The effect of self-concept on aggression type in individuals who display high psychopathic trait factors

Faculty of Behavioural and Social Sciences – Leiden University
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By: L.S. van Dijk

1637487

Supervisor: I.H. van de Groep, MSc

Developmental and Educational Psychology Unit

Second reviewer: Dr. M.G.N. Bos

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Abstract

Expressions of antisocial behaviour have a detrimental impact on society. Given the heterogeneity among offenders, however, treatment effects yield various levels of success in diminishing antisocial behaviour. Knowledge on the origin of the differences between offenders is thus crucial. Recent research found that positive self-concept was associated with less hostility. This suggests that self-concept might explain some of the heterogeneity between offenders. The main objective of the present study was to examine the effect of the valence of self-concept on aggression type in individuals who presented high psychopathic traits. First, the association between psychopathy and aggression type was explored. Second, the relation between psychopathic traits and self-concept and the moderating effect of self-concept on psychopathic traits and aggression was examined. Additionally, the relation between psychopathic trait factors (interpersonal-affective factor, and behavioural-lifestyle factor) and aggression types (proactive, and reactive) was examined, followed by an analysis to examine if self-concept would differently moderate this relation. In total, 67 participants were included for this cross-sectional survey study, of which 33 had completed a fMRI self-concept task. The questionnaires that were analyzed were the Youth Psychopathic traits Inventory and the Reactive-Proactive Aggression Questionnaire. The results indicated that a significant effect was found between both the interpersonal-affective factor (p = .001) and the behavioural-lifestyle factor (p = .019) and proactive aggression, and the behavioural-lifestyle factor and reactive aggression (p = .008). Second, a significant positive association was found between the interpersonal-affective factor and self-concept (p = .002). The moderation analyses showed that self-concept did not influence the relation between psychopathic traits and aggression. Given the positive correlation between the interpersonal-affective factor and proactive aggression and the association between self-concept and the interpersonal-affective factor, it can be argued that the promotion of a positive self-concept might lower the interpersonal-affective factor of psychopathy and therefore may also be of influence on aggression. This suggestion, however, needs a stronger body of empirical evidence to support it, since the moderation analysis did not support this hypothesis. Knowledge on the interaction between these variables could provide information for the design of possible treatment interventions for individuals with high psychopathic traits.

Key words: self-concept, psychopathy, interpersonal-affective factor, behavioural-lifestyle factor, proactive aggression, reactive aggression

Layman's abstract

Expressions of antisocial behaviour, such as verbal and physical aggression, have a huge impact on society in both economical terms as well as on an individual level. It follows that an effective treatment for offenders and prevention programmes for youth are of utmost importance. However, treatment varies in their effectiveness to reduce antisocial behaviour as differences amongst offenders exist. Knowledge on the origin of the differences between offenders is thus crucial for the establishment of prevention programmes against antisocial behaviour. Recent research suggested that self-concept (i.e. how an individual sees themself) could explain some of the differences between offenders; it was found that a positive self-concept was associated with less hostility. In this study it was argued however, that this would not apply to individuals with high psychopathic trait scores, since these individuals are known to have a grandiose sense of self. The main objective of this study was thus to examine the effect of a positive or negative self-concept on aggression in individuals who displayed psychopathic traits. Two types of psychopathic trait factors were examined; the interpersonal-behavioural factor (affective component of psychopathy) and the behavioural-lifestyle factor (impulsive component of psychopathy). In addition, two different types of aggression were examined; proactive and reactive aggression. Proactive aggression occurs when no provocation is present and reactive aggression occurs as a response to perceived provocation. All these factors (i.e. self-concept, psychopathic trait factors and aggression type) were examined in relation to each other, in a survey study. In total, 67 participants were included for analysis in this study. Results indicated that individuals with high psychopathic trait scores were associated with proactive aggression. It also indicated that individuals with a high interpersonal-behavioural factor were not associated with reactive aggression, contrary to individuals with a high behavioural lifestyle-factor. Lastly, the results indicated that a high interpersonal-affective factor was associated with a negative self-concept, which was in odds with the proposition made in this study. In conclusion, in the current study self-concept did not influence the relation between psychopathy traits and aggression.

Key words: self-concept, psychopathy, interpersonal-affective factor, behavioural-lifestyle factor, proactive aggression, reactive aggression

Introduction

The reduction of crime rates has been a prominent item on political agendas for many years (Kogel, 2008; Riverbark et al., 2018), which is indicative of the impact that antisocial behaviour has in society. Expressions of antisocial behaviour (i.e. verbal and physical aggression) have a negative effect on the emotional well-being of victims and can cause posttraumatic stress disorders and depressive disorders (Kilpatrick et al., 2003). Not only victims are affected by antisocial behaviour, however, perpetrators themselves are impacted as well. Research has shown that youth who display antisocial behaviour are prone to develop mental health problems (i.e. substance abuse, anxiety, and suicidal behaviour)(Colman et al., 2009; Odgers et al., 2007) and are at greater risk of unemployment (Healey, Knapp & Farrington, 2004). The limited work options for antisocial youth, caused by a criminal record or incarceration (Rivenbark et al., 2018), also underline the monetary impact of antisocial behaviour in society. Overall, the need for appropriate treatment programmes to curb antisocial behaviour is substantial.

One criminogenic need (i.e. a factor that increases the risk of a re-offence) (Bonta & Andrews, 2007), that puts youth at risk for an antisocial behaviour pattern throughout life is a history of antisocial behaviour. While the antisocial behaviour of some juveniles in the early-onset group diminishes in adolescence (abstainers), however, others display a life-course persistent style of offending behaviour (persisters) (Moffit and Capsi, 2001), demonstrating a substantial heterogeneity between offenders. Because treatments yield various levels of success in reducing antisocial behaviour (Kogel, 2008), it has become evident over the last decade, that heterogeneity amongst offenders requires heterogeneous treatment programmes. Knowledge on the origin of the differences between abstainers and persisters in juvenile offenders is thus crucial for the establishment of prevention programmes of antisocial behaviour and treatment interventions for youth. Therefore, the present study addresses a group of young adults, who have been arrested by the police in their childhood. In this thesis, it is proposed that self-concept, psychopathy and aggression type are factors that may help explain some of the heterogeneity between offenders.

Self-concept (i.e. the way an individual sees themselves) is a factor that has been shown to differentially influence the development and persistence of antisocial behaviour (Garaigordobil, Pérez & María Mozaz, 2008; Landazabal, Pérez & Mozaz, 2008; Pisecco et al., 2001). In the academic literature, self-concept is often used interchangeably with 'self-esteem'. It is important to distinguish between these two concepts, however, because they represent two discrete cognitive dimensions (King, 1997). Self-concept is generally defined as the cognitive aspect of self-knowledge, whereas self-esteem is referred to as the emotional aspect of self-knowledge (Garaigordobil, Pérez and María Mozaz, 2008). Self-concept therefore represents the description an individual applies to oneself with regards to personal attributes or roles, while self-esteem is the evaluation of that description. These definitions imply that valence[1] descriptions can only be applied to self-esteem and not to self-concept, since a valence

[1] i.e. the attractiveness or averseness of something, in this case, a statement about oneself.

description would signify an evaluation. Garaigordobil, Pérez and Mozaz (2008), however, argue that the description of oneself per definition is evaluative and that self-esteem is hierarchically subordinate to self-concept. Self-concept is thus an overarching term containing both self-esteem and self-knowledge, which is the understanding that will also be applied in the current thesis.

Various studies have addressed the link between self-concept and antisocial behaviour (Calvo, González & Martorell, 2001; Landazabal, Pérez & Mozaz, 2008). It was found that a positive or high self-concept was associated with lower hostility as opposed to a negative or low self-concept (Calvo, González & Martorell, 2001). A positive self-concept is proposed to be a protective factor against the development and persistence of antisocial behaviour from adolescence into adulthood, as opposed to a negative self-concept that is proposed to be a risk factor in the persistence of antisocial behaviour into adulthood. Research therefore suggests that the stimulation of a more positive self-concept, could gradually decrease antisocial behaviour (Landazabal, Pérez & Mozaz, 2008; Pisecco, Wristers, Swank, Silva & Baker, 2001), opening up possibilities for prevention and treatment.

While generating a positive self-concept seems to be a promising factor in decreasing antisocial behaviour, this may not apply to a group of offenders that display psychopathic traits. Psychopathy is defined as a personality disorder in which affective (callous, unemotional), interpersonal (grandiose, manipulative) and behavioural dimensions (impulsive, irresponsible) are affected (Cooke & Michie, 2001; Ojanen & Nostrand, 2019). Individuals who display higher psychopathic traits are generally associated with aggressive behaviour, and a grandiose sense of self-worth (i.e. positive self-concept; Hare, 1996). Aggressive behaviour in psychopathic individuals is thus not associated with a negative self-concept. Meloy & Yakeley (2011) support this hypothesis by demonstrating that individuals with a psychopathic personality use aggression as a means to assure their own feelings of grandiosity. Hence, when these individuals receive negative environmental feedback, they might react aggressively, in order to protect their grandiose sense of self. Boasting self-concept in people who display high psychopathic traits might therefore work counterproductive as this assures these individuals of their self-perceived grandiosity which may potentially reinforce aggression (Falkenbach, Howe & Falki, 2003).

The behavioural components of psychopathy, which are mostly associated with aggression, can be divided into two factors (Lehman et al., 2019). The first factor (interpersonal-affective factor) consists of callousness, shallow affect (in the literature also referred to as the callousness-unemotional trait (Salekin, 2017)), manipulation, and feelings of grandiosity (in literature also referred to as the grandiosity-manipulatively trait (Salekin, 2017)). The second factor (behavioural-lifestyle factor) is generally associated with impulsiveness, irresponsibility, and antisocial-behaviour (in the literature also referred to as the impulsivity-irresponsibility trait (Salekin, 2017)). Falkenbach, Howe & Falki (2013) were the first to discover that the interpersonal-affective factor of psychopathy is associated with high self-esteem and low aggression, while the behavioural-lifestyle factor of psychopathy is associated with low self-esteem and more violent aggression.

Since psychopathy is commonly associated with aggression (Falkenbach, Howe & Falki, 2013), and since aggression is an important heterogenic outcome measure with regards to antisocial behaviour, aggression is a relevant concept to discuss in this context. Aggression in research is commonly classified into two types, namely proactive aggression and reactive aggression. Proactive aggression (PA) can be described as an aversive act, where no overt provocation is present and the action is non-emotional (Fite et al., 2010; Lobbestael, Cima & Arntz, 2013). Reactive aggression (RA) can be described as an aversive act as a response to perceived provocation or frustration (Fite et al., 2010; Lobbestael, Cima & Arntz, 2013). The distinction of these two types of aggression is important in understanding the origin and functionality of aggressive behaviour (Poulin & Boivin, 2000). Furthermore, both PA and RA earlier in life may predict the evolution of personality disorders (i.e. Antisocial Personality Disorder (ASPD) or psychopathy) later in life (Lobbestael, Cima & Arntz, 2013; Urben, et al., 2018). Urben and colleagues (2018), found that callous-unemotional traits in youth were associated with PA, while impulsivity in youth was associated with RA. In addition, research shows that PA seemed to be more associated with the interpersonal-affective factor of psychopathy while RA seemed to be more associated with the behavioural-lifestyle factor of psychopathy (Blais, Solodukin and Forth, 2014). Blais, Solodukin and Forth (2014) suggest, however, that more research is needed to investigate whether other factors are of influence on this correlation. In the current thesis, it is proposed that self-concept might be the variable to explain the differences between reactive and proactive aggression in individuals who display psychopathic traits.

In summary, the impact antisocial behaviour has on victims, offenders, and society calls for appropriate treatment and prevention programmes. Recent research proposed that self-concept could be a factor of influence in the development and persistence of antisocial behaviour from adolescence into young adulthood. Although research on self-concept seems promising, no research has been done on the influence of self-concept in people who display high psychopathic traits. In addition, research on aggression type (e.g. reactive and proactive aggression) shown by people who display high psychopathic traits is conflicting. It follows that self-concept and aggression type in these individuals need to be studied to better understand the underlying mechanisms that make individuals with high psychopathic traits more prone to aggression. Examining this relation in young adults might shed light on the psychological development trajectories that may be a risk factor for antisocial behaviour.

The research question that will be explored in this thesis is: *What is the effect of self-concept on the display of aggression in individuals who express high psychopathic traits?* This research question has been operationalised into the following hypotheses. First, self-concept will moderate the relation between psychopathic traits and aggression (see *figure 1*) (Falkenbach, Howe & Falki, 2003). Second, the interpersonal-affective factor is related to proactive aggression and the behavioural-lifestyle factor is related to reactive aggression (Falkenbach, Howe & Falki, 2013). Third, it is hypothesized that individuals with a high interpersonal-affective factor will have a lower self-concept than individuals with a high behavioural-lifestyle factor (Falkenbach, Howe & Falki, 2003; Falkenbach, Howe & Falki,

2013). Fourth, a high self-concept has a stronger moderating effect on the relation between a high interpersonal-affective factor and proactive aggression, as opposed to a low self-concept, while a low self-concept has a stronger moderating effect on the relation between a high behavioural lifestyle factor and reactive aggression, as opposed to a high self-concept (see *figure 2*) (Blais, Soludukin and Forth, 2014; Urben and colleagues, 2018).

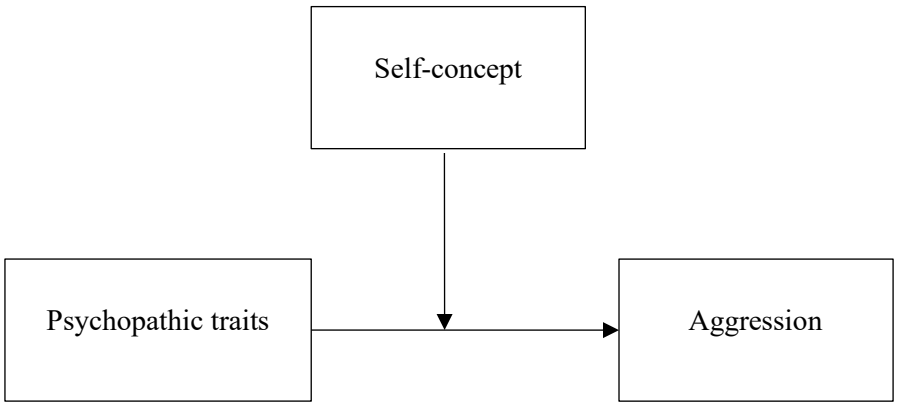

Figure 1. Hypothesis 1: Self-concept interacts with psychopathic traits and aggression.

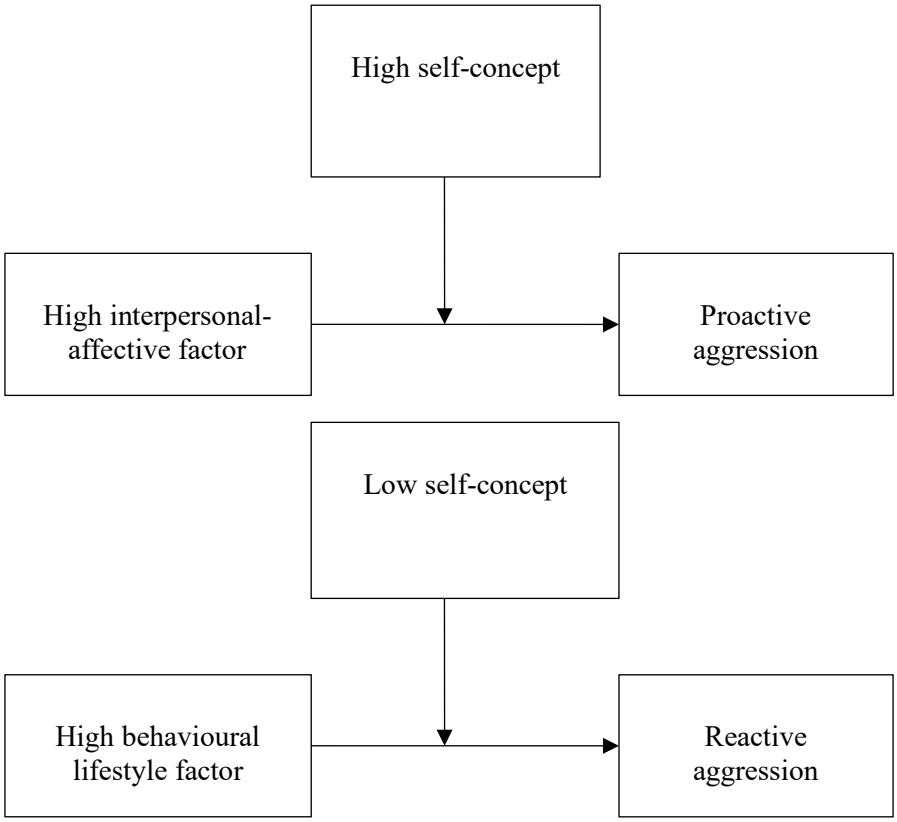

Figure 2. Hypothesis 4: High self-concept interacts with a high interpersonal-affective factor and proactive aggression, and low self-concept interacts with a high behavioural-lifestyle factor and reactive aggression.

Methods

Design

For this study a between-subjects, cross-sectional survey design was used to examine self-concept, psychopathic traits an aggression type. To assess self-concept, a self-concept task was used in which participants had to specify to which extent a valence trait was applicable to them. The Youth Psychopathic traits Inventory (YPI) was used to assess psychopathic traits and the Reactive-Proactive Aggression Questionnaire (RPQ) was used to assess aggression type.

This thesis was conducted as part of a longitudinal study named the Resist Project, which is an fMRI study, that aims "to gain insight into different developmental trajectories in young adults with a history of antisocial behavior, by studying several underlying psychological and neurobiological mechanisms" (Resist, n.d.). The study has been approved by the Local Medical Ethical Committee, in accordance with the Declaration of Helsinki (VUMC Amsterdam; file number NL67617.029.18). The neurological fMRI data was not examined in the current thesis.

Participants

Recruitment

For the longitudinal study, a cohort of Dutch individuals, who have been arrested by the police before the age of twelve years, have been followed across adolescence into young adulthood. The cohort is currently in the age of 20 to 28 years old and the present group of participants is referred to as the fifth wave. The fifth wave is a follow-up from the fourth wave 8-10 years ago, in which behavioural, neuropsychological and structural fMRI measures were examined. For the fifth wave, participants of the earlier waves were recruited, with a focus on young adults who also participated in the fourth wave of data collection.

Inclusion and exclusion

The expected number of total participants was $N = 150$. Due to the circumstances with regards to Covid-19 and the subsequential delay in fMRI research, however, the total number of participants[2] has become $N = 80$. In total, 13 participants were excluded from all analyses (11 participants had most of their answers missing, and 2 participants missed at least one of the following analyzed questionnaires: YPI, RPQ). Participants who had completed the self-concept task, and the YPI and RPQ were automatically included. In total, the data of 67 participants was included for analysis of which 33 participants had completed the self-concept task. In the analyses regarding self-concept, only the group who completed the self-concept task was analyzed ($N = 33$), to ensure a reliable comparison. Only for the demographic data and the second hypothesis the additional datapoints were analyzed ($N = 67$).

[2] A control group in the same age range has also been recruited (N=40), but was not included for analyses.

Sociodemographic data

Of the 67 participants, 57 identified as male and 10 identified as female. All participants were between the age of 22 and 28 years old (mean ± SD, 26.9 ± 1.40). The participants indicated their nationality as follows; 54 were from Dutch origin (80,6%), 3 were from Surinamese origin (3,9%), one from Moroccan origin (1,5%), one was from Antillean origin (1,5%), and 7 identified as 'other' (Congolese, Yugoslavian, Cape Verdean). Participants indicated their highest level of education as follows; 29 participants indicated to be Intermediate Vocational Education graduates, 12 participants indicated to be Lower General Secondary graduates, 10 indicated to be Higher Vocational graduates, and 5 indicated to be University Education graduates (either finished a Bachelor or a Master program), one indicated to be a Higher General Secondary Education graduate, and one indicated to be a pre-university graduate, 8 participants indicated 'other' (e.g. primary school, pre master graduate). With regards to the socioeconomic status (SES), 39 participants indicated to earn below the Dutch national average income in 2020 (< €36.500)(CPB, 2019), 7 participants indicated to earn around the Dutch national average income in 2020, and 18 participants indicated to earn above the Dutch national average income in 2020.

fMRI-group versus non-fMRI group

The demographic data, YPI scores, and RPQ scores of the fMRI group (in which self-concept was measured)(N = 33) and the non-fMRI group (in which self-concept was not measured) (N = 67) were compared. An independent samples t-test, $t(66) = -2.51$, $p > .05$, showed that the YPI scores of the fMRI group (M = 1.69, SD = 0.41) did not significantly differ from the YPI scores of the non-fMRI group (M = 1.71, SD = 0.48). Another independent samples t-test, $t(64) = .86$, $p = .014$, showed that the fMRI group scored significantly lower on the RPQ (M = 0.34, SD = 0.27) than the non-fMRI group (M = 0.53, SD = 0.38). No substantial differences were observed in the demographic data between the two groups.

Materials

Self-concept

An adapted version of a well-validated self-knowledge fMRI task was used to study self-concept (Van der Cruijsen, Peters, Van der Aar & Crone, 2018)(see *figure 3*). In this task participants had to specify if they thought that positive or negative valence traits were applicable to them on a 4-point Likert scale (1 = not at all applicable, 2 = not applicable, 3 = a little applicable, 4 = completely applicable). The traits targeted the physical (e.g. 'I am unattractive'), and the prosocial domain (e.g. 'I help others'). In the original task of Van der Cruijsen and colleagues, (2018) one extra domain was targeted. This considered the academic domain (e.g. 'I am smart'), which was not applied in the current study, since not all participants were in school anymore. A control trial was also administered, to determine if the participants had understood the task. In this control trial participants had to categorize sentences regarding traits in the correct category (e.g. Social, Appearance, I don't know).

In total, 52 trials were run of which 40 self-condition trials (e.g. applicability of traits) and 12 control condition trials. Valence (positive and negative sentences) and domains (physical, prosocial) were equally divided among the trials. Each trial took 4600 milliseconds to complete. A trial existed off a fixation cross that was shown for 400 milliseconds, the trait description and the response options. When a participant did not specify an answer before 1000 milliseconds, they were notified they were too late with their response. The order of the trials and jitter timing were optimized for the current design using Optseq2 (Dale, 1999), with jittered timing intervals varying between 0 and 4400 milliseconds.

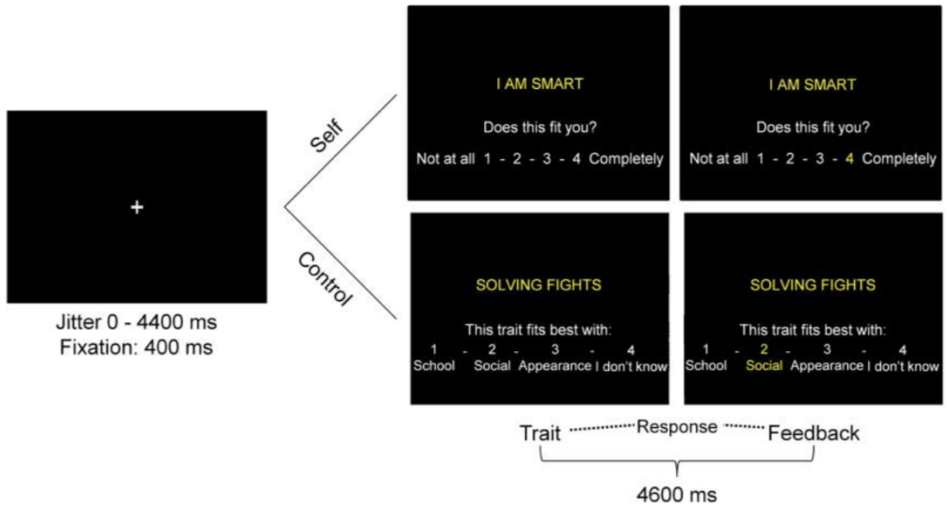

Figure 3. Example of the self-condition and the control condition of the self-concept fMRI task.

Psychopathy

To assess personality traits that are associated with psychopathy, the Youth Psychopathic traits Inventory (YPI) (Van Baardewijk et al., 2008) was used. The YPI is a questionnaire that is also validated in a non-incarcerated population (Andershed, Hodgins & Tengström, 2007). The questionnaire consisted of 50 questions such as: 'I can make people believe almost anything', 'I am capable of not feeling any guilt or shame about things I think others would feel guilty of, 'I consider myself to be a pretty impulsive person', that can be answered on a 4-point Likert scale (1 = not applicable to me, 2 = a little applicable to me, 3 = reasonably applicable to me, 4 = very applicable to me). The YPI measures three dimensions[3] that are associated with psychopathic behaviour and that can be divided in 10 subdimensions: grandiosity-manipulatively (Cronbach's α = .82, consisting of the subscales Dishonest charm, Grandiosity, Lying, Manipulation), callousness-unemotionality (Cronbach's α = .81, consisting of the subscales Remorselessness, Unemotionality, Callousness), impulsivity-irresponsibility (Cronbach's α =

[3] The first factor of psychopathy (interpersonal-affective factor), as mentioned in the introduction, consists of both the grandiosity-manipulatively dimension, and the callousness-unemotional dimension (Salekin, 2017). The second factor of psychopathy (behavioural-lifestyle factor) consists of the impulsivity-irresponsibility dimension (Salekin, 2017).

.68, consisting of the subscales Thrill seeking, Impulsiveness, Irresponsibility)(Andershed, Hodgins & Tengström, 2007). Reliability analyses of the YPI in the sample population (n = 65) showed that the questionnaire had a Cronbach's α of .94.

Reactive and proactive aggression

To assess reactive and proactive aggression, the Reactive-Proactive Aggression Questionnaire (RPQ) (Raine et al., 2006) was used. The RPQ is a questionnaire that is validated in both an offender and a non-offender population, and among youths and adults (Cima, Raine, Meesters, & Popma, 2013). This self-report measure contains of 23 questions such as: 'How many times did you hurt people to impress others' that can be answered on a 3-point Likert scale (0 = never, 1 = sometimes, 2= often). Summed scores for total aggression and separate scores for the two subscales of reactive aggression (11 items, Cronbach's α = .84) and proactive aggression (12 items, Cronbach's α = .86) were calculated separately (Raine et al., 2006). Reliability analyses of the RPQ in the sample population (n = 65) showed that the questionnaire had a Cronbach's α of .92.

Procedure

For each participant two appointments were scheduled, of which the first was a house visit[4] and the second was for the fMRI procedure[5] in the university medical center of Leiden (LUMC). On forehand participants were screened on fMRI safety to make sure participants did not have any metal in their body that could be potentially hazardous in the scanner (e.g. metal splinter, implants). All participants signed an informed consent form prior to participation. During the house visit, the following measure was used to collect clinical data: Mini International Neuropsychiatric Interview (MINI). Additional psychological measurements included a self-report of antisocial behaviour (WAS), the Youth Psychopathic traits Inventory (YPI); measuring psychopathic traits (i.e. callous/unemotional traits), the Adult Self Report (ASR); measuring several domains of psychological functioning, (i.e. anxiousness and depression), the Social Value Orientation, the Reactive-Proactive Aggression Questionnaire (RPQ), the Questionnaire of Cognitive and Affective Empathy (QCAE), sleep questionnaires and the CAGE-AID for data on substance use. Intelligence quotient's were estimated using two subtests of the Wechsler Adult Intelligence Scale IV- NL (i.e. Vocabulary and Block Design) (Wechsler, 1997) (Protocol; Fear Conditioning in Antisocial Adolescents: A Neuroimaging Study, 2020). The WAS, the MINI and the subtests of the Wechsler Adult Intelligence Scale were administered in an interview format by students

[4] Due to the current circumstances regarding COVID-19, a part of the house visits were done in an online setting, including the necessary questionnaires for the current study (i.e. YPI & RPQ).

[5] As a safety measure, participants were screened beforehand on possible COVID-19 symptoms. Both researchers and participants were required to wear a mouth mask outside the fMRI scanner.

who were trained to administer them. The participants were asked to fill out all the other questionnaires themselves for which they received a Qualtrics link.

For the fMRI procedure, participants were invited to the LUMC, for which a travel allowance was provided. First, the fMRI safety screener mentioned above was employed again. Prior to scanning, participants received an elaborate instruction from an experimenter for each task they had to fulfill in the scanner. Participants were then instructed to practice these tasks on a laptop. The sounds the fMRI makes were played to them prior to scanning, so that they knew what to expect. Participants were then provided with pants that did not contain metal. Just before entering the scanner they were weighed, and a last safety check was employed to make sure participants could safely access the scanner (e.g. no metal). The tasks they had to fulfill in the scanner included a vicarious reward learning task, a self-concept task, and an impulse control task. They could select answers via a remote that was strapped on one of their legs. After the scanning procedure, participants had to fill out an exit questionnaire. Participants also received a monetary reward upon completion (€45,- for the house visit and €55,- for the fMRI procedure). All participants were debriefed on the purpose of the study after participation.

Statistical analyses

The data was analyzed via the Statistical Package for the Social Sciences (SPSS, 24.0). Frequencies and sociodemographic descriptive statistics of the dataset were first calculated. Pearson correlation analyses (checked for absence of outliers and linearity) and four Analyses of Variance (ANOVA) (checked for outliers, normal distribution and homogeneity of variance) were executed for the demographic variables and the main variables (psychopathic traits, aggression type and self-concept) to examine if there were variables that needed to be controlled for. Reliability analyses for the YPI and RPQ were conducted. The following tests are two-tailed and were executed with an alpha of 0.05.

The first hypothesis was that self-concept would moderate the relation between psychopathic traits and aggression. To test this hypothesis the relation between psychopathic traits and aggression was first examined. Second, the independent variable and the moderation variable were centered at their means before the analysis was conducted, and an interaction variable was created out of these centered variables. Third, the moderation analysis was executed using a bootstrap approach, with SPSS Process Macro (5.000 resamples; Preacher and Hayes, 2008). The variables were tested for multicollinearity outliers, linearity, normality, homoscedasticity, and independence of residuals.

To test the second hypothesis that the interpersonal-affective factor would be related to proactive aggression and the behavioural-lifestyle factor would be related to reactive aggression, a simple linear regression analysis was conducted to ascertain the relation between the factor scores and aggression scores. The variables for the regression analysis were tested for normality, linearity, outliers, homoscedasticity, and independence of residuals.

To test the third hypothesis that individuals with a high interpersonal-affective factor would have a lower self-concept than individuals with a high behavioural-lifestyle factor, a multiple regression

analysis was conducted. The differences between the behavioural-lifestyle factor and the interpersonal-affective factor with self-concept as an independent variable were examined. The variables for the multiple regression analysis were tested for multicollinearity, outliers, normality, homoscedasticity, and independence of residuals.

To test the fourth hypothesis the following analyses were executed. To examine if a high self-concept had a stronger moderating effect on the relation between a high interpersonal-affective factor and proactive aggression, as opposed to a low self-concept, a moderation bootstrap analysis was conducted. To examine if a low self-concept had a stronger moderating effect on the relation between a high behavioural lifestyle factor and reactive aggression, as opposed to a high self-concept, a second moderation bootstrap analysis was conducted. Hence, the moderation analysis, as described by the first hypothesis, was repeated two times in SPSS Process Macro (5.000 resamples; Preacher and Hayes, 2008). First the behavioural lifestyle factor was added to the model as moderator and second the interpersonal-affective factor was added as a moderator. The variables were tested for multicollinearity outliers, linearity, normality, homoscedasticity, and independence of residuals.

Results

All assumptions mentioned in the methods section were examined prior to analyses, and were deemed sufficient in order to continue the analyses below (e.g. no influential outliers[6], multicollinearity). Because of (a small number of) missing items in the questionnaires, it was decided to use the calculated mean scores of the psychological variables (self-concept, YPI scores, RPQ scores) instead of the sum scores. By using mean scores, missing items were automatically controlled for.

Characteristics of demographic and psychological variables (N= 65)

A Pearson correlation analysis showed no significant relations between the demographic factor age and the variables of self-concept (SC), psychopathic traits (YPI) and aggression (RPQ). For the psychological variables, positive significant correlations were found between SC and YPI scores and YPI and RPQ scores. Table 1 displays an overview of the correlation statistics between SC, YPI and RPQ scores. An ANOVA analysis showed that the demographic factor gender was related to YPI scores, $F(1,63) = 6.39$, $p = .014$, $\eta p^2 = .09$. Males scored higher ($M = 1.74$, $SD = 0.43$) on psychopathic traits than females ($M = 1.39$, $SD = 0.23$)[7]. Finally, another ANOVA showed that the demographic variable SES was related to RPQ scores ($F(7,55) = 2.61$, $p = .021$). Post hoc test, however, showed that the only group that scored significantly higher on the RPQ were the participants that earned between €50.001,- and €60.000,- a year. The other income groups did not show any significant results in relation to RPQ scores. Table 2 displays an overview of the means and score ranges between the interpersonal-affective factor (F1), the behavioural lifestyle factor (F2), proactive aggression (PA) and reactive aggression (RA),

Table 1 *Summary of intercorrelations for scores on the self-concept task, (N= 65).*

	SC	YPI	RPQ
SC	-	**-.46***	-.32
YPI	**-.46***	-	**.34****
RPQ	-.32	**.34****	-

* $p < .05$. ** $p < .01$. *** $p < .001$.

[6]The outliers that were identified did not substantially influence the statistical findings. Hence, the results were reported with outliers included.

[2]In the following analyses Gender was first added to the model to control for a possible confound. Since Gender was no significant predictor for any of the models however, the variable was subsequently excluded from all analyses and is therefore not reported in the following text.

Table 2 *Summary of means and score ranges of aggression and psychopathic variables, (N= 63).*

	Mean	Minimum Score	Maximum Score
RPQ	.43	.00	1.74
RA scores	.67	.00	2.00
PA scores	.21	.00	1.50
YPI	1.67	1.00	2.83
F1	2.33	1.50	4.12
F2	1.98	1.00	3.67

The effect of self-concept on the relation between psychopathic traits and aggression (N = 29)

To test the hypothesis that self-concept would strengthen the relation between psychopathic traits and aggression, a moderation bootstrap analysis was conducted (5000 resamples; Preacher and Hayes, 2008). Self-concept, psychopathic traits and the interaction between self-concept and psychopathic traits were added as predictors to the model. The regression analyses indicated that the model was non-significant, $F(3,25) = 1.10$, $p > .05$, $R^2 = .12$, with no significant predictors. The interaction between self-concept and psychopathic traits was not significant, $t(29) = -.30$, $p > .05$, suggesting that self-concept was not a significant moderator.

Interpersonal-affective factor, behavioural lifestyle factor and aggression type (N = 67)

To examine whether the interpersonal-affective factor was related to proactive aggression and the behavioural-lifestyle factor was related to reactive aggression, two simple linear regression analyses were conducted, with the factors as dependent variable and aggression type as the independent variable. A statistically significant effect was found between the interpersonal-affective factor (Factor 1) and proactive aggression, $F(1,64) = 12.73$, $p = .001$, $R^2 = .17$ (see *figure 4),* but not between the interpersonal-affective factor and reactive aggression, $F(1,62) = 1.89$, $p > .05$, $R^2 = .30$ (see *figure 5*). A statistically significant effect was found between the behavioural-lifestyle factor and proactive aggression, $F(1,64) = 7.38$, $p = .008$, $R^2 = .10$ (see *figure 6*). Another significant effect between the behavioural-lifestyle factor (Factor 2) and reactive aggression was found, $F(1,62) = 5.81$, $p = .019$, $R^2 = .09$ (see *figure 7).* These analyses showed that participants who had higher interpersonal-affective factor had a higher inclination towards proactive aggression, but not to reactive aggression, while participants with a higher behavioural lifestyle factor had an inclination towards both aggression types.

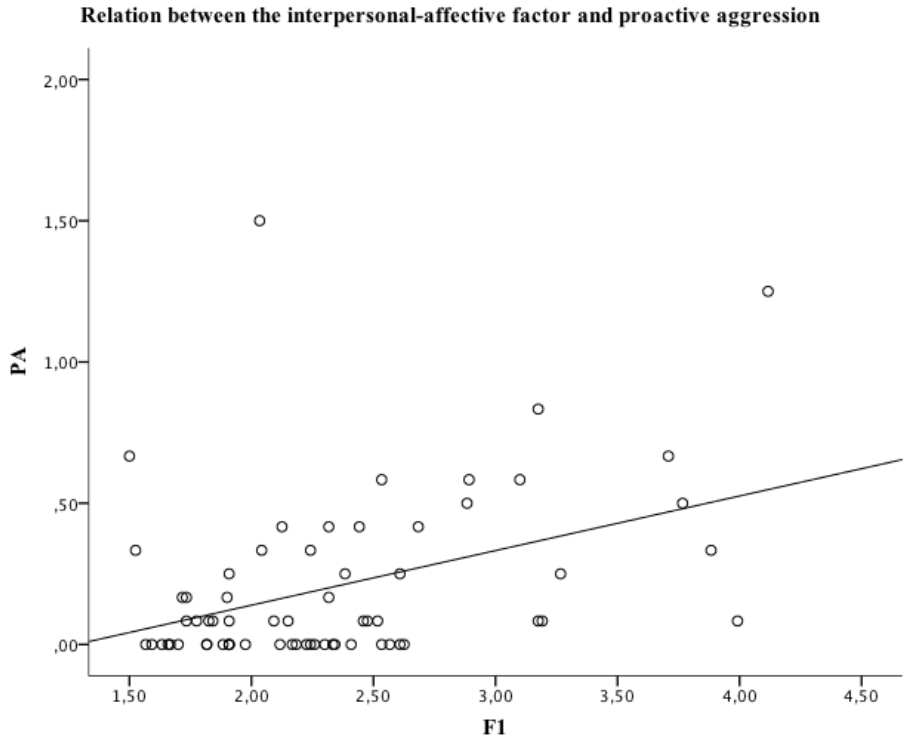

Figure 4. Scatterplot of the relation between the interpersonal-affective factor and proactive aggression.

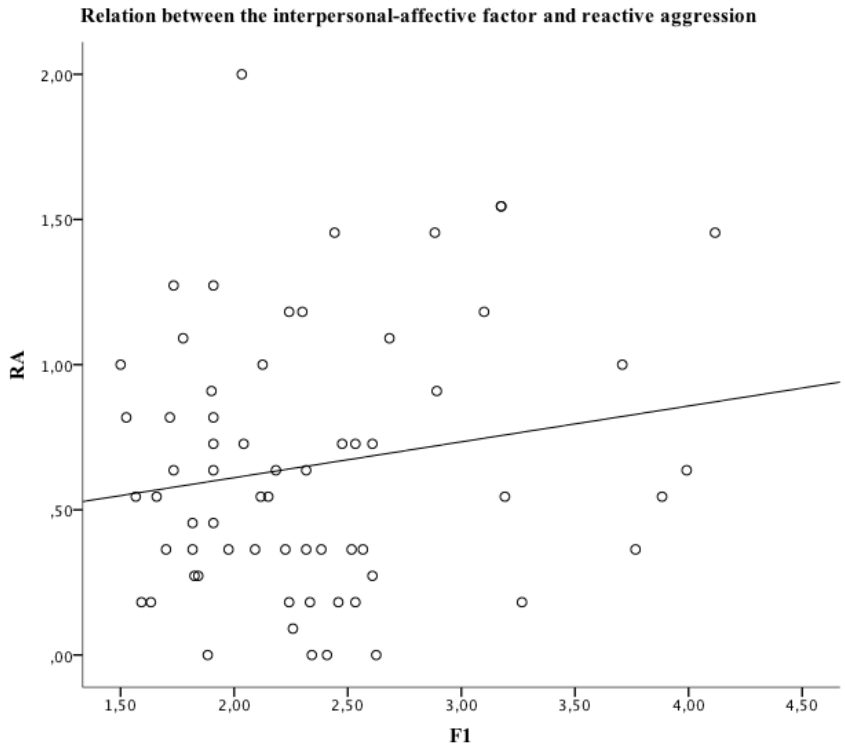

Figure 5. Scatterplot of the relation between the interpersonal-affective factor and reactive aggression.

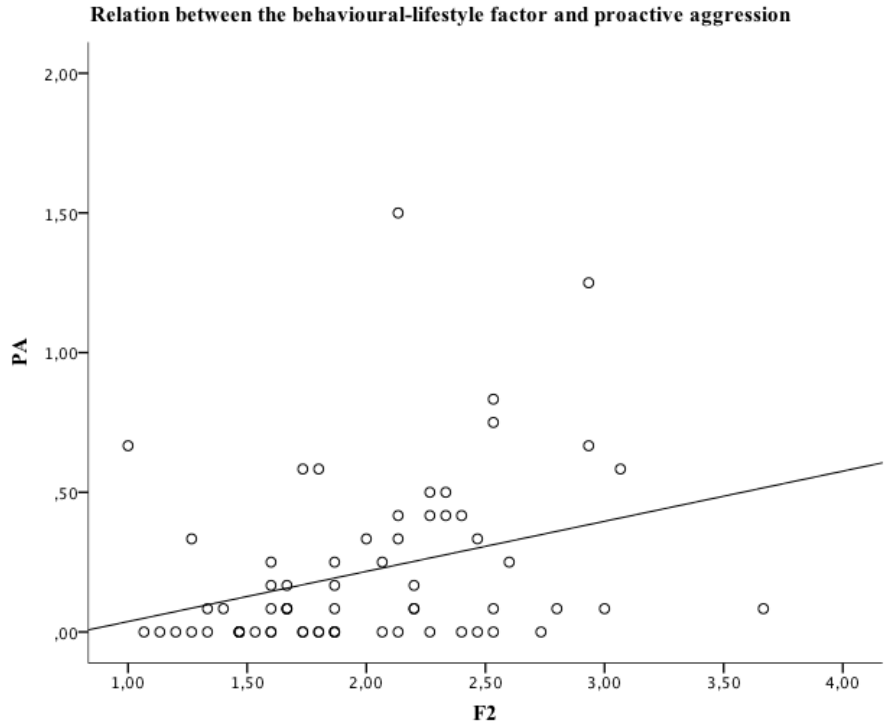

Figure 6. Scatterplot of the relation between the behavioural-lifestyle factor and proactive aggression.

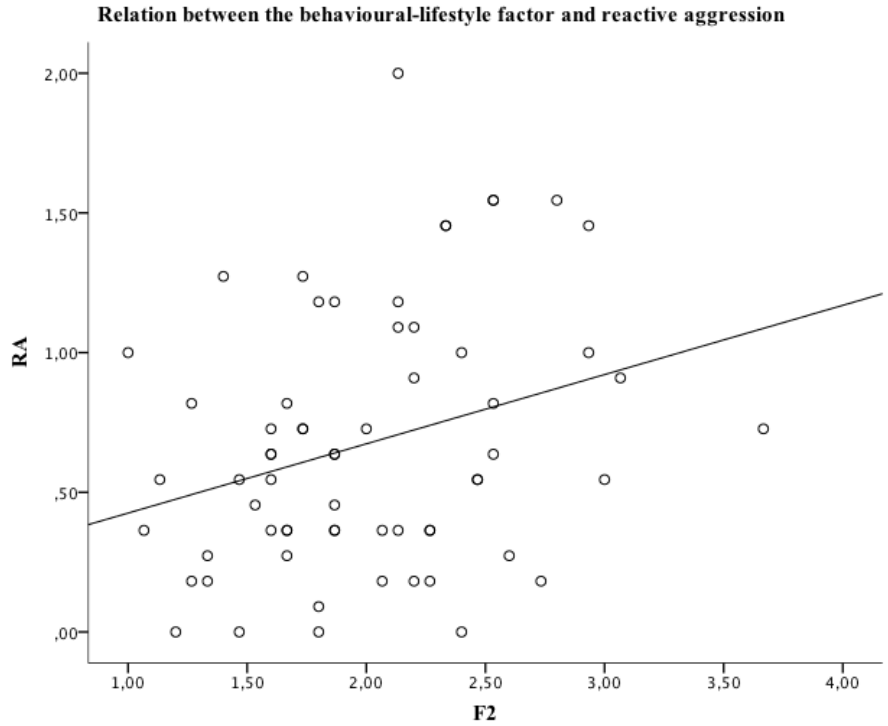

Figure 7. Scatterplot of the relation between the behavioural-lifestyle factor and reactive aggression.

Interpersonal-affective factor, behavioural-lifestyle factor and self-concept (N = 33)

To test whether individuals with a high interpersonal-affective factor would have a lower self-concept than individuals with a high behavioural-lifestyle factor, a multiple regression analysis was conducted with the factor variables and self-concept as the dependent variable. A statistically significant effect was found between the interpersonal-affective factor and self-concept $F(1,29) = 11.85$, $p = .002$, $R^2 = .29$ (see *figure 8*), but not between the behavioural-lifestyle factor and self-concept $F(2,28) = 2.34$, $p > .05$, $R^2 = .08$ (see *figure 9*). Parameter estimates showed that an increase in the interpersonal-affective factor will induce a decrease in self-concept.

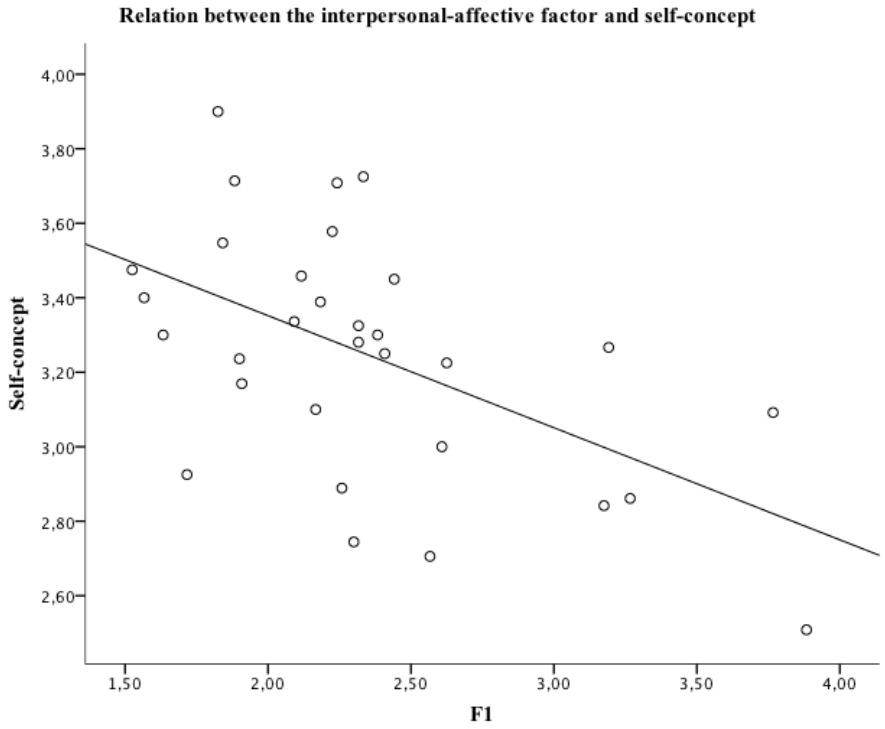

Figure 8. Scatterplot of the relation between the interpersonal-affective factor and self-concept.

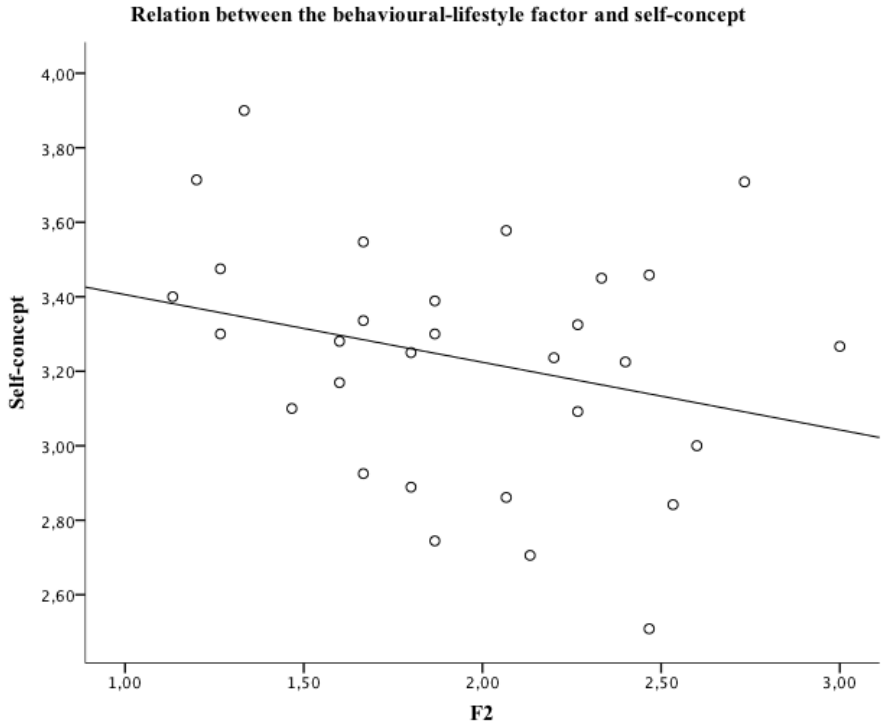

Figure 9. Scatterplot of the relation between the behavioural-lifestyle factor and self-concept.

The effect of self-concept on the relation between the interpersonal-affective factor, the behavioural-lifestyle factor and aggression type (N = 31)

To examine if a high self-concept has a stronger moderating effect on the relation between a high interpersonal-affective factor and proactive aggression, as opposed to a low self-concept, a moderation bootstrap analysis was conducted (5000 resamples; Preacher and Hayes, 2008). To examine if a low self-concept has a stronger moderating effect on the relation between a high behavioural lifestyle factor and reactive aggression, as opposed to a high self-concept, a second moderation bootstrap analysis was conducted (5000 resamples; Preacher and Hayes, 2008). For the first analysis, self-concept, the interpersonal-affective factor and the interaction between self-concept and the interpersonal-affective factor were added as predictors to the model. The regression analysis indicated that the model was significant, as already seen in the multiple regression analysis, $F(3,27) = 3,23$, $p = .038$, $R^2 = .26$, but the interpersonal-affective factor was not a significant predictor ($B = .14$, $p > .05$) ($t(31) = 1.86$, $p > .05$). Additionally, self-concept was not a significant predictor for the model either, $t(31) = -.19$, $p > .05$. Hence, the interaction between self-concept and the interpersonal-affective factor was not significant, $t(31) = -.19$, $p > .05$. Thus, a positive self-concept did not have an effect on the relation between psychopathic traits and proactive aggression. Table 3 displays a summary of the regression analysis statistics.

Table 3 *Summary of hierarchical regression analysis for variables predicting proactive aggression (PA) (n =31).*

Variables		Model 1
	B	SE B
PA	**.13***	.04
F1	.14	.08
SC	-.02	.12
SC*F1	-.11	.17
R^2 change		.005
F for change in R^2		.20

Note: the interpersonal-affective factor and self-concept were centered at their means.
*$p < .05$. **$p < .01$. *** $p < .001$.

For the second analysis, self-concept, the behavioural lifestyle factor and the interaction between self-concept and the behavioural lifestyle factor were added as predictors to the model. The regression analysis indicated that the model was non-significant, as already seen in the multiple regression analysis ($F(3,25) = .58$, $p > .05$, $R^2 = .07$), with no significant predictors. The behavioural lifestyle factor was not a significant predictor for the model ($t(29) = .35$, $p > .05$) and the interaction variable was not significant either ($t(29) = .12$, $p > .05$). The regression analysis indicated that the height of self-concept did not have an effect on the relation between psychopathic traits and reactive aggression.

Discussion

Heterogeneity among offenders can be explained by a multitude of factors, which in turn may induce different manifestations of antisocial behaviour. Because antisocial behaviour has a severe impact on society and its members, it is important to ascertain which factors may contribute to its expression. Recent studies showed that the evaluative description an individual applies to oneself (i.e. self-concept), can affect the development and persistence of antisocial behaviour throughout one's life. In the present study four hypotheses were examined. The main objective was to examine the effect of the valence of self-concept on the display of aggression type in individuals who presented high psychopathic trait factors. First, the associations between self-concept, psychopathic traits and aggression were explored. This subsequently allowed for the analysis of the relation between psychopathic traits and self-concept and the moderating effect of self-concept on the relation between psychopathic traits and aggression. Additionally, the relation between psychopathic trait factors (interpersonal-affective factor, and behavioural-lifestyle factor) and aggression types (proactive, and reactive) was examined, followed by an analysis to examine if self-concept would differently moderate the relation between the psychopathic trait factors and aggression type. The three major findings on the relation between these variables are addressed in this discussion.

First, as hypothesized, a significant relation was found between the interpersonal-affective factor and proactive aggression, but not between the interpersonal affective factor and reactive aggression. Similar findings were obtained in a study of Urben and colleagues (2018), in which they found a positive relation between the callous-emotional traits of psychopathy and proactive aggression in adolescents, but not between callous-emotional traits and reactive aggression. A theoretical explanation for these findings could be that traits such as a lack of guilt and a lack of empathy, make individuals with a high interpersonal-affective factor more likely to use aggression as a means to gratify their own needs (i.e. achieve goals, satisfaction) (Meloy & Yakeley, 2011). Contrary to the hypothesis, the behavioural-lifestyle factor was associated with both proactive aggression and reactive aggression. This finding is at odds with the study of Urben and colleagues (2018), in which only an association between impulsivity and reactive aggression was found and not between impulsivity and proactive aggression, and with a recent meta-analysis, which only found a strong association between the behavioural-lifestyle factor and reactive aggression (Blais, Solodukin and Forth, 2014). However, it should be noted that in this meta-analyses, both the interpersonal-affective factor and the behavioural-lifestyle factor were associated with proactive aggression, as was the case in the current study. This small discrepancy in findings between these aforementioned studies and the current study may advocate for a dissection into subtypes of the two factors of psychopathy. This could provide for a better understanding of the different personality facets that underlie a psychopathic personality, subsequently predicting aggression type. Another explanation of the findings might be that psychopathy is an overall predictor for aggression, regardless of aggression type. Theoretically this would provide an explanation, since individuals with high psychopathic traits may be more inclined to initiate aggression, but may also

be more inclined to react aggressively in response to negative environmental feedback, as a response to protect their inflated sense of self (Meloy & Yakeley, 2011). Given these contradicting explanations, a study where group-based trajectory modelling would be applied, may offer some more insight in which specific factors contribute to aggression type.

Second, significant positive associations were found between the interpersonal-affective factor and self-concept. This showed, contrary to the hypothesis, that an increase in interpersonal-affective traits would induce a decrease in self-concept positivity. In addition, the behavioural-lifestyle factor seemed not to be associated with either a positive or a negative self-concept. This is not in line with the findings of Falkenbach, Howe and Falki (2013), who suggested that the interpersonal-affective factor of psychopathy was positively associated with self-esteem and negatively to aggression, while the behavioural-lifestyle factor was negatively associated with self-esteem and positively with aggression. Although Falkenbach, Howe and Falki (2013) do not provide a clear conceptualization of self-esteem in their paper, they did use a questionnaire that assessed self-esteem in a similar way as was done in the self-concept task in the current study. Namely, they asked participants to rate the applicability of statements about oneself on a 4-point Likert scale. However, Falkenbach, Howe and Falki (2013), used a self-concept task that mostly focused on self-competence (e.g. 'I am capable') and self-liking (e.g. 'I am socially relevant'), and the current study used a self-concept task that was more focused on physical and prosocial factors. It is possible that the difference in statements may have caused this discrepancy in findings. Given that psychopathy is a personality disorder that focuses on interpersonal relations, a self-concept task focusing on this domain may yield a better predictor for self-concept. Another explanation could be that fluctuations in self-concept over time could be a better predictor of aggression. Falkenbach, Howe and Falki (2013), state that fluctuations in self-esteem could indicate that an individual is overly reliant on external sources of evaluation. When an individual with an unstable self-concept would receive a negative evaluation, this could cause aggression as a means to protect one's self-concept from harm. In this case, a stable positive self-concept could actually minimalize aggression. A longitudinal study in youth may gain more insight on the effect of the stability of self-concept in these individuals.

Third, research suggested that self-concept did not seem to influence the relation between the psychopathic trait factors and aggression type (hypotheses one and four). However, this was to be expected in the light of the findings in the current thesis. Noteworthy is that there were no significant predictors in any of the models, while the previous mentioned regression analyses did show a significant result. This shows that the interpersonal-affective factor was not a significant predictor for proactive aggression when self-concept was used as a moderator. As this was the first study to examine this connection, the results can still be seen as a preliminary first step in uncovering the effect of self-concept in psychopathic individuals. Since multiple studies on self-concept have shown that it could be a potent reinforcer of aggression, it would still be interesting to further examine how self-concept in individuals

with high psychopathic traits can be explained. It is possible that the sample size of the current study caused this discrepancy in findings.

Hence, notwithstanding the findings, there are some limitations that need to be reported. First, the sample size was, especially with regard to previous studies, relatively small. For future studies a larger sample size is recommend for a more accurate representation. Second, the methods that were employed in this study were self-report measures, which may have caused some distortions in the responses as participants may have answered in a social desirable manner. Lastly, this study limited itself to self-concept and psychopathic traits as potential constructs to help predict aggression, but both self-concept and psychopathic traits are constructs that are variable and may lie on a continuum. For instance, a psychopathic personality disposition is always categorized by antisocial behaviour and shows a great overlap with an Antisocial Personality Disorder, while an Antisocial Personality Disorder is not always diagnosed as psychopathy (Meloy & Yakeley, 2011). Additionally, psychopathic individuals also show an overlap with narcissistic personality traits (Falkebach, Howe, and Falki, 2013). Hence, the heterogeneity implied in both these constructs can possibly predict behaviour and aggression types by themselves. The group-based trajectory modelling method mentioned earlier may be used to gain insight on this heterogeneity.

In summary, whilst keeping the limitations in mind, some potential suggestions to guide future research can be provided. The first suggestion is that it would be helpful for future research to develop longitudinal studies for self-concept to examine if an instability in self-concept could indeed provide an explanation for aggression. Longitudinal studies would also provide information about the development of self-concept from adolescence into young adulthood, which are periods of time in which self-concept might fluctuate (Van der Cruijsen, Peters, Van der Aar, & Crone, 2018). The second suggestion is to explore the construct of psychopathy on a continuum, to examine which scores on this continuum could predict antisocial behaviour and subsequent aggression type. This could provide more insight on the functionality of aggression type in different continuum associations.

In conclusion, aggressive expressions of antisocial behaviour have a great impact on society, both in economic terms and on an individual level. Since there exists a vast heterogeneity among offenders concerning personality traits and psychological constructs, this thesis took the preliminary steps to investigate the personality construct of psychopathy and the psychological construct of self-concept more closely in relation to each other and to aggression. Given the positive correlation between the interpersonal-affective factor and proactive aggression and the association between self-concept and the interpersonal-affective factor, it can be argued that the promotion of a positive self-concept might lower the interpersonal-affective factor of psychopathy and therefore may also be of some influence on aggression. This suggestion, however, needs a stronger body of empirical research to support it, since the moderation analysis did not support this notion. Furthermore, it was suggested that it could be valuable to perform a longitudinal study of self-concept in youth. It was also suggested that psychopathy is a complex and multidimensional personality construct that may be better explained on a continuum

of antisocial behaviour and narcissism. Overall, the present study emphasized the need for a more extensive body of research to broaden the knowledge on the influence of self-concept in individuals who display high psychopathic traits. This could in turn provide insight for the design of treatment interventions for individuals with high psychopathic traits.

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