Antisocial Behavior and Violent Recidivism in Forensic Psychiatric Patients With Adverse Childhood Experiences

Student: Rosa Willems

Student number: 2004488

Administration number: u396302

Master Clinical Forensic Psychology

April 4th 2022

Supervisor: Marija Jankovic

Second Assessor: Atha Chasiotis

Word count: 6648

Abstract

Research has frequently found antisocial behavior to be a significant predictor of violent reoffending. However, less is known about how well antisocial behavior can predict violent reoffending in forensic patients with adverse childhood experiences (ACEs). The literature suggests that offenders with ACEs engage in antisocial and criminal behavior at a younger age than offenders without these experiences. Nonetheless, as far as we know, no previous studies to date have investigated the role of age at first offense in the association between antisocial behavior and violent recidivism. Therefore, the present study aimed to investigate whether antisocial behavior predicts violent recidivism in forensic psychiatric patients with ACEs as well as whether this association is moderated by age at first offense.

The sample consisted of 112 male forensic psychiatric patients, with ages at admission ranging from 17 to 45 (M= 31.45, SD= 8.39), who were unconditionally released between 2004 and 2008 from highly-secured forensic psychiatric institutions in the Netherlands. It was hypothesized that antisocial behavior would be positively associated with violent recidivism and that this association would be stronger for individuals who first offended at a younger age in comparison to individuals who offended at an older age. Hierarchical binary logistic regression with an interaction term revealed that antisocial behavior did not significantly contribute to violent recidivism nor was age at first offense a significant moderator in this association. This is not in line with previous research nor with the hypotheses.

Keywords: antisocial behavior, recidivism, age at first offense, forensic psychiatric patients, Forensic Psychiatric Centers

Antisocial Behavior and Violent Recidivism in Forensic Psychiatric Patients With Adverse Childhood Experiences

In the Netherlands, there is a growing number of patients admitted to high secure forensic institutions through a Terbeschikkingstelling (TBS) conviction: In 2016, 174 patients were admitted to TBS clinics whilst in 2020 this number increased to 273 patients (De Rechtspraak, 2021). A TBS conviction refers to an involuntary admission by the order of the state that can only be justified by the court if the offense is related to the mental state of the accused (de Ruiter & Trestman, 2007; Van Marle, 2002). During a TBS conviction, offenders cannot be held entirely responsible for the crimes they committed, which can be due to their mental states. The purpose of a TBS conviction is to adequately treat patients' underlying conditions to rehabilitate them and ensure they are no longer a threat to society (Bogaerts et al., 2018; Van Marle, 2002).

Although these patients are characterized by mental illnesses such as psychotic, cluster B, and/ or personality disorders, studies have documented that another highly prevalent factor is the suffering from adverse childhood experiences (ACEs) (Connolly, 2020). ACEs entail potentially traumatic events, such as maltreatment, neglect, or abuse, that can have lasting impacts on victims' physical as well as mental health and can adversely affect their further development and behavioral tendencies (Boullier & Blair, 2018; Connolly, 2020). The development of the victims' brain structures can cause neurological dysfunctions that can impair emotional regulation, triggering, for example, impulsive and inadequate reactions to provocation, making aggression more likely (Reavis et al., 2013). Specifically, Reavis et al. (2013) posit that ACE can lead to a range of behavioral problems such as antisocial behavior (e.g., Hunt et al., 2017) and aggression (e.g., King, 2021).

The tendency of individuals with ACEs to display antisocial behavior can also lead to the development of violence and criminal behavior (Fagan & Novak, 2018; Fox et al., 2015; Hambrick et al., 2018). Indeed, numerous studies substantiated antisocial behavior as a strong

predictor of criminality and reoffending: Roberts and Coid (2010) noted its prevalence in a wide range of crimes such as obstruction of justice, firearm attack, robbery, escape, arson, burglary and violence. Moreover, drawing on prior scholarship (e.g., Banse et al., 2013; Bonta & Andrew, 2017) and the risk-need-responsivity (RNR) framework of offender rehabilitation (Andrews et al., 1990), antisocial behavior is also considered one of the major risk factors and strongest predictors of recidivism. A meta-analysis consolidating data gathered between 1994 and 2015 in American correctional facilities has for example established that higher scores on antisocial personality scales and/or a prevalent history of antisocial behavior imply a significantly higher likelihood of recidivism (Katsiyannis et al., 2018). Similarly, Eisenberg et al. (2019) identified criminal history (including early antisocial behavior), antisocial patterns of behavior and, pro-criminal (i.e., antisocial) attitudes as the most impactful predictors for general and violent recidivism when meta-analyzing data of forensic outpatients.

Although the link between antisocial behavior and recidivism is well-established, some factors may influence this association. The current study focused on the potential impact of age at first offense, a variable that has previously been related to both, antisocial behavior and recidivism individually (e.g., Moffitt, 1993; Van Hazebroek et al., 2019), yet has never been investigated in a shared context before. Studies have shown that young age at first offense heightens the risk of sustained antisocial behavior as well as repeated, high-frequency involvement in delinquent activities and thus increased recidivism rates (Staff et al., 2015). Studies focusing on juvenile offenders specifically, found that early delinquents tend to follow the most severe and chronic criminal pathways, committing the highest amounts and most diverse types of crimes (Baglivio et al., 2015; Broidy et al., 2015). Such insights have led scholars to identify two distinct age-crime trajectories: one where those who first offend young tend to persist offending and one where those who offend at a later age exhibit shorter criminal careers (Moffitt, 1993; Theobald & Farrington, 2018). Accordingly,

it is possible that early delinquents, who tend to be more impulsive and generally troubled, could thus have a lower threshold for engaging in criminal behavior. This could consequently make antisocial behavior a stronger predictor for this specific group, such that it will more quickly and often manifest in recidivism. For late delinquents, on the other hand, it could be that antisocial behavior is a weaker predictor, as they are argued to be less devastated by problems than early delinquents and were on top of that found to be able to 'age' out of their criminal stages (Moffitt, 2005).

Therefore, this study will answer the following research question: Does age at first offense moderate the association between antisocial behavior and violent recidivism in forensic psychiatric patients with ACEs?

To examine the above main research question, two sub-questions were formulated:

1) Does antisocial behavior predict violent recidivism within five years after discharge in forensic psychiatric patients with ACEs?
2) Does the age at first offense moderate the relationship between antisocial behavior and violent recidivism within five years after discharge in forensic psychiatric patients with ACEs?

Based on previous research, the following hypotheses were formulated for each sub-question accordingly.

1) Antisocial behavior would positively predict violent recidivism.
2) Age at first offense would moderate the positive relationship between antisocial behavior and violent recidivism with the association being stronger for individuals who first offended at a younger age in comparison to individuals who offended at an older age.

The current study could prove valuable by providing further insight into the workings of the main effect between antisocial behavior and recidivism, and reveal potentially differing paths for individuals with varying ages at first offense. It could thereby not only aid in

predicting recidivism in admitted patients, but also allow for individualization of treatment plans in high secure forensic institutions.

Method

Procedure

Information on demographic characteristics, psychiatric diagnoses according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev. [DSM-IV-TR]; American Psychiatric Association [APA], 2000), and criminal records were collected through electronic patient files. In addition, risk assessment was based on the Historical, Clinical, Future – Revised (Historisch, Klinisch, Toekomst – Revisie; HKT-R). It is a structured risk assessment tool for predicting violent recidivism in forensic patients (Spreen et al., 2014). The HKT-R is divided into three domains: Historical, Clinical, and Future and each domain is used to best predict recidivism. Moreover, the HKT-R was assessed retrospectively by twenty trained coders who used information from the patients' electronic files. These files included the description of their criminal history, background history, treatment plans, leave requests, psychiatric evaluation reports, and prolongation advice. Before running the analyses, all the data were anonymized. Although consent is common practice, for this study, the patients were not able to give consent as many were no longer located in the institutions and a group of them had already died. However, due to the fact that this study serves the public interest (i.e., the safety of society), permission is not required according to paragraph three of the Dutch Civil Code [in Dutch: BW].

For the purpose of this study, only forensic psychiatric patients who experienced at least one form of ACEs were included. The experience of ACE was determined by the historical item H07 of the HKT-R at the time of admission to the forensic psychiatric institution (Spreen et al., 2014). This item was rated on a 5-point Likert scale from 0 = *no ACE to* 4 = *chronic ACE*. However, in this study, only the patients that have experienced ACE will be included, therefore, scale point 0 was removed from this study. The study was

approved by the ethical review board of Tilburg University School of Social and Behavioral Sciences.

Participants

The study sample consisted of forensic psychiatric patients who were unconditionally released between 2004 and 2008 from one of 12 high-secure forensic psychiatric institutions in the Netherlands. The initial sample included 347 patients (n = 30 , 8.6% were females). However, the measurement with HKT-R is only validated for a male TBS population and therefore females were excluded from this study (Spreen et al., 2014). Also, patients without ACEs (n = 55, 15.85 %) were removed from this study. This resulted in a final sample of 267 males, with ages ranging from 17 to 66 (M = 31.80, SD= 8.74) at the time of admission to the TBS clinic, and treatment duration ranging from 3 to 16 years (M = 7.77, SD = 2.91). Most of the participants had the Dutch Nationality (n=83, 74.1%) and twenty-six of the participants (9.7%) reoffended violently within five years after release from the institution. The sample characteristics are displayed in Table 1, along with differences between recidivists and non-recidivists in demographic characteristics and the criminal history. As can be seen from the Table 1, the percentage of violent recidivists having committed traffic and public disturbance violations, property offenses, moderate, severe violence and power force crimes, was significantly higher to that of non-recidivists. Moreover, recidivists were found to be significantly younger when first offended than recidivists. Psychiatric diagnoses detected in the sample and differences in these diagnoses between recidivists and non-recidivists are reported in Table 2. No significant differences between violent recidivists and non-recidivists in psychiatric diagnoses were detected.

Measures

Antisocial Behavior

Antisocial behavior was assessed during admission to the clinic with the clinical item *antisocial behavior* of the HKT-R (Spreen et al., 2014). This assessment focuses on whether

the patient has followed their desire without considering the feelings of others or the circumstance that they are under in the past 12 months. This helps to examine whether the patient has previously been involved in conflictive situations which may have resulted in violence. An important factor to note in this assessment is that all types of behavior are addressed and this assessment does not take into consideration possible pathology which might explain the behavior (antisocial disorder, autism, etc.). This item was rated on a 5-point Likert scale where 0 = *no antisocial behavior* and 4 = *high levels of antisocial behavior*.

Violent Recidivism

The data on violent reconvictions after release were provided by the Dutch Ministry of Security and Justice. Patients were followed after release up until the 11th of July of 2011 (Spreen et al., 2014). Violent recidivism was operationalized as any new conviction within five years after unconditional release including mild to moderate violence and possession of arms, power by force, severe violence, moral offenses with adults as victims, manslaughter, arson, and premeditated murder. This variable was measured using a yes and no answer option such that 0 = *the patient has not reoffended within five years after unconditional release* and 1 = *the patient has reoffended within five years after unconditional release.*

Age at First Offense

The age at first offense was defined as the age at which the first offense is committed. It was assessed as a continuous indicator from the electronic patient files. Therefore, age at first offense was used as a continuous variable.

Statistical Analysis

The SPSS v.28 statistical package was used for all analyses conducted for the purposes of the present study. First, listwise deletion was applied meaning that participants with missing data on one or more of the three variables included in the analysis (recidivism, age at first offense, and antisocial behavior) were excluded. Listwise deletion was chosen for two reasons; first, it is the method that is used the most when dealing with missing data

(Howat, Crilley & Mc Grath, 2008), and second, since the present study examines a moderation effect and only three variables are included in the analyses, pairwise deletion would practically exclude the same cases from the analysis. Replacing with the means, was not considered an appropriate option, considering scholars who claim that this method can severely distort the results when there are a lot of missing cases, like in the present study (Pallant, 2020, pp. 213). Next, histograms and boxplots were used to check for outliers of age at first offense, the only variable included in the analysis that was measured as continuous.

Furthermore, descriptive statistics were calculated to summarize the characteristics of the sample. Correlations between the study variables were also examined. Note that antisocial behavior, an originally ordinal measured variable, was treated as a continuous in the analysis because it contains five categories and thus treating it as a continuous does not harm the analysis (Norman, 2010; Sullivan & Artino, 2013). Independent sample t-tests (for continuous variables) and Chi-square tests for independence (for categorical variables) were conducted in order to compare sample characteristics between recidivists and non-recidivists.

Lastly, binary logistic regression was performed to test whether antisocial behavior predicts violent recidivism and whether this relationship is moderated by age at first offense. Prior to the analysis, potential violations of the assumptions of binary logistic regression were checked. The assumption of a dichotomous dependent variable was met, as recidivism was measured by defining two categories, one for those having conducted recidivism at the time of the measurement and one for those who had not. The sample size requirements for logistic regression as defined by the formula of Tabachnick and Fidell (2001, p. 117) were also met; 112 participants were included in the analyses which is a number that is higher than the minimum required by the Tabachnick and Fidell formula (50+8*number of predictors, thus 66 for the present study). Furthermore, no reason existed to doubt the independence of the measurements, since the measurements were not repeated, and the participants were sampled from 12 different forensic institutions in a period of four years meaning that it is unlikely that

the measurements are related to each other. Multicollinearity was checked by conducting a linear (not logistic) regression with the same dependent and independent variables as the main analysis of this study and interpreting only the results referring to the collinearity diagnostics. To assess multicollinearity the variance inflation factor (VIF) and tolerance statistics were examined. Tolerance values less than 0.1 and VIF values greater than 10 were considered to indicate multicollinearity (Pallant, 2020, pp. 159). In order to examine the assumption of a linear relationship between each of the independent variables and the log odds, the Box-Tidwell test was performed (Shrestha, 2019). Note that, since the whole population of patients with ACEs who were unconditionally released between 2004-2008 was included in the analysis, conducting a power analysis was not relevant for the present study.

The binary logistic regression was performed in a hierarchical manner, with the independent variables of antisocial behavior and age at first offense included in the first block, and the interaction between the two added at the second block. Adding this moderation term allowed us to check whether a relationship between antisocial behavior and violent recidivism would change for different values of the moderator, in this case age at first offense. If the interaction term, added to the second block of the binary logistic regression, was significant, the interaction would be probed in PROCESS MACRO, in order to examine for which values of age at first offense antisocial behavior had an effect on violent recidivism.

Results

Missing Data and Outliers

In total, 155 participants had missing data on at least one of the three variables included in the analysis. All these participants were removed from the analysis, leaving 112 cases to be included in the analyses. No outliers were detected.

Descriptive Statistics and Correlations

Descriptive of age at first offense and antisocial behavior are presented in Table 1.

Correlations between the study variables are reported in Table 3. A significant negative association was found between violent recidivism and age at first offense. This means that a co-occurrence was detected between violent recidivism at 5 years after release and younger age at first offense. In other words, the younger the participants were when they first offended, the more they tended to reoffend violently 5 years after release.

Logistic Regression Analysis

The assumptions of binary logistic regression were inspected before the analysis was conducted. The assumption of multicollinearity was met, since the tolerance value was higher than 0.1 and the VIF was lower than 10. Furthermore, no violation of the assumption of a linear relationship between the independent variable and the log odds was found, as the coefficients of the interaction term between age and log transformation of itself, and antisocial behavior and log transformation of itself, were not found to be statistically significant (b = -.09, p =.769 and b = 2.91, p =.062, respectively).

Logistic regression analysis was performed to assess whether antisocial behavior affects the likelihood of violent recidivism within five years after release, and whether such an effect is different for different values of age at first offense. The analysis revealed that the full model of the first block was statistically significant, χ^2 (2, N = 112) = 9.201, p < .01, indicating that the model was able to distinguish between violent recidivists and non-recidivists. The model explained between 7.7% (Cox and Snell R square) and 11.7% (Nagelkerke R squared) of the variance in violent recidivism and correctly classified 76.8% of the cases. As shown in Table 4, only age at first offense made a unique statistically significant contribution to the model, recording an odds ratio of 0.90. This indicates that for every additional year of age, participants were 0.90 times less likely to reoffend, controlling for antisocial behavior. Antisocial behavior did not predict the likelihood of violent recidivism, controlling for age at first offense.

The full model of the second block was also statistically significant, χ^2 (8, N = 112) = 11.87, p = .003. The model explained between 10% (Cox and Snell R square) and 15% (Nagelkerke R squared) of the variance in violent recidivism and correctly classified 78.6% of the cases. However, as shown in Table 4, none of the predictors made a statistically significant contribution to the model when the interaction term was added. The interaction between age at first offense and antisocial behavior was also not found to be significant, indicating that age at first offense does not moderate the association between antisocial behavior and violent recidivism.

Discussion

The relationship between antisocial behavior and violent recidivism in forensic patients with ACEs has rarely been studied. In addition, no prior studies have examined whether this association is moderated by age of first offense. Therefore, the goal of this study was to investigate whether age at first offense moderates the association between antisocial behavior and violent recidivism within five years after release. The sample included male forensic psychiatric patients with ACEs unconditionally released between 2004 and 2008 from one of the 12 Dutch Forensic Psychiatric Centers (FPCs). It was firstly hypothesized that antisocial behavior would positively predict violent recidivism, meaning that increased antisocial behavior heightens the risk of violent recidivism. Secondly, it was hypothesized that age at first offense would moderate the positive relationship between antisocial behavior and violent recidivism such that the association would be stronger for individuals who first offended when younger than for individuals who first offended when older. Hypotheses were tested by means of a logistic regression analysis with an interaction term, which was conducted in a hierarchical manner.

In contrast with the first hypothesis, no significant relationship was found between antisocial behavior and recidivism, meaning that antisocial behavior does not contribute to violent reoffending. This finding is not in line with previous findings, as substantial research

has identified a history of antisocial behavior as well as antisocial personality as reliable predictors of re-offense (Bonta et al., 1998; Cottle et al., 2001; Dvoskin et al., 2012; Eisenberg et al., 2019; Hanson & Morgon-Bourgon, 2004; Katsiyannis et al., 2018).

A very probable reason for the current non-findings – which were however in the expected direction - is the limited statistical power of the current investigation. Prior studies have found rather small effect sizes, ranging between 0.00 and 0.18 (Bonta et al., 1998) concerning the relationship between antisocial behavior and recidivism, which require substantial sample sizes to be detected in an investigation. Particularly the group size of recidivists (N = 26) appears to be too small to detect any effects.

Looking closer at prior findings, consistent with the current hypothesis, it is noteworthy that the majority of this research has been conducted using samples from the United States and focused on adult recidivism. Other existing work that established antisocial behavior as a predictor of recidivism has exclusively focused on samples with particular characteristics, such as forensic outpatients (Eisenberg et al., 2019), mentally disordered offenders (Bonta et al., 1998) or sexual offenders (Hanson & Morton-Bourgon, 2005), which could extract findings specific to these populations. While the current sample of Dutch patients with ACE has per definition substantial overlap with characteristics of these samples of forensic and mentally disordered patients, it could be that the treatment that patients received in Dutch FPCs differs from the approaches that patients in other countries and facilities were confronted with. It could thus be possible that the treatment and coping strategies transferred in Dutch facilities moderate the effect that antisocial behavior has on recidivism. This effect could be substantiated in future research by investigating different countries as well as certain treatment approaches as moderators of the association between antisocial behavior and recidivism.

Furthermore, also the timing of the measurement of antisocial behavior could have impacted the current results. Namely, antisocial behavior was measured 12 months after

admission, meaning that at this point patients had already received treatment over multiple months which could have decreased their antisocial tendencies and its influence on violent recidivism. Statistically seen, the treatment could have decreased the variance in antisocial behavior measures and subsequently impacted the ability to detect associations with violent recidivism scores.

Pertaining to potential methodological issues, Lyman and LoBuglio (2007) suggest that recidivism assessments should be administered three times: once after half a year, once after a year, and the last time after three years. The current study measured recidivism only once, five years after release. Thus, measuring recidivism at multiple timepoints could potentially result in different findings. The timeframe of the measure used is however in line with prior research and recommendations, as Durose et al. (2015) found that 77 percent of prisoners reoffended within five years after release. Similarly, Eisenberg et al. (2019) established in their meta-analysis that the average follow-up time for recidivism is 3.8 years, which favors the setup of the current investigation. Yet, longer follow-up measures of recidivism may result in a higher rate of reoffenders and could subsequently increase statistical power to find more accurate and statistically significant findings.

Moreover, contrary to the expectations of the present study the second hypothesis was not supported, as there was no significant moderating effect of age at first offense on the relationship between antisocial behavior and violent recidivism. As the investigation of age at first offense as a moderating mechanism is a novel addition to prior research, the reasons for the current non findings are rather ambiguous. However, prior research providing evidence of direct relationships between age at first offense with the independent and dependent variables (e.g., Moffitt, 1993; Van Hazebroek et al., 2019), could imply that the relationship between antisocial behavior and recidivism is in fact mediated by age at first offense. This could mean that increased antisocial behavior could lead to earlier criminal offenses, which reportedly

heightens the risk of sustained antisocial behavior and could subsequently increase the likelihood of recidivism (Baglivio et al., 2015; Broidy et al., 2015; Staff et al., 2015).

A statistically significant, negative correlation between violent recidivism and age at first offense was found. Additionally, age at first offense was a statistically significant predictor of recidivism in block 1 of the logistic regression, implying a negative relationship between the variables. Specifically, this means that for every additional year of age, participants were 0.90 times less likely to reoffend, when controlling for antisocial behavior. This is in line with prior research, for example a study conducted by Nagin and colleagues (2009), who found that recidivism rates decrease by 18 percent each year of age. This finding is also consistent with and thus provides further support for the age-crime trajectories proposed by Moffit (1993) as well as Theobald and Farrington (2018), where those who first offend young persistently offend while those who first offend at a later age exhibit shorter criminal careers.

Various limitations should be considered when interpreting the current results. Firstly, the HKT-R, at this point, is not suitable for females, which resulted in the exclusion of all women in this study. Due to this, the HKT-R is not generalizable to the female forensic population. Furthermore, due to the small sample size and very specific sample characteristics, the findings are not generalizable to a larger population or other countries. For future references, neighboring countries, such as Germany or France, could perform a similar study in order to find differences and similarities between countries. Due to the outliers as well as missing data, 235 participants had to be excluded from the analysis, 80 of which were excluded because they were either female or had no ACE, and 155 because of missing data. This has most likely impacted the results through small statistical power and therefore can be considered a limitation. Moreover, the data was collected between 2004 and 2008 which is more than nine years ago, which could imply that data collection methods and research ethics might not confer with current standards. Another potential limitation is that no distinctions

were made between different forms of abuse and neglect, that the ACE patients had to endure. Such a differentiation could have shed light on whether results differed for each of these groups and allowed for inferences for each different type of ACE, thus providing more nuanced insights.

Regardless of these limitations, the current study could pose important implications on research and practice. To the best of my knowledge, the moderating effect of age at first offense on the relationship between antisocial behavior and recidivism has never been investigated before. Despite the insignificant main results, the additional findings of the current research illustrate the importance of considering age at first as a predictor of recidivism. However, more research needs to be conducted in order to assess the relationship between antisocial behavior and recidivism. For future purposes it would be interesting to see if the relationship between antisocial behavior and recidivism would differ when comparing ACE patients with non-ACE patients. Moreover, to investigate if this would influence that relationship and whether age at first offense might have a moderating role in a sample without ACE.

This study also entails results that are of practical relevance and could be of value to clinical interventions as well as for risk assessment. Clinicians can for example draw on the current results to predict recidivism rates when looking at the relationship between age at first offense and recidivism. This can ultimately aid in enhancing individualization efforts of treatment plans for the patients. In conclusion, the current findings were inconclusive and could not support the RNR framework that suggests antisocial behavior as a predictor of violent recidivism or establish age at first offense as a moderating factor. However, it provided evidence for age at first offense as a predictor of recidivism, which poses as a relevant indicator for clinical assessments and treatment planning. The power was the main reason for the non-findings. For future purposes, the relationship between antisocial behavior

and recidivism with age at first offense as a moderator should be explored in more detail whilst keeping in mind the limitations from this study.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.).

Andrews, D. A., & Bonta, J. (2010). The psychology of criminal conduct. Routledge.

Andrews, D. A., Bonta, J., & Hoge, R. D. (1990). Classification for effective rehabilitation: Rediscovering psychology. *Criminal justice and Behavior, 17*(1), 19-52. https://doi.org/10.1111/j.1745-9125.1990.tb01330.x

Baglivio, M. T., Wolff, K. T., Piquero, A. R., & Epps, N. (2015). The relationship between adverse childhood experiences (ACE) and juvenile offending trajectories in a juvenile offender sample. *Journal of Criminal Justice, 43*(3), 229-241.https://psycnet.apa.org/doi/10.1016/j.jcrimjus.2015.04.012

Banse, R., Koppehele-Gossel, J., Kistemaker, L. M., Werner, V. A., & Schmidt, A. F. (2013). Pro-criminal attitudes, intervention, and recidivism. *Aggression and Violent Behavior, 18*(6), 673-685. http://dx.doi.org/10.1016/j.avb.2013.07.024

Bogaerts, S., Spreen, M., Ter Horst, P., & Gerlsma, C. (2018). Predictive validity of the HKT-R risk assessment tool: Two and 5-year violent recidivism in a nationwide sample of Dutch forensic psychiatric patients. *International Journal of Offender Therapy and Comparative Criminology*, *62*(8), 2259-2270. https://doi.org/10.1177/0306624X17717128

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

Boullier, M., & Blair, M. (2018). Adverse childhood experiences. *Paediatrics and Child Health, 28*(3), 132-137. https://doi.org/10.1016/j.paed.2017.12.008

Broidy, L. M., Stewart, A. L., Thompson, C. M., Chrzanowski, A., Allard, T., & Dennison, S. M. (2015). Life course offending pathways across gender and race/ethnicity. *Journal of*

Developmental and Life-Course Criminology, *1*(2), 118-149. https://doi.org/10.1007/s40865-015-0008-z

Connolly, E. J. (2020). Further evaluating the relationship between adverse childhood experiences, antisocial behavior, and violent victimization: a sibling-comparison analysis. *Youth Violence and Juvenile Justice, 18*(1), 3-23. https://doi.org/10.1177/1541204019833145

Cottle, C. C., Lee, R. J., & Heilbrun, K. (2001). The prediction of criminal recidivism in juveniles: a meta-analysis. *Criminal Justice and Behavior*, *28*, 367–394.

De Rechtspraak. (2021, 18 mei). *Nieuwe cijfers over tbs-maatregelen in 2019 en 2020.* https://www.rechtspraak.nl/Organisatie-en-contact/Organisatie/Raad-voor-de-rechtspraak/Nieuws/Paginas/Nieuwe-cijfers-over-tbs-maatregelen-in-2019-en-2020.aspx

De Ruiter, C., & Trestman, R. L. (2007). Prevalence and treatment of personality disorders in Dutch forensic mental health services. Journal American Academy of Psychiatry and the Law, *35*(1), 92.

DeLisi, M., Neppl, T. K., Lohman, B. J., Vaughn, M. G., & Shook, J. J. (2013). Early starters: Which type of criminal onset matters most for delinquent careers?. *Journal of Criminal Justice, 41*(1), 12-17. https://doi.org/10.1016/j.jcrimjus.2012.10.002

Durose, M. R., Snyder, H. N., & Cooper, A. D. (2015). Multistate criminal history patterns of prisoners released in 30 states. *Special Report, Bureau of Justice Statistics*. http://www.bjs.gov/content/pub/pdf/mschpprts05.pdf

Dvoskin, J. A., Skeem, J. L., Novaco, R. W., & Douglas, K. S. (Eds.) (2012). *Using social science to reduce violent offending*. New York, NY: Oxford University Press.

Eisenberg, M. J., van Horn, J. E., Dekker, J. M., Assink, M., van der Put, C. E., Hendriks, J., & Stams, G. J. J. M. (2019). Static and dynamic predictors of general and violent criminal offense recidivism in the forensic outpatient population: A meta-analysis.

Criminal Justice and Behavior, 46(5), 732–750. https://doi.org/10.1177/0093854819826109

Fagan, A. A., & Novak, A. (2018). Adverse childhood experiences and adolescent delinquency in a high-risk sample: A comparison of white and black youth. *Youth Violence and Juvenile Justice, 16*(4), 395-417. https://doi.org/10.1177%2F1541204017735568

Fox, B. H., Perez, N., Cass, E., Baglivio, M. T., & Epps, N. (2015). Trauma changes everything: Examining the relationship between adverse childhood experiences and serious, violent and chronic juvenile offenders. *Child Abuse & Neglect, 46*, 163-173. https://doi.org/10.1016/j.chiabu.2015.01.011

Gaston, S. (2019). Producing race disparities: A study of drug arrests across place and race. *Criminology, 57*(3), 424-451. https://doi.org/10.1111/1745-9125.12207

Hambrick, E. P., Rubens, S. L., Brawner, T. W., & Taussig, H. N. (2018). Do sleep problems mediate the link between adverse childhood experiences and delinquency in preadolescent children in foster care?. *Journal of Child Psychology and Psychiatry, 59*(2), 140-149. https://doi.org/10.1111/jcpp.12802

Hanson, R. K., & Morton-Bourgon, K. E. (2005). The characteristics of persistent sexual offenders: a meta-analysis of recidivism studies. *Journal of Consulting and Clinical Psychology*, *73*(6), 1154–1163.

Howat, G., Crilley, G., & McGrath, R. (2008). A focused service quality, benefits, overall satisfaction and loyalty model for public aquatic centres. *Managing Leisure*, *13*(3-4), 139-161.

Hunt, T. K., Slack, K. S., & Berger, L. M. (2017). Adverse childhood experiences and behavioral problems in middle childhood. *Child Abuse & Neglect, 67*, 391-402. https://doi.org/10.1016/j.chiabu.2016.11.005

Jung, H., Spjeldnes, S., & Yamatani, H. (2010). Recidivism and survival time: Racial disparity among jail ex-inmates. *Social Work Research*, *34*(3), 181-189. https://doi.org/10.1093/swr/34.3.181

Katsiyannis, A., Whitford, D.K., Zhang, D., & Gage, N. A. (2018). Adult Recidivism in United States: A Meta-Analysis 1994–2015. *Journal of Child and Family Studies, 27,* 686–696. https://doi.org/10.1007/s10826-017-0945-8

King, A. R. (2021). The ACE Questionnaire and lifetime physical aggression. *Journal of Aggression, Maltreatment & Trauma*, *30*(2), 243-260. https://doi.org/10.1080/10926771.2020.1796875

Lyman, M., and LoBuglio, S. 2007. "'Whys' and 'Hows' of Measuring Jail Recidivism." *American Jails* March/April: 9-18.

Moffitt, T. E. (2005). The New Look of Behavioral Genetics in Developmental Psychopathology: Gene-Environment Interplay in Antisocial Behaviors. *Psychological Bulletin*, *131*(4), 533–554. https://doi.org/10.1037/0033-2909.131.4.533

Nagin, D. S., Cullen, F. T., & Jonson, C. L. (2009). *Imprisonment and reoffending.* https://doi.org/0192-3234/2009/0038-0005

Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education*, *15*(5), https://doi.org/10.1007/s10459-010-9222-y

Pallant, J. (2020). SPSS survival manual: *A step by step guide to data analysis using IBM SPSS*. Routledge.

Reavis, J. A., Looman, J., Franco, K. A., & Rojas, B. (2013). Adverse childhood experiences and adult criminality: How long must we live before we possess our own lives?. *The Permanente Journal*, *17*(2), 44. https://doi.org/10.7812/TPP/12-072

Roberts, A. D. L., & Coid, J. W. (2010). Personality disorder and offending behaviour:

Findings from the national survey of male prisoners in England and Wales. *The Journal of Forensic Psychiatry & Psychology*, *21*(2), 221–237. https://doi.org/10.1080/14789940903303811

Schoeler, T., Theobald, D., Pingault, J. B., Farrington, D. P., Coid, J. W., & Bhattacharyya, S. (2018). Developmental sensitivity to cannabis use patterns and risk for major depressive disorder in mid-life: findings from 40 years of follow-up. *Psychological Medicine, 48*(13), 2169-2176. https://doi.org/10.1017/S0033291717003658

Shrestha, N. (2019). Application of binary logistic regression model to assess the likelihood of overweight. *American Journal of Theoretical and Applied Statistics*, *8*(1), 18-25. https://doi.org/ 10.11648/j.ajtas.20190801.13

Spreen, M., Brand, E., Horst, P. T., & Bogaerts, S. (2014). Handleiding HKT-R, Historische, Klinische en Toekomstige–Revisie [Manual HKT-R, Historical, Clinical, Future – Revised].

Sullivan, G. M., & Artino Jr, A. R. (2013). Analyzing and interpreting data from Likert-type scales. *Journal of Graduate Medical Education*, *5*(4), 541-542. https://doi.org/10.4300/JGME-5-4-18

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics (4th ed.).* New York: HarperCollins.

Teasley, M. L., Schiele, J. H., Adams, C., & Okilwa, N. S. (2018). Trayvon Martin: Racial profiling, Black male stigma, and social work practice. *Social Work, 63*(1), 37-46. https://doi.org/10.1093/sw/swx049

Van Hazebroek, B. C., Blokland, A. A., Wermink, H. T., De Keijser, J. W., Popma, A., & Van Domburgh, L. (2019). Delinquent development among early-onset offenders: Identifying and characterizing trajectories based on frequency across types of offending. *Criminal Justice and Behavior, 46*(11), 1542-1565. https://doi.org/10.1177%2F0093854819876306

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

Table 1

Sample Characteristics

Variable	Entire sample(*n* = 112)	Recidivists (*n* = 26)	Non-Recidivists(*n* = 86)	Test statistic
	Mean/Frequency (*SD*)/*N* (%)			
Age at admission	31.45 (8.39)	30.26 (6.70)	31.81 (8.84)	*t*(107)= .90
Age at first offense	19.48 (7.41)	16.34 (5.04)	20.42 (7.77)	*t*(64.12)= 3.15**
Antisocial Behavior at admission	1.55 (1.52)	1.96 (1.69)	1.43 (1.46)	*t*(110)= -1.57
Total IQ	95.88 (15.69)	93.40 (12.10)	96.62 (16.60)	*t*(53.84)= .95
Birthland				
Netherlands (yes)	83 (74.1%)	18 (69.2%)	67 (77.9%)	$\chi^2(1) = .42$
Criminal history (yes)				
Traffic Violation & Public Disturbance	45 (40.2%)	17 (65.4%)	28 (32.6%)	$\chi^2(1)= 7.64^{**}$
Drug-Related Offenses	3 (2.6%)	26 (100%)	3 (3.5%)	$\chi^2(1)= .07$

Destruction of Property	26 (33.9%)	15 (57.7%)	23 (26.7%)	$\chi^2(1) = 7.20^{**}$
Fiscal Capital & Profit Offenses	71 (63.4%)	21 (80.8%)	50 (58.1%)	$\chi^2(1) = 3.48$
Mild-Moderate Violence & Arms possession	65 (58.0%)	22 (84.6%)	43 (50%)	$\chi^2(1) = 8.45^{**}$
Power Force	37 (33.0%)	13 (50%)	24 (27.9%)	$\chi^2(1) = 3.46^{**}$
Severe Violence	29 (25.9%)	12 (46.2%)	17 (19.8%)	$\chi^2(1) = 5.93^{*}$
Moral Offenses (adult victim)	24 (21.4%)	7 (26.9%)	17 (19.8%)	$\chi^2(1) = .26$
Moral Offenses (under-aged victim)	8 (7.1%)	26 (100%)	8 (9.3%)	$\chi^2(1) = 1.39$
Manslaughter	33 (29.5%)	9 (34.6%)	24 (27.9%)	$\chi^2(1) = .17$
Arson	18(16.1%)	5 (19.2%)	13 (15.1%)	$\chi^2(1) = .04$
Premediated Murder	30(26.8%)	23 (11.5%)	27 (31.4%)	$\chi^2(1) = 3.07$

Note. n = Number of participants; *SD* = Standard deviation; Test statistic refers to the test used to evaluate differences between recidivists and non-recidivists; * $p < .05$; ** $p < .01$.

Table 2

Psychiatric Diagnoses Detected in the Sample

Variable	Entire sample (n = 112)	Recidivists (n = 26)	Non-Recidivists (n = 86)	Test statistic
	Frequency /N (%)			
Axis I Diagnosis				
Developmental Disorders	4 (3.6%)	2 (7.7%)	2 (2.3%)	$\chi^2(1) = .47$
Substance-related Disorders	36 (32.1%)	9 (34.6%)	27 (31.4%)	$\chi^2(4) = 4.95$
Schizophrenia and Psychotic Disorders	22 (19.7%)	4 (15.3%)	18 (21%)	$\chi^2(2) = .58$
Mood Disorders	5 (4.5%)	0 (0%)	5 (5.8%)	$\chi^2(2) = 1.52$
Anxiety Disorders	3 (2.7%)	1 (3.8%)	2 (2.3%)	$\chi^2(1) = .00$
Dissociative Disorders	2 (1.8%)	0 (0%)	2 (2.3%)	$\chi^2(1) = .00$
Sexual and Gender Identity Disorders	3 (2.7%)	1 (3.8%)	2 (2.3%)	$\chi^2(1) = .00$
Sleep Disorders	1 (.9%)	0 (0%)	1 (1.2%)	$\chi^2(1) = .00$
Impulse Control Disorders	3 (2.7%)	0 (0%)	3 (3.5%)	$\chi^2(1) = .07$
Axis II Diagnosis				

Cluster A Personality Disorders	5 (4.5%)	3 (11.5%)	2 (2.3%)	$\chi^2(1) = 2.11$
Cluster B Personality Disorders	34 (30.4%)	11 (42.3%)	23 (26.7%)	$\chi^2(1) = 1.61$
Cluster C Personality Disorders	2 (2.8%)	0 (0%)	2 (2.3%)	$\chi^2(1) = .00$
Personality Disorder Not Otherwise Specified	57 (50.9%)	14 (53.8%)	43 (50%)	$\chi^2(1) = .01$

Note. *n* = Number of participants; Test statistic refers to the test used to evaluate differences between recidivists and non-recidivists.

Table 3

Correlation Between Main Study Variables

Variable	1	2	3
1. Violent Recidivism	−		
2. Age at First Offense	-.23*	−	
3. Antisocial Behavior	.15	-.13	−

Note. Point Biserial correlation coefficients are reported for the relationship between Recidivism and Age at First Offense, and Recidivism and Antisocial Behavior. Pearson correlation coefficient is reported for the relationship Between Age at First Offense and Antisocial Behavior; * $p < .05$.

Table 4

Binary Logistic Regression Model With Age at First Offense, Antisocial Behavior and Their Interaction, for Block 1 and Block 2.

Predictors		*b (S.E.)*	*p*	*Exp(b)OR*	*95% CI* for *Exp(b)*	
					Upper	*Lower*
Block 1						
	Age at First Offense	-.1 (.05)	.019	.90	.83	.98
	Antisocial Behavior	.19 (.15)	.752	1.20	.90	1.62
Block 2						
	Age at First Offense	-.03 (.05)	.520	.97	.87	1.06
	Antisocial Behavior	1.05 (.55)	.055	2.87	.99	8.41
	Interaction	-.05 (.03)	.103	.95	.89	1.01

Note. *S.E.* = Standard error; *CI* = Confidence intervals; *Exp(b)* = Odds ratios.