children, who suffer from ODD, often break rules or requests, and can easily get upset and angry (American Psychiatric Association, 1994). Patients who suffer from ASPD can be very aggressive and impulsive. They have no regrets, often show unethical behaviour, and disregard the rights of others. In addition, ASPD is often associated with criminal behaviour (Emmelkamp & Kamphuis, 2007). Due to the increased risk of violence, we can hypothesize that youth with a DBD/ASPD are more likely to show violent incidents in a JJI than youth without (one of) these disorders.

In risk assessment, the chance of future violence is estimated based on structured assessment of risk and protective factors, which provides input for treatment and risk management strategies (De Vries Robbé, Geers, Stapel, Hilterman, & de Vogel, 2014). Risk factors are factors that are associated with increased risk of violent behaviour (Lodewijks, Doreleijers & Ruiter, 2008). According to a definition provided by De Vries Robbé and his colleagues (2014), protective factors for violent behaviour are: "All personal, social, and environmental factors which have a reducing effect at the risk of future (sexual) violent behaviour towards others" (p.9). It is previously mentioned that youth who suffer from DBD/ASPD often come into contact with violence (American Psychiatric Association, 1994; Emmelkamp & Kamphuis, 2007). In addition, patients who suffer from CD and patients with ASPD violate the basic rights of others. Examples of common symptoms of DBD are social isolation, blaming others, low self esteem and lack of empathy. Furthermore, patients with ASPD do not feel responsible, as indicated by repeated failure to maintain a job and paying bills (American Psychiatric Association, 1994). It seems reasonable to expect that the youth

who suffer from a DBD/ASPD have more risk factors and less protective factors for violence than youth who do not suffer from DBD/ASPD.

The Structured Professional Judgement (SJP) is the latest approach in the risk assessment. This type of risk assessment uses a standard checklist with evidence-based risk and protective factors. SJP instruments often include historical factors and dynamic factors (De Vries Robbé et al., 2014). The 'Structured Assessment of Violence Risk in Youth' (SAVRY; Borum, Bartel & Forth, 2006) is one mainly used risk assessment tool in youth. The SAVRY includes risk factors and was one of the first instruments that included some protective factors. Paying attention to risk factors and protective factors, results in a more balanced assessment (De Vries Robbé et al., 2014). In order to increase the attention on protective factors, the 'Structured Assessment of Protective Factors for violence risk –Youth Version' (SAPROF-YV) could be used in addition to the SAVRY. The SAPROF-YV is a tool specifically developed for the assessment of protective factors and can only be used in combination with a (predominantly) risk-focussed instrument (De Vries Robbé et al., 2014). Consequently, this study is focused on both the SAVRY and SAPROF-YV.

The predictive validity of the SAVRY has been investigated repeatedly. For example, Catchpole and Gretto (2003) did a retrospective study with the SAVRY in 74 young violent offenders. They used clinical and forensic patient file information of the offenders to complete the items of the SAVRY. They followed the offenders for 1 year and showed that the predictive validity of the SAVRY was good for recidivism. Lodewijks, Doreleijers, Ruiter, and Borum (2008) found an excellent predictive validity of the SAVRY for physical violence against persons and a good predictive validity for violence against objects and verbal threats. Vincent, Chapman and Cook (2011) conducted a prospective study among 480 male adolescents. They followed these adolescent for a 5-year follow up period. Any type of reoffending could be predicted from the total score of the SAVRY. Meyers and Schmidt (2008) found a good predictive validity of the SAVRY as well, just like Gammelgård, Koivisto, Eronen, and Kaltiala-Heino (2008). All these researchers showed a good overall predictive validity of the SAVRY, but it is important to note not all subscales of the SAVRY predict equally. The 30 items are divided into four domains: Historical, social/contextual, individual and the protective domain (Borum et al., 2006). Lodewijks et al. (2008) showed that the items of the individual subscale and protective subscale had the highest predictive values. They showed that the historical subscale seem less relevant in the prediction of

violence. Similarly, Vincent et al. (2011) showed that the social/contextual domain had a predictive value for violent arrests, whereas the historical items were not predictive for violent reoffending. However, Gammelgård and colleagues (2008) found that the social/contextual had a just above change predictive ability and the historical subscale had a fair predictive ability. Remarkably, there are varying results regarding the predictive validity of the subscales. Despite the good overall predictive validity, one has to be careful with the predictive validity of the different subscales.

Since the SAPROF-YV is a relatively new tool, there has been very little research on the predictive validity of this instrument. De Vries Robbé and his colleagues (2014) examined the pilot-version of the SAPROF-YV with young psychiatric patients who stayed in a psychiatric institution in the Netherlands. They made a comparison with the SAPROF-YV and the SAVRY. They found a negative correlation between the protective factors of the SAPROF-YV and the risk factors of the SAVRY, as expected. In addition, they found a positive relation between the protective factors of both instruments. Up to now these are the only results that have been found, more research is needed. Based on the previous research about the predictive validity of the SAVRY and SAPROF-YV, we might expect that the risk and protective factors can predict the occurrence of violent incidents in a JJI.

The predictive validity of the Structured Assessment of Protective Factors for violence risk (SAPROF), the adult version of the SAPROF-YV, as well as the SAVRY is equal in different groups. De Vries Robbé and his colleagues (2014) studied the predictive validity of the SAPROF with forensic psychiatric adults. They showed that the SAPROF had an equal predictive validity for patients who suffer from psychotic problems, patients who suffer from personality disorders, and psychopathic patients. Gammelgård and his colleagues (2008) showed that the SAVRY was a valid risk assessment instrument for estimating risk of violent behaviour in all groups. They used the SAVRY with juvenile delinquents, but also with psychiatric adolescents who stayed in a psychiatric setting (general or forensic). Therefore, it seems reasonable to expect that the risk assessment instruments for youth are also useful for different groups in the JJIs.

Research showed that criminal interventions are even most effective when they include the risk, need and responsivity principles of offender rehabilitation are taken into account (Andrews & Bonta, 2010). The risk principle states that higher risk offenders should get direct intensive services and low risk offenders should get fewer services. The need principle

represents that risk factors are dynamic (criminogenic needs) and so they are changeable. Treatment must focus on these criminogenic needs. The responsivity principle states that the treatment must be adapted to the offender; to his own learning style, intelligence, and competences. These three principles form the Risk-Need-Responsivity (RNR) model of offender rehabilitation. The RNR model makes a major contribution to the criminal justice interventions. Using risk assessment instruments such as the SAVRY and SAPROF-YV, forensic treatment will be more effective, because the treatment is completely specialized for that particular detainee, and criminogenic needs are targeted. Because of the more effective treatment; there will be less recidivism or violent behaviour (De Vries Robbé et al., 2014), and risk assessment instruments could be invaluable to guard the internal safety in JJIs.

Taken together, many violent incidents occur in a JJI (Vermanen, 2016). In addition, many youth suffer from a psychiatric disorder (Pliszka et al., 2000; Teplin et al.,2002). Research has shown that there is a relation between DBD/ASPD and violence (American Psychiatric Association, 1994; Emmelkamp & Kamphuis, 2007). The current study is a pilot study aimed to investigate the relationship between DBD/ASPD, violent incidents in JJI and the risk and protective factors for violence in risk assessment. The following research question will be addressed: "What is the effect of having a DBD/ASPD on showing violent incidents in a JJI and the risk and protective factors for violence?" The additional research question is: "Can risk and protective factors in risk assessment predict the occurrence of violent incidents in a JJI in both youth who suffer from a DBD/ASPD and youth who do not suffer from (one of) these disorders?" It is expected that juvenile or young adult detainees with DBD/ASPD show more violent incidents in a JJI and that they have more risk factors and less protective factors. Additionally it is expected that the risk and protective factors can predict if violent incidents occur in both groups but also in the total sample. Consequently, we might expect that the youth who suffer from a DBD/ASPD are more likely to show an incident in a JJI than the youth without (one of) these disorders because they have more risk factors and less protective factors.

This pilot study could provide the first evidence and input for additional research in the relationship between DBD/ASPD and violence in a JJI and violence risk assessment in this group. With the use of risk assessment instruments and thereby individualized treatment targeting risk factors and improving protective factors, the number of violent incidents may decrease (De Vries et al., 2014, Bortum et al., 2006). This guards more internal safety in JJIs.

A better-individualized treatment allows for a better preparation for a successful return to society. This ultimately creates a safer society.

2. Methods

2.1 Research Design

The research design of this pilot study is a retrospective cohort study. The juvenile detainees were assigned to two conditions: (1) Youth who suffer from a DBD/(symptoms of) an ASPD (DBD/ASPD group) (2) Youth who do not suffer from a DBD/(symptoms of) an ASPD (no DBD/ASPD group).

2.2 Population

The research population consisted of 37 adolescents and young adult males (23 with DBD/ASPD) with a history of violent behaviour, who were hospitalized in a JJI in the Netherlands between January 2013 and October 2015. They are between the 15 and 21-years-old. The mean age was 17.35 years old. 29.7% of the detainees were of Dutch origin, 16.2% Moroccan, 16.2% Antillean, 8.1% Turkish, 2.7% Surinam, 21.6% were from a different origin and the origin of 5.4% was not known. Education level varied between primary school and MBO level 4 (Vocational Education/Community College).

The adolescent and young adult detainees stayed in on the following Dutch JJIs: *'RJJI De Hunnerberg, RJJI De Hartelborgt, RJJI Den Hey-Acker, Forensisch Centrum Teylingereind, JJI Lelystad and JJI Het Poortje'*. Detainees were excluded from the sample if their patient file consisted less than two treatment plans. Due to the prediction of incidents for a period of five months, detainees who did not stay five months in a JJI after the first treatment plan were excluded. Additionally, when the quality of the patient file was indicated as insufficient, the files were excluded from the sample. Youth with a history of sexually violent offenses were also excluded from the sample.

2.2.1 Recruiting detainees and ethical aspects. In this study, there was no physical involvement of the detainees and their parents. The data was not specially obtained for this study. We only used the information from the patient files. There were no risks involved in participating in this study. According to article 15 of the Dutch law system, law for the protection of personal information 2001, judicial data can be provided for policy information or scientific research and statistics, given that the results do not contain any personal information (art. 3 law Wbp, 2001). The results of this research only contain information at

group level, and are not reducible to individual characteristics. In the JJI's, the detainees are informed about the use of their personal data for example for research purposes.

2.3 Procedure

Data is collected at the ministry of justice and security and at the VUmc Bascule in the Netherlands by a team of six researchers. Risk assessment instruments were scored retrospectively using the professional manuals based on the patient file. The patient file usually includes demographic data, psychological and psychiatric reports, reports from the child protection services, personal and judicial historical information, treatment plans, evaluation reports of parent-mentor and youth-mentor periodical meetings, registered (violent) incidents in the JJI and plans for the future. Based on the duration of the treatment, risk assessment instruments were scored at the start of the treatment (T0). The registered violent incidents of the following five months were used in this study.

Prior to data collection, all researchers were trained in the different risk assessment instruments. In advance of the scoring process, one researcher performed an inclusion check of a certain patient file and another researcher was responsible for scoring that patient file (i.e. score the risk assessment instruments, demographic variables and violence incidents). As a result the latter researcher was not biased by the information he/she would read about the future (for example recidivism).

In order to access the interrater reliability, six patient files (random time point) were rated by two independent and randomly chosen researchers. Results were discussed in consensus meetings. The consensus scores were used in the predictive analyses.

2.4 Materials

Risk and protective factors for violence were measured with the SAVRY (Borum et al., 2006), in Dutch translation (Lodewijks, Doreleijers, de Ruiter, & de Wit-Grouls, 2006). The Interrater Correlation Coefficient (ICC) of the SAVRY ranged from good to excellent .61 to .86. in the study of Lodewijks and his colleagues (2008). The SAPROF-YV (de Vries Robbé et al., 2014) is used to measure protective factors for violence. The research of the pilot version of the SAPROF-YV showed a high ICC, between the .84 and .91 in two different samples (de Vries Robbé et al., 2014).

2.4.1 SAVRY. The SAVRY (Borum et al., 2006) consists of 30 items in four domains. The first domain includes the historical risk factors (ten items), which are scored based on all available documented information. The second and third domain respectively includes the

social/contextual risk factors (six items) and the individual risk factors (eight items). For these items we only used the documented information from the last six months. All these items were scored on a 3-point scale: (0= low, 1= moderate, 2= high). The last domain includes the protective factors (six items), for which documented information is used from the last 12 months. These items could be scored as absent or present. The items of the SAVRY are listed in Table 1. Finally, a maximum of four items were marked as critical. A critical item means that this item has an important influence on the risk level.

2.4.2 SAPROF-YV. The SAPROF-YV (de Vries Robbé et al., 2014) consists of 16 items on four domains: The resilience scale (four items), the motivational scale (six items), the relational scale (three items) and the external scale (three items). The items of the SAPROF-YV are listed in Table 2. All these items were scored on a 3-point scale: (0= No: The protective factor is not or barely present, 1= Partly: The protective factor is possibly present or to some extent present, 2= Yes: The protective factor is clearly present), or with the addition of plusses and minuses, which actually leads to a 7-point scale (0 = 0, 0+ = 1, 1- = 2, 1 = 3, 1+ = 4, 2- = 5, 2 = 6). The latter scale was used in this study. The items of the SAPROF-YV were scored for the following six months, based on the information of the previous six months. Finally, by marking 'Key' items, the researcher could determine the most important protective factors for preventing future violence. A maximum of three items with a score of 1 or 2 could be marked as a 'Key' item. Also, a maximum of 3 items with a score of 0 or 1 could be marked as 'Goal'. Improving the scores on the items, which are marked as 'Goal' leads to decreasing the risk of future violence. In addition to scoring the risk and protective factors of the SAVRY and SAPROF-YV, a clinical protection judgement and clinical risk judgement were made by integrating the factors rated in the both instruments.

2.4.3 Demographic data. With a self-developed scoring form, demographic information was scored and the quality of the files of the detainees was determined. This form included specific demographic variables (e.g. age, ethnicity, criminal history, index offense, intelligence, psychopathology according to a DSM diagnosis, and treatment history).

2.4.4 Violent incidents. The incidents of the detainees were scored based on the incident reports in the digital file. The report includes a description of the incident, the sanction that followed the incident, and the date on which an incident took place. Violence was defined according to the Dutch version of the SAVRY (Lodewijks et al., 2006): "An act of abuse or physical violence which is severe enough to cause injury to one or more persons (e.g. cuts,

bruises, broken bones or death) regardless of actual injury occurs; any form of sexual assault; or threat with a weapon or verbal threats of violence" (p. 24). We registered all violent incidents with a self-developed scoring form and indicated if the incident was of verbal or physical nature. Only violent incidents that occurred in the five months following the risk assessment date were included in analyses.

Table 1

Risk- and protective factors of the SAVRY (Borum et al., 2006)

Historical Items	Social/Contextual Items
1. History of violence	11. Peer delinquency
2. History of non-violent offending	12. Peer rejection
3. Early initiation of violence	13. Stress and poor coping
4. Past supervision/intervention failures	14. Poor parental management
5. History of self-harm or suicide attempts	15. Lack of personal/social support
6. Exposure to violence in the home	16. Community disorganization
7. Childhood history of maltreatment	
8. Parental/caregiver criminality	
9. Early caregiver disruption	
10. Poor school achievement	

Individual items	Protective Items
17. Negative attitudes	P1. Prosocial involvement
18. Risk taking/impulsivity	P2. Strong social support
19. Substance use difficulties	P3. Strong attachment and bonds
20. Anger management problems	P4. Positive attitude towards intervention and authority
21. Low empathy/remorse	P5. Strong commitment to school or work
22. Attention deficit/hyperactivity difficulties	P6. Resilient personality
23. Poor compliance	
24. Low interest/commitment to school or work	

Table 2

SAPROF-YV items (de Vries Robbé et al., 2014)

Resilience Items	Motivational Items
1. Social competence	5. Future orientation
2. Coping	6. Motivation for treatment
3. Self-control	7. Attitude towards agreements and conditions
4. Perseverance	8. Medication
	9. School/work

	10. Leisure activities
Relational Items	*External Items*
11. Parents/guardians	14. Pedagogical climate
12. Peers	15. Professional care
13. Other supportive relationships	16. Court order

2.5 Statistical Analyses

SPSS software version 24 was used to analyse the data. Two sum scores (total scores) were calculated for the SAVRY risk items and the SAPROF-YV items. SAVRY scores were recoded to a 7-point scale, to make it possible to subtract the items of the SAPROF-YV. SAVRY risk items minus SAVRY protective items, and SAVRY risk items minus SAPROF-YV items provided separate scores. Additional sum scores were calculated for the different domains of the SAVRY (historical items, social/contextual, and individual), and the domains of the SAPROF-YV (resilience-, motivational-, relational-, and external domain). When calculating the different sum scores, missing variables were taken into account.

   A dichotomous dummy variable was created for the presence of DBD/(symptoms of) an ASPD. This variable was used to define the two groups. Another dichotomous dummy variable was created for the presence of violent incidents during treatment with a follow-up period of five months, which served as outcome variable in the regression analysis and ROC analyses.

   The interrater reliability of the SAVRY and the SAPROF-YV was examined using an intraclass correlation coefficient (ICC), with a two-way random effect variance model and consistency type. In accordance with Fleiss (1986) the critical values for the single measures ICC's were set at ICC .75 = excellent, .60 < ICC < .75 = good, and .40 < ICC < .60 = moderate.

   To investigate if the DBD/ASPD group showed more violent incidents in a JJI than the group without one of these disorders, crosstabs and Chi-Square tests were used. This is the first step of the mediation analysis to examine if the juvenile detainees who suffer from a DBD/ASPD were more likely to show an incident in a JJI than the juvenile detainees without (one of) these disorders, because they have more risk and less protective factors for violence. The Baron and Kennedy (1986) method is used for the mediation analysis. Independent sample T-tests were performed in order to investigate if the DBD/ASPD group had significantly more risk factors and less protective factors than the group without (one of) these disorders (second step of the mediation analysis). To investigate the predictive validity of the

risk and protective factors of the SAVRY and SAPROF-YV for the occurrence of violent incidents in the JJIs during the five months after T0, logistic regression analyses were carried out for the total sample (third step mediation analysis). In addition, two hierarchical logistic regression analyses were performed to investigate the incremental predictive validity of the SAVRY protective factors, and the SAPROF-YV protective factors over the risk factors in the SAVRY. Because of the small and sample size and the skewed sample distribution, it is very difficult to draw conclusions from the findings of a logistic regression analysis. Therefore, Receiving Operating Characteristic (ROC) analyses were carried out as well. Moreover, ROC analyses are recommended when one wants to analyse data about prediction of violence (Mossman, 1994). One of the reasons is because ROC analyses are not affected by base rates of violent incidents. Initially, for the fourth step of the mediation analysis, having a DBD/ASPD had to be added to the model. Afterwards it appeared that this was not possible due to a previous non-significant result.

To examine the predictive validity of risk and protective factors of the SAVRY and SAPROF-YV for the occurrence of violent incidents in both the group with DBD/ASPD and the group without DBD/ASPD, ROC analyses were carried out again. Due to the even smaller sample size (because of the distinction in groups) logistic regression analyses were not performed for the separate groups.

The results of the ROC analyses, the Area Under the Curve (AUC) values were considered moderate to large when .70 or above, and large when above .75 in accordance with Douglas and Reeves (2010). The effects were significant, when the p-value was less then .05.

3. Results

3.1 Descriptive Statistics

Table 3 shows the mean scores on the SAVRY, SAPROF-YV, and subscales of both instruments for the total sample, and for the group with and without DBD/ASPD. Table 4 shows the occurrence of (verbal and physical) incidents for the total sample and for both groups. The amount of total incidents are shown in Table 5. The interrater reliability was .922 for the SAVRY risk factors, .837 for the SAVRY protective factors, and .870 for the SAPROF-YV.

Table 3

Descriptive statistics of the total scores and scores of different subscales of the SAVRY and SAPROF-YV for the total sample and the groups with and without DBD/ASPD.

	Total sample		DBD/ASPD		No DBD/ASPD	
	M	Range	*M*	Range	*M*	Range
SAVRY						
Total risk	22.49	7.00–37.57	25.78	15.65–37.57	17.07	7.00–29.00
Historical scale	8.07	2.00–16.67	9.77	5.00–16.67	5.29	2.00–13.00
Socialcontextual scale	6.32	3.00–10.00	7.00	4.00–10.00	5.21	3.00–10.00
Individual scale	8.08	1.00–14.00	9.00	4.00–14.00	6.57	1.00–10.00
Protective scale	1.16	0.00–4.00	0.78	0.00–2.00	1.79	0.00–4.00
SAPROF-YV						
Total	41.82	21.33–74.67	39.18	21.33–52.27	46.15	22.40–74.67
Resilience scale	9.27	3.00–17.00	8.96	3.00–17.00	9.79	4.00–15.00
Motivational scale	12.41	3.60–26.40	11.16	3.60–19.20	14.46	4.80–26.40
Relational scale	5.86	1.00–18.00	4.82	1.00–11.00	7.57	2.00–18.00
External scale	13.76	8.00–18.00	13.70	10.00–18.00	13.86	8.00–18.00
Risk - protection						
Total risk – SAVRY protection	20.16	-1.00–35.57	24.22	14.00–35.57	13.50	-1.00–27.00
Total risk – SAPROF-YV	25.64	-43.00–83.67	38.17	-1.04–83.67	5.07	-43.00-49.60

Table 4

Descriptive statistics of the occurrence of incidents for the total sample and the groups with and without DBD/ASPD

	N	Total incidents	Physical incidents	Verbal incidents
Total sample	37	24	19	14
DBD/ASPD	23	16	12	10
No DBD/ASPD	14	7	7	4

Table 5

The amount of total incidents for the total sample and the groups with and without DBD/ASPD

	Amount of total violent incidents										
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
DBD/ASPD	7	8	3	0	4	0	1	0	0	0	0
No DSPD	6	2	2	1	0	1	1	0	0	0	1
Total	13	10	5	1	4	1	2	0	0	0	1

3.2 Differences in violent incidents between groups

The first step in the mediation analysis is about the relationship between having a DBD/ASPD and the occurrence of incidents in a JJI. Crosstabs and Chi-Square test (or Fisher's exact test) were performed to test if the group who suffer from a DBD/ASPD was significantly more likely to show violent incidents in a JJI than the group without a DBD/ASPD. The sample included 37 detainees, 16 of the 23 (69.6%) detainees who suffer from a DBD/ASPD showed one or more violent incidents inside the JJI. In addition, 8 of the 14 (57.1%) detainees who do not suffer from (one of) those disorders showed one or more violent incidents in a JJI. This can be seen by the frequencies cross tabulated in Table 6. Since the expected frequency was not at least 5 in each cell, Fisher's Exact Test was conducted. The proportion of detainees with DBD/ASPD that showed violent incidents was not significantly different from the proportion detainees without DBD/ASPD that showed violent incidents (p = .338, one tailed Fisher's exact test).

Table 6

Cross table of the occurrence of total violent incidents and having a DBD/ASPD

	Total violent incidents in JJI		
	No	**Yes**	**Total**
DBD/ASPD	7	16	23
No DBD/ASPD	6	8	14
Total sample	13	24	37

    3.2.1 Physical versus verbal violent incidents. Other crosstabs and Chi-Square tests were carried out to investigate if the group with DBD/ASPD was more likely to show either physical violent or verbal violent incidents than detainees without DBD/ASPD. Results showed that 12 of the 23 (52.2%) detainees who suffer from a DBD/ASPD showed one or more physical violent incidents inside the JJI. In addition, 7 of the 14 (50%) detainees who do not suffer from a DBD/ASPD showed one or more physical violent incidents in a JJI. This

can be seen by the frequencies cross tabulated in Table 7. The difference was not significant according to the Pearson Chi-Square, X^2 (1, N = 27), .016, p = 898. In addition, 10 of the 23 (43.5%) detainees who suffer from a DBD/ASPD showed one or more verbal violent incidents inside the JJI. Results showed that 4 of the 14 (28.6%) detainees without DBD/ASPD showed one or more verbal violent incidents in a JJI. This can be seen by the frequencies cross tabulated in Table 8. The differences were not significant according to the Pearson Chi-Square, X^2 (1, N = 37) = .822, p = .365.

Table 7
Cross table of the occurrence of physical violent incidents and having a DBD/ASPD

	Total physical violent incidents in JJI		
	No	**Yes**	**Total**
DBD/ASPD	11	12	23
No DBD/ASPD	7	7	14
Total sample	18	19	37

Table 8
Cross table of the occurrence of verbal violent incidents and having a DBD/ASPD

	Total verbal violent incidents in JJI		
	No	**Yes**	**Total**
DBD/ASPD	13	10	23
No DBD/ASPD	10	4	14
Total sample	23	14	37

Since the method of Baron and Kennedy (1986) is used for the mediation analysis, it is not allowed to continue the other steps because of the non-significant result in the first step. However, due to the preliminary nature of this pilot study it was decided to investigate the relationship between having a DBD/ASPD and risk and protective factors for violence, and the relationship between the risk and protective factors and the occurrence of violent incidents anyway.

3.3 Mean differences risk and protective factors.

The second step in the mediation analysis is about the relationship between having a DBD/ASPD and the amount of risk and protective factors. Independent sample T-tests were used to test if the group with DBD/ASPD had significantly more risk factors and less protective factors than the group without (one of) these disorders, with having a DBD/ASPD as independent variable and the risk and protective factors as the dependent variables. Faced

on histograms, the scores (on the subscales) of the risk and protective factors of the SAVRY and SAPROF-YV for both groups were marginally normally distributed. Homogeneity of variance could be assumed for all T-tests since Levene's test for equality of variances appeared not significant for all the T-tests, except for protective factors of the SAVRY, the total SAPROF-YV score, and the motivational and relation subscale of the SAPROF-YV. Equal variances were not assumed for these tests. Table 9 shows the results of the independent sample T-tests.

Table 9

Independent sample T-test results for the effect of a DBD/ASPD on the risk and protective factors of the SAVRY and SAPROF-YV

	DBD/ASPD		No DBD/ASPD		
	M	*SD*	*M*	*SD*	*t*-test
SAVRY					
Total risk	25.78	6.29	17.07	6.40	-4.058*
Historical scale	9.77	3.52	5.29	3.50	-3.764*
Social/contextual scale	7.00	1.83	5.21	2.15	-2.689*
Individual scale	9.00	2.59	6.57	2.53	-2.786*
Protective scale	0.78	0.80	1.79	1.48	2.343*
SAPROF-YV					
Total	39.18	8.86	46.15	14.06	1.664
Resilience scale	8.96	3.31	9.79	3.19	0.749
Motivational scale	11.17	4.50	14.46	6.90	1.591
Relational scale	4.83	2.81	7.57	4.89	1.916
External scale	13.69	2.79	13.86	3.18	0.162
Risk - protection					
Total risk – SAVRY protection	24.22	7.23	13.50	8.88	-4.010*
Total risk – SAPROF-YV	38.17	25.28	5.06	28.70	-3.671*

* Significant, p < .05

3.3.1 Risk factors. The analyses revealed that the group with DBD/ASPD (*M* = 25.78, *SD* = 6.29) had significant more (*t* (35) = -4.058, *p* = <.001) risk factors on the SAVRY than the group without (one of) these disorders (*M* = 17.07, *SD* = 6.40). The results in Table 9 shows that the group with DBD/ASPD also had significantly more historical, social/contextual and individual risk factors than the group with no DBD/ASPD.

3.3.2 Protective factors. The analyses revealed that there was a significant difference in the SAVRY protection score (*t* (17.76) = 2.343, *p* = .031), the group who suffer from a DBD/ASPD had less protective factors (*M* = .78, *SD* = .80) than the group who do not suffer from a DBD/ASPD (*M* = 1.79, *SD* = 1.48). The results in Table 9 show that the group with DBD/ASPD (*M* = 39.18, *SD* = 8.86) did not have significantly (t (19.37) = 1.664, *p* = .112)

less protective factors on the SAPROF-YV than the group without DBD/ASPD (M = 46.15, SD = 14.06). The analyses of the different domains of the SAPROF-YV revealed no significant differences in all the domains (resilience protective factors, motivational protective factors, relational protective factors and external protective factors) between the group with DBD/ASPD and the group without DBD/ASPD (see Table 9).

   3.2.3 Risk – protective factors. The results of the analyses in Table 9 showed that the DBD/ASPD group (M = 24.22, SD = 7.23) had a significantly higher score (t (35) = -4.010, p = <.001) on the total risk min SAVRY protection than the group without DBD/ASPD (M = 13.50, SD = 8.88). Additionally, the DBD/ASPD group (M = 38.17, SD = 25.28) had a significantly higher score (t (35) = -3.671, p = .001) on the total risk min SAPROF-YV than the group who did not suffer from DBD/ASPD (M = 5.06, SD = 28.70) as well.

3.4 Predictive Validity of the Risk and Protective Factors for the Total Sample

The third step in the mediation analysis is about the relationship between the amount of risk and protective factors and the occurrence of a violent incident in a JJI. Logistic regression analyses and ROC analyses were carried out to predict the occurrence of a violent incident in a JJI using risk and protective factors of the SAPROF-YV and SAVRY as predictors in the total sample. The Pearson Correlation between the total scores on the risk factors and violent incidents was r_{pb} = .430 (p = .008). The Pearson Correlation between the SAVRY protective scores and violent incidents was r_{pb} = -.284 (p = .088). The Pearson Correlation between the total scores on the protective factors of the SAPROF-YV and violent incidents was r_{pb} = -.299 (p = .072).

   A logistic regression analysis with different independent variables was performed three times because of the small sample size. The independent variable in the logistic regression analysis was respectively the total risk factor score, the SAVRY protective factors, and the SAPROF-YV total score and the dependent variable was the total violent incidents (dichotomous variable). The variable total risk factors was entered in block 1. The logistic regression analysis revealed that a test of the full model against a constant only model was statistically significant, indicating that the risk factors did reliable distinguishing between showing an incident or not (X^2 = 7.456, p = .006). However Nagelkerke's R^2 of .251 indicated a weak relationship between prediction and grouping. Prediction success overall was 70.3% (83.3% for showing an incident and 46.2% for not showing an incident). The Wald criterion

showed that the total risk factor score was a significant predictor. When the total risk factor was raised by one unit, the odds ratio was 1.156 as large.

In the second analysis, block 1 consisted of the protective factors score of the SAVRY. The logistic regression analysis revealed that a test of the full model against a constant only model was not statistically significant, indicating that the protective factors did not reliable distinguishing between showing an incident or not (X^2 = 2.976, p = .085). Nagelkerke's R^2 of .106 indicated a weak relationship between prediction and grouping. Prediction success overall was 67.6% (91.7% for showing an incident and 23.1% for not showing an incident).

In the third analysis, block 1 consisted of the total protective factors score of the SAPROF-YV. The logistic regression analysis revealed that a test of the full model against a constant only model was not significant, indicating that the protective factors did not reliable distinguishing between showing an incident or not (X^2 = 3.430, p = .064). However Nagelkerke's R^2 of .122 indicated a weak relationship between prediction and grouping. Prediction success overall was 70.3% (95.8% for showing an incident and 23.1% for not showing an incident).

To investigate the incremental predictive validity of the SAVRY protective factors, and the SAPROF-YV protective factors over the risk factors in the SAVRY, two hierarchical logistic regression analyses were carried out. The SAVRY risk total scores were entered in step 1, the SAPROF-YV total score or the SAVRY protective factors were added in step 2. The prediction model of the SAVRY risk factors for violent incidents (block 1) did not improve significantly when the SAVRY protective items were added (X^2 = .091, p = .763). Additionally, the SAVRY risk model did not improve when the SAPROF-YV total score was added (X^2 = .141, p = .708).

Due to the small sample size and the skewed sample distribution we decided to use ROC analyses as well to predict the occurrence of a violent incident in a JJI using risk and protective factors as predictors. The state variable was the total incidents (dichotomous variable) and the test variables were the risk and protective factors. Table 10 shows the results of the ROC analyses for the total sample. The total risk score of the SAVRY was significant with a large AUC value, AUC value was .77, p = .008 and SE = .10. The different scales of the risk items were also significant, with moderate to large AUC values. The protective factors of both the SAVRY and the SAPROF-YV were not significant at all and the AUC values were all less than .70. The risk min SAVRY protection and risk min SAPROF-YV

remain significant with the same AUC value as the total risk score alone, respectively with large AUC values of .76, p = .011 and SE = .10 and .76, p = .09 and SE = .09. Similar to the results of the hierarchical logistic regression analyses, the protective factors did not add in the prediction of the total incidents.

The first step of the mediation analysis was not significant. Therefore, it is not possible to add having a DBD/ASPD in the logistic regression analysis to examine the effect of the potential mediating effect of risk and protective factors (fourth step of the mediation analysis).

3.4 Predictive Validity of the Risk and Protective Factors for Both Groups

Again logistic regression analyses were performed to investigate the predictive validity for showing a violent incident in a JJI by using the risk and protective factors for both groups.

3.5.1 DBD/ASPD group First, the results for the group who suffer from DBD/ASPD are shown. The state variable was the total incidents (dichotomous variable) and the test variables were the risk and protective factors. Table 10 shows the results of the ROC analyses for the DBD/ASPD group as well. The total risk score of the SAVRY was marginally significant with a large AUC value of .75, p = .061 and SE = .15. The total risk − SAVRY protection remained marginally significant with the same AUC value. All other scales of the risk assessment instruments were not significant.

3.5.2 No DBD/ASPD group. Table 10 shows the results of the ROC analyses for the no DBD/ASPD group in the last column. The individual scale is significant, with a very large AUC value of .91, p = .012 and SE = .08. In addition, the total risk min the SAPROF-YV is significant with a large AUC value of .83, p = .039 and SE = .11. The total scores and all other subscales of the risk assessment instruments were not significant for this group.

Table 10
The AUC values, SE values en p values of the ROC analyses of the total sample and the groups with and without DBD/ASPD

	Total Sample			DBD/ASPD			No DBD/ASPD		
	AUC	*SE*	*p*	*AUC*	*SE*	*p*	*AUC*	*SE*	*p*
SAVRY									
Total risk	.77	.10	.008*	.75	.15	.061	.79	.13	.071
Historical scale	.72	.09	.027*	.72	.14	.095	.62	.16	.478
Social/contextual scale	.71	.09	.034*	.70	.14	.133	.64	.15	.366
Individual scale	.72	.10	.029*	.61	.13	.423	.91	.08	.012*
Protective scale	.64	.10	.171	.53	.14	.815	.74	.14	.138
SAPROF-YV									

Total	.66	.10	.112	.59	.13	.483	.73	.15	.156
Resilience scale	.62	.10	.221	.58	.14	.548	.68	.16	.272
Motivational scale	.61	.10	.265	.52	.13	.894	.72	.14	.175
Relational scale	63	.09	.192	.54	.12	.764	.71	.15	.197
External scale	.68	.09	.083	.62	.12	.385	.75	.14	.121
Risk - protection									
Total risk – SAVRY protection	.76	.10	.011*	.75	.15	.061	.79	.13	.071
Total risk – SAPROF-YV	.76	.09	.010*	.74	.15	.071	.83	.11	.039*

* Significant, p <.05

4. Discussion

First of all, the results of this pilot study must be considered very cautiously because of the small sample size and the skewed distribution. Due to the small sample size it is not possible draw hard conclusions, and it is very hard to generalize the results to other populations. However, this pilot study can provide the first evidence and input for additional research.

The first research question was: "What is the effect of having a DBD/ASPD on showing violent incidents in a JJI and the risk and protective factors for violence?" Unexpectedly, results showed that detainees who suffer from a DBD/ASPD seem not more likely to show violent incidents in a JJI than youth who do not suffer from (one of) these disorders. Despite the fact that it was not allowed to continue the mediation analysis, the analyses were continued due to the exploratory nature of this study. The results showed that the detainees with a DBD/ASPD seem to have significantly more total risk factors than the group without (one of) these disorders. This result confirms the fact that DBD/ASPD is associated with the risk of violence (American Psychiatric Association, 1994; Emmelkamp & Kamphuis, 2007). The results did not show that the detainees who suffer from a DBD/ASPD had significantly less protective factors than the group who do not suffer from (one of) these disorders. Furthermore, it can be cautiously concluded that the risk factors seem to predict the occurrence of a violent incident in a JJI. This is in agreement with previous studies on the predictive validity of the SAVRY, even though most of these studies investigated the predictive validity of recidivism (Catchpole & Gretto, 2003; Gammelgård et al., 2008; Lodewijks et al., 2008; Meyers & Schmidt, 2008; Vincent et al., 2011). The occurrence of a violent incident in a JJI could not be predicted by the protective factors of the SAVRY and SAPROF-YV. This is in contrast with Lodewijks et al. (2008) who showed that the protective domain of the SAVRY had one of the highest predictive values.

The additional research question was: "Can risk and protective factors in risk assessment predict the occurrence of violent incidents in a JJI in both youth who suffer from a DBD/ASPD and youth who do not suffer from (one of) these disorders?" Because the small sample size is divided into two groups, results must be handled even more cautiously. Unexpectedly, it turns out that the risk en protective factors of the SAVRY and SAPROF-YV could not predict the occurrence of an incident for both groups.

Despite the non-significant results, almost all the results we found were in the expected direction, which is promising for future research. This exploratory study showed the first indications of evidence. Research with a larger sample size need to prove this.

Unfortunately, this study did not find a significant difference in the occurrence of incidents between the groups with and without DBD/ASPD. The result was in the expected direction, but the difference was not large enough to find significant results. When the distinction was made between physical violent incidents and verbal violent incidents, the differences were even less clear. Results seem to show that the likelihood that detainees with and without DBD/ASPD showed a physical violent incident was almost similar. When we take a look at the verbal violent incidents, the difference was in the expected direction. However, insignificant. Several other factors might have played a role in this relationship. One of the reasons for the non-significant result could be that the detainees had other disorders (in addition to the DBD/ASPD). The comorbidity of the mental disorders was high among the juvenile detainees. For example some of the juvenile detainees had a substance use disorders (SUD) and/or mental retardation. Sharma, Sharma and Barkataki (2016) showed that increasing drug use led to increasing delinquency and vice versa. Supplementary, Budney, Hughes, Moore and Vandrey (2004) demonstrated that people who are addicted to cannabis may experience aggressive behaviour as withdrawn symptom. Additionally, one of the major risk factors for antisocial behaviour includes low intelligence (Farrington, 2005). There is a significant relationship between intelligence measured at the age of three years and registered criminality. Low IQ at a young age can predict later delinquency (Stattin & Klackenberg-Larsson, 1993). These factors may be predictors of the occurrence of a violent incident in a JJI. Future research could examine the influence of other mental disorders and comorbidity as well. It may also be that having a DBD/ASPD does not affect the occurrence of violent incidents in a JJI at all. For example, it might be that these detainees had helpful therapy outside the JJI before they were hospitalized or they benefited from the start of the therapy

inside the JJI already. This is not taken into account in this study; future research can take this into consideration. Finally, the non-significant result could be due to the small sample size and the skewed sample distribution. The small sample size causes difficulty in finding significant relationships from the data.

As already mentioned, the detainees who suffer from DBD/ASPD seem to have more risk factors, but not less protective factors than the detainees who do not suffer from DBD/ASPD. It was expected that the detainees with DBD/ASPD had less protective factors than the youth without DBD/ASPD. The differences were in the expected direction, however they were not large enough to be significant. This may be due to the skewed sample distribution and the small sample size. Again, it is also possible that these youth with a DBD/ASPD had helpful therapy for their mental disorder already, which could have led to an increase in the protective factors.

Furthermore, the relationship between the risk and protective factors and the occurrence of a violent incident in a JJI was examined in the total sample. The predictive value of the risk factors seems promising, but it is still too early to draw conclusions. It seems that the protective factors cannot predict the occurrence of a violent incident in a JJI. The SAPROF-YV could not predict the occurrence of violent incidents in a JJI when looking at the results of the ROC analyses. Although this study had a very small sample size, non-significant trends were found in the logistic regression analysis; the results were in the expected direction. As previously indicated, there is very little research on the predictive validity of the SAPROF-YV because it is a relatively new instrument (de Vries Robbé et al., 2014). The examined pilot version of Robbé and his colleagues (2014) was one of the few investigations about the predictive validity of the SAPROF-YV. This exploratory study can contribute to the scientific evidence of the predictive value of the protective factors of the SAPROF-YV. However, no hard conclusions can be drawn because of the conflicting results and the small sample size. Future research with a larger population is needed. The total risk min the SAVRY protection and the total risk min the SAPROF-YV remain significant, however the protective factors of both instrument did not add something to the prediction of violent incidents in a JJI.

 Finally, based on this preliminary data the SAVRY and SAPROF-YV appear not to predict the occurrence of violent incidents for the group with and without DBD/ASPD separately. Gammelgård and his colleagues (2009) showed that the SAVRY could be used in different groups, for example in juvenile delinquents and psychiatric adolescents who stayed

in a psychiatric setting. Unfortunately, these preliminary results seem not to confirm this. The total risk min the SAPROF-YV seems to predict the occurrence of a violent incident in a JJI for the group detainees without DBD/ASPD. In addition, it is remarkable that the individual subscale of the SAVRY had a large predictive value for the occurrence of violent incidents in the group without DBD/ASPD. However, this group had a very small sample size therefore it is not possible to draw conclusions.

4.1 Limitations and Strengths

As already mentioned several times, a major limitation of this research was the small sample size. The small sample size caused difficulty in finding significant relationships from the data. A small sample size is also a threat to external validity. It is hard to generalize these results. Therefore a larger sample size is a suggestion for future research. Statistical tests can be performed better and the results can be better generalized.

As mentioned before, there is a lot of comorbidity of different disorders. There were also detainees without DBD/ASPD with other mental disorders. We wanted to take this into account, however due to small sample size this was impossible. Future research with larger samples should take the other mental disorders into account. Consequently, the relationship between having a mental disorder (DBD/ASPD or another mental disorder) and violent incidents and risk and protective factors can be better identified.

Another limitation that has to be addressed is the retrospective design of the study. There could be possible distortions in the memory of the detainee, for example in the recall of previously exposure to risk factors (the historical risk factors). This could lead to incorrect information in the patient file. Moreover, data was collected solely based on patient file information, so we relied on others who record the information. We did not have the opportunity to ask the detainee about some missing information. Future research could carry out the research in a JJI itself. The researchers can ask anything about the detainees to group leaders, psychologists and behaviour scientists. They can even talk with the detainees themselves. At the same time, this is also a strength of this study. We had access to information from many different resources. This information was compared and often resulted in a complete picture of the situation. Moreover, we could not be influenced by social desirable answers of the detainees, which is a strength as well. In addition, because this study had a retrospective design it was possible to quickly generate results. Due to lack of time, it

was not possible for this study to gather prospective data. It is advisable for future research to gather prospective data.

The current study was established in cooperation with all the JJIs in the Netherlands. This is a strength because it ensures a representative sample (despite the small sample). Moreover, these JJIs know about the research and we can show our results. The JJIs can eventually put these results into practice. The cooperation with the JJIs provides opportunities regarding a possible future prospective study.

4.2 Implications

Despite the limitations, it can be cautiously concluded that detainees with a DBD/ASPD seem to have significantly more risk factors than the group without (one of) these disorders. In practice, it is important to be alert when a detainee has many risk factors. This shows that they are more vulnerable to recidivism, for that reason it is important to introduce treatment aimed at reducing risk factors. The RNR model, which makes a major contribution to the criminal justice interventions, states that the offenders with more risk factors (higher risk offenders) should get direct intensive services, according to the responsivity principle. The RNR model also shows that the factors associated with the particular crime should be treated (the need principle) (Andrews & Bonta, 2010). In conclusion, specialized treatment is very important for an effective intervention.

Furthermore it can be very cautiously concluded that the risk factors might predict the occurrence of an incident for the total sample. In practice, it might be useful to pay attention on the risk factors of the youth regardless of a DBD/ASPD. When an incident can be predicted it can also be prevented, especially by offering treatment or additional support. Unfortunately, little can be said about the protective factors due to the conflicting results. Future studies should include a larger sample size and prospective data collection. This pilot study was about the prediction of incidents within a JJI. An interesting approach would be to investigate if the risk assessment instrument can predict who will reoffend in the future. When risk factors and protective factors are known from the SAVRY (Borum et al., 2006), individualized treatment targeting these risk and protective factors can be used. This can probably lead to decreasing the number of violent incident (De Vries et al., 2014). This guards more internal safety in JJIs and ultimately creates a safer society.

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