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## **Psychopathy in 3D : using three dimensions to model psychopathic traits in youth**

Zwaanswijk, W.; Zwaanswijk W.

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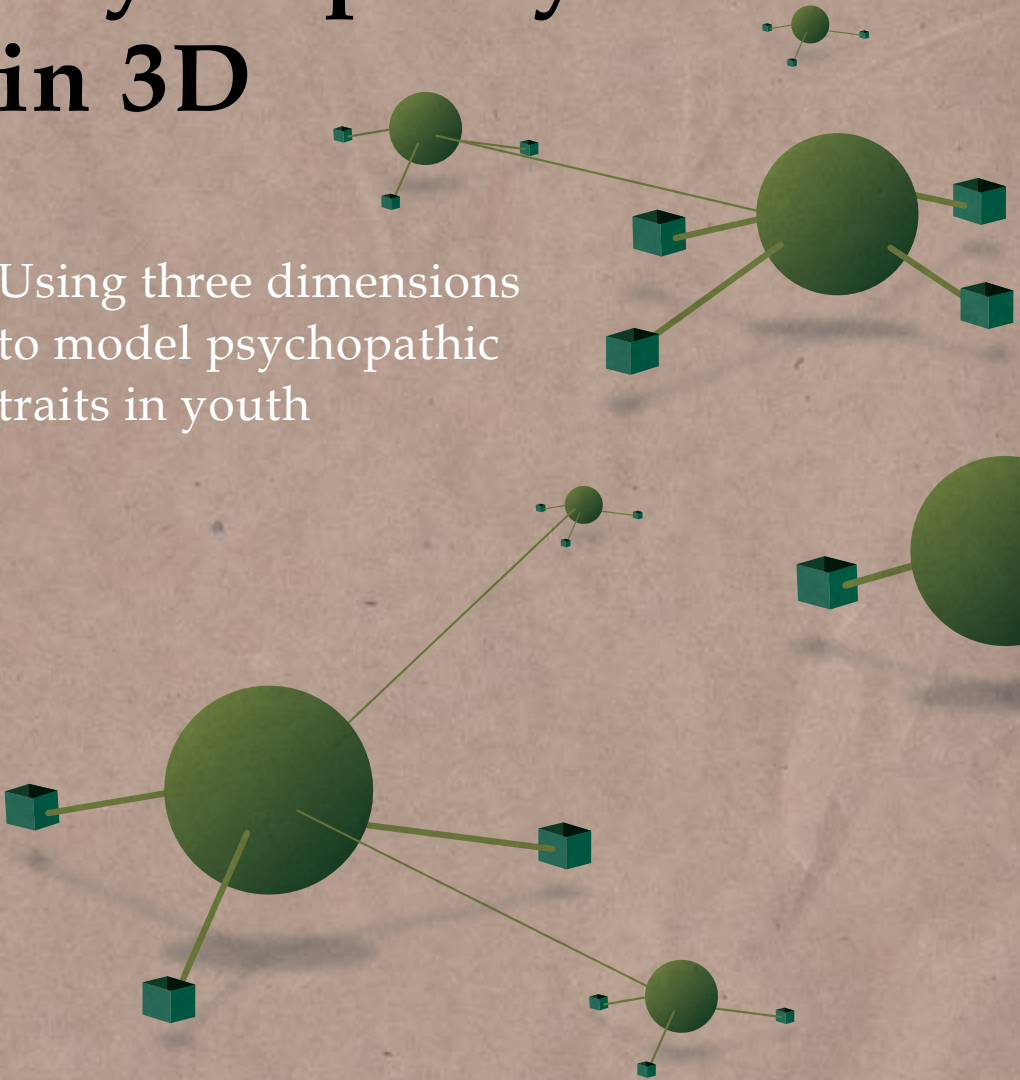
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# Psychopathy in 3D

Using three dimensions  
to model psychopathic  
traits in youth



Wendy Zwaanswijk



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Wendy Zwaanswijk

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# Psychopathy in 3D

Using three dimensions to model psychopathic traits in youth

## Proefschrift

Ter verkrijging van  
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Dr. M. van Geel

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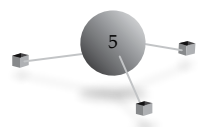
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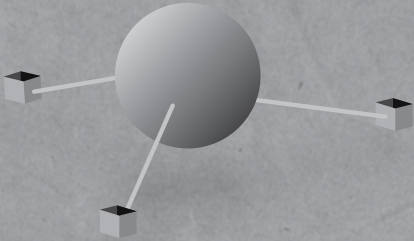
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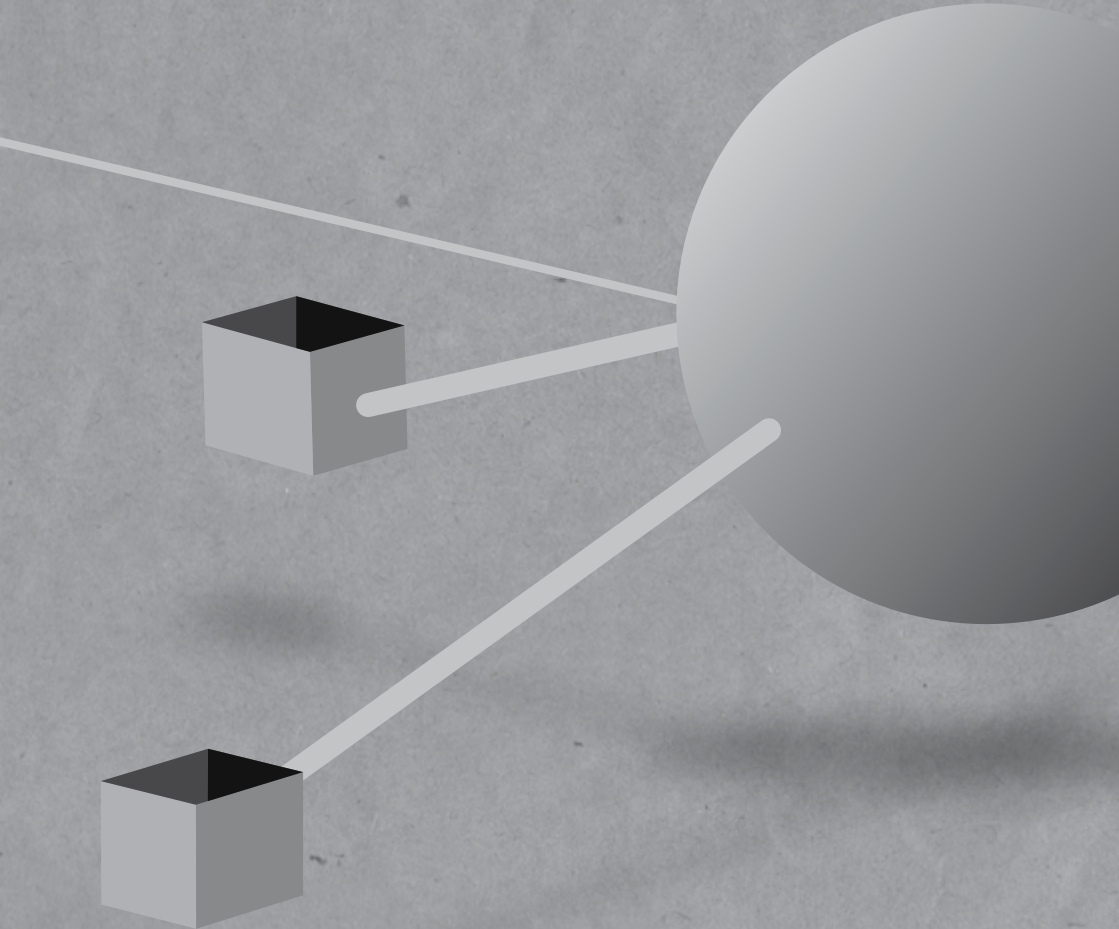


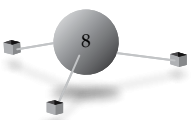


# Chapter 1



## General Introduction





Psychopathy is a personality disorder characterized by a particular constellation of interpersonal, affective, and behavioral characteristics. The interpersonal traits include characteristics such as superficial charm, arrogance, lying, manipulation, and a grandiose sense of self. The affective traits include characteristics such as callousness, lack of empathy, remorse or shame, and shallow emotions. The behavioral traits refer to characteristics such as impulsivity, irresponsibility, a need for excitement, and rule-breaking behavior (e.g., Hare, 2003; Skeem, Polaschek, Patrick, & Lilienfeld, 2011). Cleckley (1948, 1988) was the first to comprehensively describe this constellation, and described 16 criteria in his book the *Mask of Sanity* to help operationalize the psychopathy disorder based on his observations of psychiatric patients. These criteria included positive adjustment, behavioral deviance, and emotional-interpersonal deficits (Skeem et al., 2011). To this day Cleckley's description remains the basis for conceptualizing the psychopathic personality.

The prevalence rates of psychopathy according to current standards among adults in the general population have been estimated around 1-2% (Coid, Yang, Ullrich, Roberts, & Hare, 2009; Forth, Brown, Hart, & Hare, 1996; Neumann & Hare, 2008; Salekin, Trobst, & Krioukova, 2001), while the prevalence rates range from 15% to 30% in forensic populations (Hare, 2003; Nicholls, Ogloff, Brink, & Spidel, 2005). Characteristics of psychopathy, such as violence and antisocial behavior in combination with a lack of remorse and empathy, increase the risk for offending (Hare, 1996; Johnstone & Cooke, 2007; Salekin, Rogers, & Machin, 2001). Individuals with psychopathy seem overrepresented in the small percentage of criminals that is responsible for the majority of offences (Hart & Hare, 1997; Salekin et al., 2001). Compared to non-psychopathic criminals, psychopathic criminals are more likely to commit a violent offence, commit a wider range of offences, and have higher risks for criminal recidivism (Hart & Hare, 1997; Skeem et al., 2011). In addition to increased risk for criminal behavior, psychopathy seems very difficult to treat (Kirkman, 2008; Salekin, 2002). Accordingly, individuals with psychopathy create considerable costs for society (Viding, 2004). The current dissertation seeks to answer the question how psychopathy can best be

conceptualized. Another aim of this dissertation is to contribute to the current state of knowledge on the factors that might be related to the development of psychopathic traits.

### **Psychopathy in Youth**

Early identification of psychopathic traits is important for predicting aggressive and violent behavior later in life (Edens, Skeem, Cruise, & Cauffman, 2001). Moreover, early identification is basic to effective prevention and intervention, which seem more promising in youth than treatment of adults (Salekin et al., 2001). Timely interventions might avoid the emergence of antisocial behavior and criminality (Perenc & Radochnski, 2014). Moreover, early detection of psychopathic traits is likely to advance our understanding of the development and etiology of psychopathy (Salekin, Neumann, Leistico, DiCicco, & Duros, 2004). A better understanding of the etiology of psychopathy may contribute to a better recognition of protective factors (Salekin et al., 2004) and to the development and implementation of interventions (Frick, 1998; Lykken, 1995, see Salekin, 2002). For these reasons there has been an increased focus on psychopathic traits in children and adolescents in the last two decades.

Because psychopathy is considered a stable personality disorder, and personality is not stable until adulthood (Hart, Watt, & Vincent, 2002), personality disorders as a whole, and psychopathy in particular cannot be diagnosed in youth under 18 years old. As a consequence literature writes about psychopathic *traits* in youth, rather than about a psychopathic personality of youth. Studies on psychopathic traits in children and adolescents have shown that psychopathy in youth has similar correlates as psychopathy in adults (Salekin, Leistico, Trobst, Schrum, & Lochman, 2005). For example, psychopathic traits in youth have been found related to externalizing behavior, such as conduct disorder and ADHD symptoms (Colins et al., 2014; Frick, O'Brien, Wootton, & McBurnett, 1994; Kimonis et al., 2015; Pechorro et al., 2014), aggression (Dolan & Rennie, 2007), proactive aggression (Seals, Sharp, Ha, & Michonski, 2012), and serious and versatile antisocial behavior in both boys and girls (Declercq, Markey, Vandist, & Verhaeghe, 2009). In adulthood,

psychopathy has been found to be not, or negatively, related to fear and anxiety (e.g., Coid et al., 2009), but in youth, this relation is less clear. Some studies on youth found no relation (Dolan & Rennie, 2007; Seals et al., 2012), but positive relations have also been found (Poynthress, Dembo, Wareham, & Greembaum, 2006). Kubak and Salekin (2009) propose that in youth, psychopathic traits are related to relatively high levels of anxiety, whereas this relation decreases with age. Thus, not all correlates of psychopathic traits in youth resemble the correlates of psychopathy in adults.

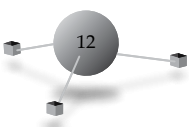
Studying psychopathy in youth is fraught with discussion and concerns. These concerns regard the stability and malleability of psychopathic traits in youth. Psychopathy may have certain traits that are reflected in different ways in adolescence and adulthood (Hart et al., 2002). In addition, some behaviors related to psychopathy could be transient characteristics that appear because of relatively normal developmental process (Seagrave & Grisso, 2002; Skeem & Cauffman, 2003). For example, grandiosity, a failure to accept responsibility for misbehaviors, and lack of empathy can be seen in normatively developing children (Seagrave & Grisso, 2002). Moreover, impulsivity, sensation-seeking, need for stimulation, and risk-taking behaviors are also traits that are normative in adolescent development (Seagrave & Grisso, 2002). Children and adolescents who show these behaviors do not necessarily develop psychopathy later in life (Hart et al., 2002; Seagrave & Grisso, 2002). A recent longitudinal study by Salihovic, Özdemir, and Kerr (2014) found that there was a small group of adolescents that started with high expression of psychopathic traits that remained high over the course of four years, compared to their peers. Adolescents in this group are at high risk of a negative development with high levels of delinquency and experiencing negative parental behavior, such as anger outbursts, coldness, and rejection. Three additional groups were found, i.e., a low-decreasing group, a moderate-stable group, and a group that starts with moderate levels of psychopathic traits, but shows a stable decline of expression during the four year period (Salihovic et al., 2014). These findings support the idea that psychopathic traits can change during adolescence. At the same time they confirm that some adolescents characterized by the psychopathic traits run an alleviated

risk of maladaptive behaviors. In light of the prevailing uncertainty about the malleability and possible developmental consequences of psychopathic traits, it is important to identify youth with high levels of expression of psychopathic traits in order to develop appropriate interventions in line with the needs and risks of these youth, and timely intervene to prevent negative adaptation outcomes (Seagrave & Grisso, 2002).

### **Nature versus Nurture**

There are studies on genetics of child and adolescent psychopathy, that show that there is a moderate to strong genetic influence in the development of psychopathic traits and a moderate influence of non-shared or unique environmental influences (i.e., environmental influences that are uniquely experienced by family members, which makes them different from each other; Viding & Larsson, 2010; Waldman & Rhee, 2006). Stability of psychopathic traits between mid- and late adolescence is likely explained by genetic factors (Forsman, Lichtenstein, Andershed, & Larsson, 2008). However, recent research has shown that for a young sample of five-year-old children, shared environmental factors (i.e., environmental influences that are similar for family members which makes them alike; Waldman & Rhee, 2006) such as socioeconomic status, can also have an influence on the development of psychopathic traits (Tuvblad, Fanti, Andershed, Colins, & Larsson, 2017). These findings suggest that the shared environmental factors might have an influence at an early age, but the shared environmental influence on the development of psychopathic traits diminishes and non-environmental, genetic influences become more important later in life (Rhee & Waldman, 2002).

Even though the development of psychopathic traits seems to be partially genetic (e.g., Blonigen, Carlson, Krueger, & Patrick 2003), environmental factors should not be discounted. Several studies suggest that with respect to the environmental factors related to psychopathic traits, parents have a strong influence. Both in retrospective studies, as well as in prospective studies, results have shown that trauma, such as child abuse (Kimonis, Fanti, Isoma, & Donoghue, 2013) and negative parenting practices, such as harsh and



inconsistent parenting (Frick et al., 2003; Pardini, Lochman, & Powell, 2007), unstable parent-child relationship (Salekin & Lochman, 2008), childhood separation, physical abuse, and indifferent parenting styles (Bailey & Shelton, 2014) may result in the development of psychopathic traits (Farrington, Ullrich, & Salekin, 2010). In addition, an insecure attachment with the parent has been found to be related to the development of callous-unemotional (CU) traits, due to disassociation from, or avoidance of the parent (Rubio, Krieger, Finney, & Coker, 2014; Saltaris, 2002). Exposure to community violence has also been found related to elevated levels of CU-traits (Kimonis, Frick, Munoz, & Aucoin, 2008). Also, living in a low socioeconomic community being exposed to community violence, such as weapons, drugs, and shootings, was found related to higher rates of psychopathic traits (Farrington et al., 2010; Rubio et al., 2014). However, environmental risk factors are often intertwined and are also related to other risk factors such as low school attainment or poor supervision from parents, which makes it difficult to single out main risk factors or to weigh the role of individual factors (Farrington et al., 2010).

Psychopathy has often been viewed as an undifferentiated construct (Cleckley, 1988). However, some scholars suggest that there are two (or more) variants of psychopathy, that differ in how the psychopathic traits emerge (Arieti, 1963; Mealey, 1995; Porter, 1996). One of these scholars is Karpman (1948), who distinguished two variants of psychopathy that seemed largely similar with regard to phenotypic behavior (i.e., observable characteristics and traits), but could be distinguished based on their etiology. *Primary psychopathy* was conceptualized as a heritable deficit in emotional sensitivity, whereas *secondary psychopathy* was thought to develop due to environmentally acquired affective disturbances, such as abuse or trauma (Karpman, 1948). This distinction has been examined empirically, and studies have confirmed that primary and secondary psychopathy can be distinguished in adults as well as in youth (e.g., Colins, Fanti, Salekin, & Andershed, 2016; Hicks, Markon, Patrick, Krueger, & Newman, 2004; Kimonis, Frick, Cauffman, Goldweber, & Skeem, 2012).

This distinction between primary and secondary psychopathy nicely corresponds to the earlier presented notions and findings that genetics as

well as environmental factors play a role in the development of psychopathy. The distinction between primary and secondary psychopathy combines the genetic and environmental developmental perspectives. Primary psychopathy has been proposed to develop when protective environmental factors do not counterbalance the genetic tendencies, whereas the temperamental distinctiveness of secondary psychopathy seems only to develop into an antisocial development in the presence of environmental risk factors that increase social stress levels to non-optimal heights (Yildirim & Derksen, 2015). An interaction between the biological predisposition with aversive environmental circumstances seems to be important for the explanation and understanding of the emergence of psychopathy.

### **Assessment of Psychopathy**

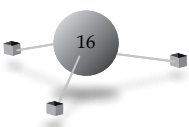
In order to systematically assess psychopathy in incarcerated criminal adults, Robert Hare developed a criterion-based semi-structured interview protocol, the Psychopathy Checklist. The revised version became the most widely used instrument to assess psychopathy, the Psychopathy Checklist - Revised (PCL-R; Hare, 2003). In order to assess psychopathic traits in incarcerated youth, the PCL-R was adapted into the Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003). Furthermore, other instruments have been developed in order to assess psychopathic traits in children and adolescents both in prison and in the general population (Viding, 2004). For example, the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), a youth psychopathy screening measure available as parent-, teacher-, and self-report form; the Child Problematic Traits Inventory (CPTI; Colins et al., 2014), a teacher-report form to assess psychopathic traits from the age of 3 to 12; the Inventory of Callous Unemotional traits (ICU; Frick, 2004) that examines the affective dimension of the psychopathy construct in youth between the ages of 4 and 18 years old; and the Youth Psychopathic traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002), a self-report questionnaire for youth older than 11 years in the general population. In short, there are several instruments that can be used to assess psychopathic traits in youth. The current dissertation uses the YPI, a questionnaire that focusses on

the core interpersonal and affective characteristics of psychopathy, in addition to behavioral characteristics (Skeem & Cauffman, 2003). As a self-report, the YPI is cost- and time effective compared to the time-consuming interview of the PCL: YV and easy to use in the general population. In addition, to minimize social desirable answering, most items of the YPI are worded in such a way that respondents do not necessarily see the psychopathic traits as deficits, but rather as neutral or positive characteristics (Andershed et al., 2002).

**Factor structure.** Many studies have focused on the factor structure of the PCL-R and other psychopathy measures (Lynam & Gudonis, 2005). By examining factor structures researchers try to uncover which and how many factors, dimensions, or constructs underlie the responses of individuals to the items of the scale, and to explain the common relationship or variance between a set of observed variables (Kline, 1994). The PCL-R was first argued to show a two-factor structure (Hart & Hare, 1997). The total score reflects to what extent an individual resembles a ‘prototypical’ psychopath; Factor 1 reflects the interpersonal and affective characteristics “selfish, callous, and remorseless use of others,” whereas Factor 2 reflects social deviance or behavioral characteristics, and a “chronically unstable and antisocial lifestyle” (Harpur, Hakistan, & Hare, 1988; Hart & Hare, 1997). However, Cooke and Michie (2000) questioned the two-factor model and proposed a three-factor model instead, separating the interpersonal from the affective factor, resulting in an interpersonal, an affective, and a behavioral factor. Recently, a four-factor model has been proposed (Neumann & Hare, 2008), which divided the behavioral factor into a lifestyle factor and an antisocial factor. The latter maintains and binds the antisocial items that earlier were dropped by Cooke and Michie when they presented their three-factor model (Lynam & Gudonis, 2005). All three factor models have in common that they assume that the factors represent correlated dimensions of a higher-order psychopathy construct (Patrick, Hicks, Nichol, & Krueger, 2007). The two-, three-, and four-factor models have been replicated in studies with adult as well as in studies engaging youth samples (Lynam & Gudonis, 2005). The separate dimensions have been found to correlate differently with external criteria. For example,

the behavioral dimension was positively related with aggressive behavior, attention problems (Seals et al., 2012) and anxiety (Falkenbach, Stern, & Creevy, 2014), whereas negative correlations between the affective dimension of psychopathy and anxiety and depression were found, and no relation was found with the interpersonal dimension of psychopathy (Seals et al., 2012).

In addition to the two-, three-, and four-factor models, an alternative factor-structure has recently been proposed; a bifactor model. In the bifactor model the overlap between all items is accounted for by a general factor, and items with similar content are additionally related to separate specific group factors (which for psychopathy represent the two, three, or four factors or dimensions; Patrick et al., 2007; Reise, 2012). This means that the items load onto a broad general construct and onto one or more specific constructs simultaneously. The overlap between the specific group factors is represented by the general factor, which results in the specific group factors and general factor being uncorrelated (Chen, West, & Sousa, 2006), and the general factor remains at the same level as the group factors with direct relations with the observed variables (Gustafsson & Balke, 1993). This way, the unique predictive validity of the group factors can be distinguished from the predictive validity of the general factor (Chen, Hayes, Carver, Laurenceau, & Zhang, 2012), and provides the opportunity to test whether the group factors predict external outcomes, over and above the general factor. Studies that do not use a bifactor model examine the relation between the specific factors and an external outcome without controlling for the common variance between the observed variables that is represented by the general factor, or only examine the relation between a total score and an outcome, without consideration for the predictive value of the specific factors. The added value of the bifactor model for psychopathy is that it is consistent with the idea that psychopathy must be based on the full range of relevant psychopathic symptomatology (Hart & Hare, 1997) and should be seen as a compound trait entity, with separable, often unrelated lower-order traits that should all be combined (Lilienfeld & Fowler, 2006). The general factor represents the construct of psychopathy as a whole, whereas the specific group factors represent more conceptually confined constructs (i.e., the interpersonal, affective, and behavioral or



lifestyle dimension) on which individuals can show elevated levels even if they do not fit the total picture of a psychopath.

An advantage of the bifactor is that the dimensionality of the questionnaire can be established. Dimensionality refers to whether the common variance of the measurement is best accounted for by one factor (unidimensionality), or whether the questionnaire is best represented by more factors (multidimensionality; Reise, Bonifay, & Haviland, 2013). Based on model fit, finding a multidimensional model often results in the conclusion that the total score should not be used and subscale-scores should be used instead (Reise et al., 2013), while dimensionality is not actually established with model fit. Using a bifactor model, dimensionality is tested in several ways. First, regression loadings of the one-factor model can be compared to the regression loadings of the general factor of the bifactor model, and the regression loadings of the multifactor model can be compared with the regression loadings of the specific group factor regression loadings (Brouwer, Meijer, & Zevalkink, 2013). Second, strength indices such as McDonald's omega and the explained common variance (ECV) can be used to examine parameter accuracy (Reise, Scheines, Widaman, & Haviland, 2013). These estimates indicate the strength of a factor, and, when model fit indicates a multidimensional model, the strength indices help the researcher to decide whether to focus on a single factor or also to consider the group factors (Reise, 2012).

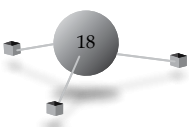
Another important aspect in the assessment of psychopathic traits is the measurement invariance of the instrument; that is, whether or not the questionnaire measures the same underlying construct with the same structure across different groups (Van der Schoot, Lugtig, & Hox, 2012). The interpretation of questions and how questions are answered can be influenced by, for example, gender, culture, age, or education (Milfont & Fischer, 2010; Warnecke et al., 1997). If there is measurement invariance, test scores between groups can be meaningfully compared (Van der Schoot et al., 2012). To ensure that differences between the latent constructs (i.e., factors) in the models are meaningful, it is important to establish measurement invariance for, for example, gender, age, and ethnic background. Results and implications will

be biased if they are based on scales that do not measure the same underlying construct across groups (Byrne, 2008).

The affective dimension has been suggested to represent the core construct of psychopathy (Frick, Ray, Thornton, & Kahn, 2014). Therefore, some studies have focused on conduct disordered youth with and without CU-traits, as an indicator of the characteristics represented by the affective dimension (cf. Frick, 2009). However, as clarified before, psychopathy is described as a constellation of interpersonal, affective, and lifestyle characteristics. According to Hart and Hare (1997) the diagnosis of psychopathy should always be based on the interpersonal and affective characteristics as well as the behavioral characteristics. Only focusing on CU-traits in combination with conduct problems loses sight of the interpersonal traits that are also characteristic of psychopathy (Salekin, 2016). Several studies show that not solely CU-traits, but CU-traits in combination with the other dimensions of psychopathy report the most adverse outcomes (Christian, Frick, Hill, Tyler, & Frazer, 1997; Colins et al., 2014; Colins et al., 2016). This suggests that the separate dimensions represent a construct distinct from the combined dimensions. Therefore, it has been argued that also in youth, all three dimensions should be used (Salekin, 2016). A bifactor model as described before is consistent with this notion of psychopathy. One General Psychopathy factor reflects psychopathy as a whole, whereas the specific dimensional factors may be but are not necessarily indicative of psychopathy. A bifactor model has been found to fit the data best using different measurement instruments for psychopathy, for instance, the PCL-R (Patrick et al., 2007), the ICU (Essau, Sasagawa, & Frick, 2006) and the YPI (Pihet, Suter, Meylan, & Schmid, 2014). The current dissertation aims to contribute to this discussion, by examining the dimensionality of the data structure of the YPI, to establish whether the General Psychopathy factor or the specific dimension factors represents psychopathy best.

### **Development of Psychopathic Traits**

In addition to the question how psychopathy can be best conceptualized, this dissertation also aims to examine some factors that might be related to



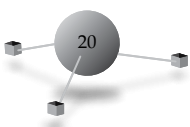
the development of psychopathic traits. As described above, psychopathy develops partially because of genetic influences, but environmental factors also seem to be a risk factor. One risk factor that is often examined in relation to externalizing problem behavior is socioeconomic status (SES). However, studies on SES in relation to psychopathic traits show inconclusive results. Some studies show a negative (e.g. Kahn, Byrd, & Pardini, 2013), some yielded positive (e.g., Farrington et al., 2010), and others reported no relation (e.g., Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007) between SES and psychopathic traits. Moreover, different relations between SES and the different dimensions of psychopathy have been found (e.g., Hall, Benning, & Patrick, 2004; Harpur, Hare, & Hakistan, 1989). Another way to examine the influence of SES on psychopathic traits is to examine SES as a moderating variable in the relation between psychopathic traits and maladaptive outcomes such as delinquency. However, also for SES as a moderating variable, contradictory results have been found. While the majority of studies find that the relation between psychopathic traits and delinquency or criminal violence is stronger in low SES neighborhoods or families (e.g., Markowitz, Ryan, & Marsh, 2015), there are also studies that find that there is a stronger relation in high SES groups (e.g., Gao, Baker, Raine, Wu, & Bezdjian, 2009), or that find no differences for different levels of SES (e.g., Ray, Thornton, Frick, Steinberg, & Cauffman, 2016). Possible explanations for these conflicting findings may be akin to the different operationalizations of SES that were used. Some studies focus on family SES, and others focus on different aspects of neighborhood SES, such as neighborhood disorder (Ray et al., 2016), residential stability (Dupéré, Lacourse, Willms, Vitaro, & Tremblay, 2007), or neighborhood income (Markowitz et al., 2015). By using a variety of operationalizations of SES for examining the relation of SES with the bifactor model of psychopathy, this dissertation tries to gain more insight in these relations, and tries to explain the inconclusive results that hitherto have been found regarding SES.

In this dissertation, genetic influences are not examined. However, based on the theory by Karpman (1948) and other scholars (Arieti, 1963; Mealey, 1995), the distinction between two variants of psychopathy can be

empirically studied by combining measures of psychopathy with measures of anxiety (Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). Primary psychopathy has been found in persons who typically report a lack in anxiety and fear. Secondary psychopathy is believed to develop because of negative environmental circumstances that trigger the development of psychopathic traits, and that, in addition, contribute to high levels of anxiety and depression, anger, aggression, and impulsiveness (Karpman, 1948; Mealey, 1995). Thus, in the current dissertation, it is examined whether the distinction between primary and secondary psychopathy can also be made in a youth sample, while using a measure of anxiety in combination with all three dimensions of psychopathy.

## General Method

The current dissertation examines psychopathic traits in a community sample of Dutch adolescents between the ages of 12 and 24 years old. Junior and senior vocational high schools were approached for participation in the study. Vocational high schools were approached to optimize the chances to sample adolescents that show, relative to the whole population, a higher risk for problems with social adjustment and adaptation (De Looze et al., 2014). Data was collected via online questionnaires during a school hour. The participants generally needed a whole school hour to complete the questionnaires. The YPI was used to examine psychopathic traits. The YPI consists of ten subscales that measure a grandiose/manipulative factor (or interpersonal dimension), composed of the subscales dishonest charm, grandiosity, lying, and manipulation, a callous/unemotional factor (or affective dimension), composed of the subscales remorselessness, unemotionality, and callousness, and an impulsive/irresponsible factor (or behavioral or lifestyle dimension), composed of the subscales thrill-seeking, impulsiveness, and irresponsibility. The YPI has been shown to have good psychometric properties (Andershed et al., 2002). Behavioral and psychosocial problems were assessed with the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), a short screening instrument with good psychometric properties (Van Widenfelt, Goedhart, Treffers, & Goodman, 2003). To distinguish between primary



and secondary psychopathy a measure for trait anxiety was also used: the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). In the current dissertation, only the Trait-questionnaire of the STAI has been used, that measures a relatively enduring disposition to feel worry and stress. The STAI-DY, that is, the Dutch version of this instrument, has been found to be a reliable and valid instrument (Van der Ploeg, 2000). Moreover, to examine family SES, the Family Affluence Scale (FAS-II; Boyce, Torsheim, Currie, & Zambon, 2006) has been administered. The FAS is a widely used short questionnaire with good psychometric properties (Currie et al., 2008). The FAS was developed for youth to give an approximation of their SES, assuming that they do not know how much their parents earn. In addition, neighborhood SES was established by census data from Statistics Netherlands based on the postal code given by the participant. The study was approved by the Institutional Board of Ethics.

### **Outline of the Dissertation**

This dissertation seeks to contribute to the discussion on how to best conceptualize and measure psychopathy in youth, shed light on the inconclusive research findings hitherto with regard to SES, and use all three dimensions as well as a measure of anxiety to distinguish primary from secondary psychopathy. The first two chapters focus on the factor structure of the YPI. *Chapter 2* examines several factor models, including the recently suggested bifactor model of psychopathy. In addition, dimensionality is examined to establish which factor contributes most to explaining the constructs measured; the General Psychopathy factor, or the specific dimension factors. *Chapter 3* focusses on the construct validity of the bifactor model as assessed with the YPI by studying the relationship between the model and conduct problems. It extends the results of Chapter 2 by relating the different factors of the bifactor model to conduct problems. *Chapter 4* also uses the bifactor model of psychopathy, not to examine the use of the bifactor model, but to examine the relation with the risk factor SES. Results on the relation between psychopathy and SES are inconclusive, and we attempt to contribute by using the bifactor model of psychopathy to gain more insight in the role

of SES in manifestations of psychopathic traits. The distinction between primary and secondary psychopathy is described in *Chapter 5*. Though the final chapter does not use the bifactor model, it uses the combination of all three dimensions of psychopathy in order to gain insight in the distinction in variants of psychopathy. This is consistent with the argument that all three dimensions should be used in juvenile psychopathy (Salekin, 2016), which is why one could use the bifactor model as well. The bifactor model is not used in this chapter because of difficulties combining several statistical methods (i.e., confirmatory factor analysis and cluster-analysis). *Chapter 6* is the general discussion of this dissertation in which the results described in the previous chapters will be summarized and reflected on. In addition, the limitations of the study in this dissertation and suggestions for future research are presented.

# Chapter 2

## The Youth Psychopathic traits Inventory: A bifactor model, dimensionality, and measurement invariance

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### Abstract

The current study examines a bifactor model for the Youth Psychopathic Traits Inventory (YPI) in a Dutch community sample of adolescents ( $N = 2,874$ ). The primary goal was to examine the latent structure of the YPI with a bifactor modeling approach. Furthermore, the study examines the dimensionality and measurement invariance of the YPI. Results show that a bifactor model at subscale level fits the YPI best. The General Psychopathy factor influences the 10 subscales of the YPI strongly, indicating that the YPI seems to be rather unidimensional than multidimensional. Nevertheless, the dimensions still explain nearly one third of the variance found. Findings imply that the bifactor model of the YPI should be used when examining relations with outcome variables, with a focus on the total score of the YPI, while factor scores should be reported with caution. Furthermore, the bifactor model appears invariant for gender, age, and ethnic background.

*Keywords:* Psychopathic traits, Youth Psychopathic traits Inventory, bifactor model, dimensionality, measurement invariance, adolescents



Psychopathy is a personality disorder characterized by a particular constellation of interpersonal (e.g., superficial charm, manipulation, grandiosity, and lying), affective (e.g., lack of remorse or shame, shallow emotions, and callousness), and behavioral traits (e.g., impulsivity, need for excitement, and irresponsibility; Hare, 2003). Psychopathy in adults has been found related to antisocial behavior and criminal behavior (e.g., Frick & White, 2008; Patrick, 2010; Walters, 2003). Psychopathic traits are measurable in preschool, childhood, and adolescence (Colins et al., 2014; Farrington, 2005; Kimonis et al., 2015; Lynam et al., 2009). In preschool, associations between psychopathic traits and conduct problems (Colins et al., 2014; Kimonis et al., 2015) and in the transition from middle childhood to adolescence, moderate associations with delinquency and (violent) recidivism have been found (Asscher et al., 2011). Therefore, psychopathy is preferably detected early in life to decrease or avoid its negative consequences (Asscher et al., 2011; Frick & White, 2008).

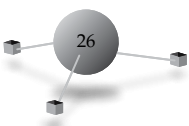
The Youth Psychopathic traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002) is a self-report questionnaire designed to assess community samples of adolescents for psychopathic personality traits. The questionnaire consists of 10 subscales, each with five items, focusing on the core traits of psychopathy in a general population. The YPI measures a grandiose/manipulative factor (or interpersonal dimension), composed of the subscales dishonest charm, grandiosity, lying, and manipulation, a callous/unemotional factor (or affective dimension), composed of the subscales remorselessness, unemotionality, and callousness, and an impulsive/irresponsible factor (or behavioral or lifestyle dimension), composed of the subscales thrill seeking, impulsiveness, and irresponsibility. To minimize social desirable answering, most items of the YPI are worded in such a way that respondents do not necessarily see the psychopathic traits as deficits, but rather as neutral or positive characteristics (Andershed et al., 2002). Some traits are measured indirectly, for instance, "What scares others usually doesn't scare me." Compared with other measures of psychopathic traits in youth, such as the Psychopathy Checklist: Youth Version (Forth, Kosson, & Hare, 2003), which is an interview requiring time-consuming administration

and scoring, the YPI as a self-report is cost- and time-effective, and easy to use in the general population (Andershed et al., 2002).

The total score and dimension scores of the YPI moderately correlate with related factors of, for instance, the Psychopathy Checklist: Youth Version (i.e.,  $r$  ranging from .20 to .51; Andershed, Hodgins, & Tengstrom, 2007; Cauffman, Kimonis, Dmitrieva, & Monahan, 2009; Skeem & Cauffman, 2003), indicating good convergent validity. The YPI has been shown to have acceptable test-retest reliability (Campbell, Douchette, & French, 2009; Skeem & Cauffman, 2003), to predict institutional disciplinary infractions (Dolan & Rennie, 2006a; Skeem & Cauffman, 2003), to be positively related to aggression, delinquency, and impulsivity (Dolan & Rennie, 2007) and to be negatively related to anxiety (Skeem & Cauffman, 2003) and hence fits recent descriptions of psychopathy. In short, the YPI shows good construct validity. Studies regarding the internal consistency of the YPI based on Cronbach's alpha were systematically reviewed by Pihet, Suter, Meylan, and Schmid (2014). They found that on average, based on 11 studies, the total score and dimension scores and most of the subscales were internally consistent (mean  $\alpha = .67-.87$ ), while the internal consistency of the subscale Callousness was found to be low across studies (mean  $\alpha = .54$ ), and low to acceptable for the subscales Unemotionality, Remorselessness, and Irresponsibility ( $\alpha = .60$ ,  $\alpha = .61$ , and  $\alpha = .61$ , respectively).

### Factor Structures

The factor structure of adult psychopathy has been exhaustively studied. Initially, a two-factor structure was distinguished composed of an affective/interpersonal dimension and a behavioral dimension (Harpur, Hakstian, & Hare, 1988). However, Cooke and Michie (2001) questioned the two-factor model and proposed a three-factor model consisting of an affective, an interpersonal, and a behavioral dimension. A four-factor model has also been proposed in which the behavioral dimension falls apart in two factors: lifestyle and antisocial (Neumann & Hare, 2008). The three different factor models have in common that they all assume that the factors represent correlated dimensions of a higher order psychopathy construct (Patrick, Hicks,



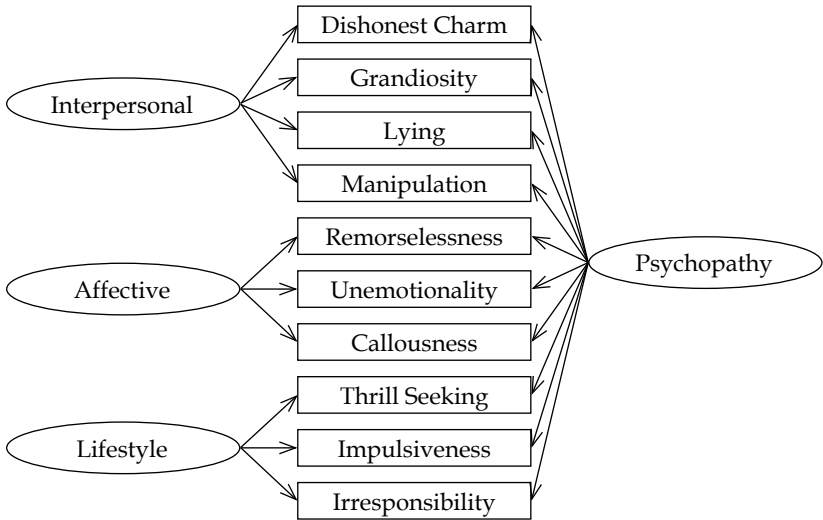


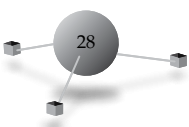
Figure 2.1. Bifactor model of the Youth Psychopathic traits Inventory.

Nichol, & Krueger, 2007). Only recently, an alternative structural model for psychopathy has been proposed, a bifactor model, in which the general factor does not relate to the dimensions but accounts for the overlap between all items, and items with similar content are additionally related to separate group factors (which for psychopathy represent the two, three, or four dimensions; Patrick et al., 2007; Reise, 2012). Thus, the items simultaneously load on a broad general construct and on one or more specific constructs. The general factor represents the conceptually broad construct which the questionnaire is intended to measure, that is, psychopathy, while group factors represent more conceptually confined constructs (i.e., interpersonal, affective, and lifestyle dimension; Reise, 2012). A characteristic of a bifactor model is that the group factors and general factors are uncorrelated, or orthogonal, while in a higher order factor model, the group factors are incorporated in the general factor (Chen, West, & Sousa, 2006). With a bifactor model, the general factor remains at the same level as the group factors, having a direct relation with the observed variables (Gustafsson & Balke, 1993). This way, the unique predictive

validity of the group factors can be distinguished from the predictive validity of the general factor, and the strength of the relation between group factors and observed variables can be examined (Chen, Hayes, Carver, Laurenceau, & Zhang, 2012). This facilitates the examination of measurement invariance across different groups and of latent mean differences for both the general and group factors (Chen et al., 2006). Furthermore, the bifactor model provides the opportunity to test whether the group factors predict external outcomes, over and above the general factor.

Several studies using the Psychopathy Checklist- Revised found a bifactor model to be superior compared with a higher order factor model (Flores-Mendoza, Alvarenga, Herrero, & Abad, 2008; Patrick et al., 2007). Similar findings were reported for the Psychopathy Checklist: Screening Version (Boduszek, Dhingra, Hyland, & Debowska, 2015) and the Hare Self-Report Psychopathy Scale (Debowska, Boduszek, Kola, & Hyland, 2014). Furthermore, the bifactor model has been tested with the Inventory of Callous and Unemotional Traits (Essau, Sasagawa, & Frick, 2006; Frick, 2004; Roose, Bijttebier, Decoene, Claes, & Frick, 2010), with a general callous-unemotional factor and three distinct factors depicting uncaring, callousness, and unemotional items. The bifactor model for psychopathy suggests that even though there is a single construct measured (i.e., a General Psychopathy factor), the items or subscales observed might also be grouped into distinctive underlying constructs with distinct relations with external outcomes and distinct etiologic processes (Flores-Mendoza et al., 2008; Patrick et al., 2007). For example, Patrick (1994) found that a deficit in fear response was related to the interpersonal/affective factor, but not to the behavioral factor, using a two-factor model of the Psychopathy Checklist-Revised.

Pihet et al. (2014) recently showed that for the YPI, a bifactor model is superior in representing the data over a higher order model, when the 10 subscale scores of the YPI are used as the observed variables (i.e., the subscale level, see Figure 2.1). Pihet et al. (2014) used data from a sample of 395 adolescents from the general population and 201 institutionalized adolescents and examined the factorial validity of the three dimensions and 10 subscales of the YPI. They compared six models with confirmatory factor analysis (CFA)



using the 50 items of the YPI and three models using the 10 subscale scores as observed variables (i.e., subscale level). At item level (i.e., when the 50 items were used as observed variables), the bifactor model with 10 group factors and 3 general factors provided good fit, but the 3-factor bifactor model at subscale level provided the best fit (see Figure 2.1). This indicates that there is a General Psychopathy factor best explaining or capturing the variance of the subscale scores of the YPI, while at the same time, the subscales are related to the dimensions. Pihet et al. (2014) concluded that because the bifactor model is superior, YPI users should rely on the total score along with the three dimension scores, as is common practice.

### Dimensionality

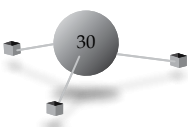
Like Pihet et al. (2014), many researchers assume that when a multidimensional model has been found (i.e., a variety of factors influence and explain respondents' item responses), the model is no longer unidimensional and both total score and subscale or dimension scores should be reported (Reise, Bonifay, & Haviland, 2013). However, using a bifactor model brings along an advantage complementing traditional dimensionality studies, namely, assessing the (uni)dimensionality of the model (Reise, Morizot, & Hays, 2007), which has not been taken into account by Pihet et al. (2014) or in other studies focusing on the bifactor model of psychopathy (e.g., Boduszek et al., 2015; Flores-Mendoza et al., 2008; Patrick et al., 2007). Testing the bifactor model allows to decide whether the YPI is essentially unidimensional and should not be broken up into dimension scores, or that the items are multidimensional, reflecting the complexity of the factor structure of the YPI (Brown, Finney, & France, 2011; Reise et al., 2007). To inspect multidimensionality, only examining a satisfying fit using CFA is insufficient, because adequate fit does not imply parameter accuracy (Reise, Scheines, Widaman, & Haviland, 2013). The fit indices do not indicate whether the total score, referring to the core construct, suffices as a reliable index or whether the subscale scores provide additional reliable information beyond the total score (Reise, Bonifay, et al., 2013). Cronbach's alpha, which is often reported as measure for reliability of the subscales and total score,

combines the variance that is explained by the general factor with the variance that is explained by the group factors (Zinbarg, Revelle, Yovel, & Li, 2005). Cronbach's alpha assumes a unidimensional solution, and when a multidimensional solution has been proposed, alpha tends to overestimate reliability (Brown et al., 2011; McDonald, 1999). A bifactor model gives the opportunity to, in addition to fit indices, evaluate strength indices such as the explained common variance (ECV) and McDonald's omega, to examine parameter accuracy (Reise, Scheines, et al., 2013). These estimates indicate the strength of a factor, and when a multidimensional model is found, it helps decide whether to continue to focus on a single core construct or also focus on the group factors (Reise, 2012). However, as regards the bifactor model for psychopathy, the consequences of working with a multidimensional model for analyzing the psychometric quality of the scale have been overlooked.

Furthermore, regarding the psychometric properties of the YPI, testing for measurement invariance of scales enables us to examine whether the questions of the overall psychopathic traits or the different factors are interpreted similarly by different groups (Van de Schoot, Lugtig, & Hox, 2012). One of few studies testing for measurement invariance found that a subscale-based correlated factor structure provided a proper fit for both Dutch and Moroccan Dutch incarcerated boys (Veen et al., 2011). Moreover, in addition to testing the bifactor model, Pihet et al. (2014) also examined the measurement invariance of the bifactor model using the subscale scores as observed variables for the YPI across gender, age, and community/institutionalized samples and established measurement invariance in all of these groups.

### Current Study

The current study attempts to replicate the study of Pihet et al. (2014) in a community sample of Dutch adolescents, adding to the cross-cultural validity and usability of the YPI. The central aim of the current study is to examine the factorial validity of the YPI, comparing correlated factor models which were presented earlier in this introduction with a bifactor model. Replication of the bifactor model of psychopathy is of importance, because



this may have implications for the way YPI measures should be used in research as well as in practice. Even more intriguing is that finding a superior fit for the bifactor model could eventually lead to better insight in the etiology of psychopathy (Patrick et al., 2007). We hypothesize that the bifactor model will be superior compared with other models.

Additionally, as recommended by Reise, Bonifay, et al. (2013), this study examines the degree of unidimensionality of the YPI and whether the dimensions of psychopathy remain reliable after accounting for the shared variance explained by the general factor. Dimensionality has not been taken into account in previous studies on bifactor models of psychopathy, but gives viable information on how to use a measurement. The YPI has been developed to measure the core personality traits of the psychopathic personality constellation, related to the three dimensions of Cooke and Michie (2001; Andershed et al., 2002), including the interpersonal style, emotional/affective traits, and behavioral/lifestyle aspects of psychopathy. Therefore, it is hypothesized that the YPI is primarily a multidimensional measure.

Furthermore, this study will examine the measurement invariance of the superior model of the YPI between gender, age, and ethnic groups. Previous studies have already established measurement invariance between boys and girls (e.g., Andershed et al., 2002), different age groups (e.g., Pihet et al., 2014), and different ethnic backgrounds (e.g., Dutch and Moroccan background; Veen et al., 2011), but it has not yet been established for the general Dutch population. In the present study, in accordance with Pihet et al. (2014), a distinction is made between younger adolescents (i.e., 12 to 15 years old) and older adolescents (i.e., 16 years and older) to examine whether younger and older adolescents interpret the questions of the YPI similarly. Furthermore, a distinction is made between native Dutch, Western, and non-Western backgrounds, because it has been suggested that ethnic background influences respondents' interpretation of the items (Milfont & Fischer, 2010). It is hypothesized that the YPI will be measurement invariant for gender, age, and ethnic background.

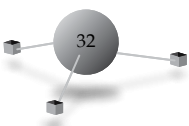
## Method

### Participants

Participants were 2,874 adolescent students from 21 prevocational high schools (*VMBO*) and five vocational high schools (*MBO*) across the Netherlands. After completing the prevocational secondary education, students can continue to further vocational training within secondary vocational education. Forty-three percent of the participants was female ( $n = 1,239$ ). The average age was 14.47 years ( $SD = 1.69$ ). There were 51 participants who did not report their age. The ethnic background of the participants was diverse: 55% was native Dutch, 10% Moroccan Dutch, 8% Surinamese Dutch, 8% Turkish Dutch, 4% Antillean Dutch, and 16% had other backgrounds, such as Indonesian, Polish, or German. We distinguished three groups according to the definition of Statistics Netherlands (2000): 1,554 native Dutch adolescents, 209 Western immigrant adolescents (e.g., Polish or French), and 1,109 non-Western immigrants (e.g., Surinamese or Moroccan). Almost three quarters of the participants (74%) indicated high affluence on the Family Affluence Scale (Boyce, Torsheim, Currie, & Zambon, 2006), 24% intermediate, and 2% reported low affluence.

### Measures

**Psychopathic Traits.** The YPI (Andershed et al., 2002) is a 50-item self-report measure to assess the 'core' traits of psychopathy in youths from the general population. The Dutch translation of the YPI was used (Das & De Ruiter, 2003). The measure consists of 10 subscales (e.g., Dishonest Charm, Grandiosity, Lying, Manipulation, Remorselessness, Unemotionality, Callousness, Thrill Seeking, Impulsiveness, and Irresponsibility), loading onto three dimensions: interpersonal (grandiose, manipulative dimension), affective (callous, unemotional dimension), and lifestyle (impulsive, irresponsible dimension). Each subscale consists of five items. Participants were asked to indicate to which degree each of the 50 statements applied to them on a 4-point Likert-type scale, ranging from 1 (*does not apply at all*) to 4 (*applies very well*) on questions such as "When I need to, I use my smile and my charm to use others," for the interpersonal dimension, "When other



people have problems, it is often their own fault, therefore, one should not help them,” for the affective dimension, and “I get bored quickly by doing the same thing over and over,” for the lifestyle dimension. Higher scores indicate higher levels of psychopathic traits.

**Ethnicity.** The questionnaire regarding ethnic background, started with questions about adolescents’ demographic background, such as gender, date of birth, and place of birth of the participant, both parents and grandparents. Based on place of birth of the (grand)parents, the adolescents were classified as native Dutch, Western immigrant, or non- Western immigrant. In order to be classified as native Dutch, both parents and all four grandparents had to be born in the Netherlands. To be classified as an immigrant (either Western or non-Western), at least two grandparents had to be born outside the Netherlands and to have similar ethnic backgrounds.

### **Procedure**

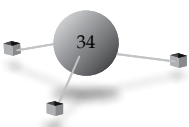
Schools across the Netherlands were approached for participation. Parents of participants in junior vocational high schools were asked to complete and sign a consent form before their children could participate in the study. Participants from senior vocational high schools all were older than 16 years of age, and hence signed their own consent form. Of all the adolescents and their parents who were asked to participate, 3% declined to participate.

The questionnaires were digitally administered in a classroom setting. Before completing the questionnaires, students received a short instruction explaining the research and how to find the questionnaires online. In addition, students were informed that completing the questionnaires was voluntary and anonymous and that the information they provided would be treated strictly confidential. Two members of the research team were always present during the administration to answer questions and solve possible computer problems. The teacher also was present during the administration but was not directly involved in the administration.

## Statistical Analyses

CFAs were first performed on the total sample to examine the best fitting model for the YPI, using the robust maximum likelihood estimation method. Data were treated as continuous variables. The subscales of the YPI were continuous variables and to remain consistent between subscale level and item level, the item level was also treated as continuous. At item level, the response scale was an ordinal scale with four response options. However, four response options is the minimum number of categories required to use data as continuous without running into serious problems (Byrne, 2008). To be able to compare the results with those of Pihet et al. (2014), several similar models were tested to find the best fitting model for the YPI. With a large sample size in the current study, it was possible to examine the factor structure of the YPI at both item level and at subscale level. At item level, four models were examined: (a) a one-factor model with all the items loading on a single factor; (b) a three-factor model, with all 50 items loading to three factors, allowing the factors to correlate; (c) a bifactor model, with each item loading on one of the three factors, as well as on a general factor; (d) a 10-factor model, with each item loading on their respective a priori subscale, allowing the subscales to correlate.

Pihet et al. (2014) examined two additional models, that is, a bifactor model with all 50 items loading on one general factor, as well as 10 specific factors representing the subscales, and a bifactor model with all 50 items loading on three general factors representing the dimensions and 10 specific factors representing the subscales. However, in order to test these same models using the data in the current study, the statistical program needed too many iterations to obtain reliable results. Therefore, these models were excluded from consideration. At the subscale level, however, three additional models were tested: (a) all 10 subscales loading on one general factor; (b) a three-factor model, with 10 subscales loading on three factors; and (c) a bifactor model, with the subscales loading on three factors, as well as one general factor. Goodness-of-fit indices were used to compare the different models. Model fit was examined using Satorra-Bentler scaled chi-square (S-B  $\chi^2$ ) and associated degrees of freedom. S-B  $\chi^2$  was used as the data were skewed.

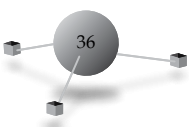


However, chi-square is sensitive for sample size and tends to reject reasonable models if the sample is large (Van de Schoot et al., 2012). Therefore, other fit indices, such as the comparative fit index (CFI), root mean square error of approximation (RMSEA), and Akaike information criterion were also taken into account. Because the data were skewed, robust calculations were used. An adequate fit was considered when CFI values were  $>.90$ , while values of  $>.95$  indicated good fit (Hu & Bentler, 1999). Values of the RMSEA between  $.05$  and  $.08$  indicated acceptable fit, while values  $<.05$  indicated good fit (Hu & Bentler, 1999). Furthermore, models with smaller values of the Akaike information criterion indicated superior fit compared with models with higher values (Byrne, 2008).

After finding the best fit to the data, the factor loadings of the one-factor model were compared with the factor loadings of the general factor of the bifactor model. Lower factor loadings of the general factor of the bifactor model would indicate that the dimensions have considerable influence on the variance in the items or subscales, pointing to multidimensionality (Brouwer, Meijer, & Zevalkink, 2013). Furthermore, the factor loadings of the dimensions of the bifactor model were compared with the factor loadings of the three-factor model. Lower factor loadings in the bifactor model, hence after accounting for the common variance, would indicate a high influence of the general factor, pointing to unidimensionality. Moreover, as an indicator of the degree of unidimensionality, the ECV was calculated. This index represents the percentage of common variance that can be attributed to the general factor in a bifactor model. This index is easy to interpret, as higher ECV values indicate little common variance beyond the variance accounted for by the general factor (Reise, Scheines, et al., 2013). To remain consistent with Pihet et al. (2014) and previous research on the YPI, internal consistency was also examined with Cronbach's alpha. Alphas of  $.6$  or lower were seen as low, between  $.6$  and  $.7$  as acceptable, and above  $.7$  as high values (Leary, 2008). The model-based reliability index omega ( $\omega$ ) was also calculated for the General Psychopathy factor and specific dimension factors (Reise, 2012). Omega for the general factor is comparable with coefficient alpha, as it is affected by all sources of common variance (Reise, 2012). It is an index of the

reliability of the total score that is based on the variance attributed to all the factors. However, omega is model-based and unlike Cronbach's alpha, does not assume tau equivalence (i.e., equal factor loadings; Zinbarg et al., 2005). Omega for the dimensions is the reliability of the dimension based on all sources of variance across the items from that dimension. Moreover, omega hierarchical ( $\omega_{hi}$ ) was calculated. This reliability index is appropriate for a bifactor model, because the variance of the general factor will be separated from the variance of the group factors (Zinbarg, Yovel, Revelle, & McDonald, 2006). Omega hierarchical indicates the proportion of the variance of the total score that can be attributed to one single common factor (the general factor), while the variance of the group factors is removed. Omega hierarchical was also calculated for each of the subscales (referred to as omega subscale [ $\omega_s$ ] in Reise, 2012), which indicates the reliable variance of the specific dimensions when the effects of the General Psychopathy factor are removed. Omega hierarchical is a direct index of general factor strength (Reise, Scheines, et al., 2013). Omega, omega hierarchical, and the ECV were calculated based on the factor loadings from the CFA models.

Finally, testing for measurement invariance was performed with multigroup CFAs in several steps. First, we tested the model for each group separately, to examine whether the same factor structure fitted each group. Next, configural invariance was examined, which examines whether the model is invariant across groups by testing the same model structure for both groups simultaneously (Milfont & Fischer, 2010). Then metric invariance was tested, for which the factor loadings or regression coefficients were set equal across groups. This examines whether the groups respond to the items in the same way, that is, whether respondents across groups attribute the same meaning to the latent factors. Finally, we tested scalar invariance, for which, in addition to equal factor loadings, the intercepts were constrained. When scalar invariance has been established, the observed scores are related to the latent scores, and groups can be compared regardless of group membership (Milfont & Fischer, 2010). Differences between the models tested are usually examined by testing the significance of the difference in chi-square and associated difference in degrees of freedom (Byrne, 2008). Because the robust



S-B  $\chi^2$  was used, the chi-square difference was corrected as suggested by Byrne (2008). However, the chi-square is sensitive to sample size. Therefore, the difference in CFI between the models was examined. This difference should not exceed .01 to indicate invariance between groups (Byrne, 2008). In addition, we checked the values of other fit indices (Byrne, 2008; Cheung & Rensvold, 2002). For the analyses of internal consistency, SPSS 21.0 was used. For testing the models, dimensionality, and measurement invariance, EQS 6.2 (Bentler, 2006) was used.

## Results

### CFA

Listwise deletion was used in EQS, and as a result, 20 cases were dropped because they had one or more missings on the measured variables. The results of the fit indices are presented in Table 2.1. Testing the one-factor model led neither at item level nor at subscale level to satisfactory fit indices. At item level, the best model fit was found for the 10-factor model with each item loading on their respective subscale (CFI = .816, RMSEA = .044, 90%

Table 2.1

*Fit indices of models tested for YPI*

Model	S-B $\chi^2$	<i>df</i>	CFI	RMSEA [90% CI]	AIC
<i>Item-level</i>					
1 factor	12829.41	1175	.655	.059 [.058-.060]	10479.42
3 correlated factors	10143.44	1172	.734	.052 [.051-.053]	7799.44
Bifactor model	7925.57	1125	.799	.046 [.045-.047]	5675.57
10 correlated factors	7360.05	1130	.816	.044 [.043-.045]	5100.05
<i>Subscale-level</i>					
1 factor	1358.88	35	.842	.115 [.110-.120]	1288.89
3 correlated factors	604.69	32	.932	.079 [.074-.085]	540.69
Bifactor model	358.81	25	.960	.068 [.062-.075]	308.81

*Note.* S-B  $\chi^2$ = Satorra-Bentler chi-square; *df* = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; 90% CI = 90% Confidence Interval; AIC = Akaike Information Criterion.

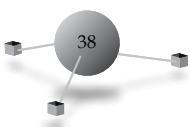
confidence interval [CI .043, .045]). However, with relatively low fit measures, this fit is not satisfactory. Overall, the best model fit with satisfactory values was found for the bifactor model at subscale level (CFI = .96, RMSEA = .068, 90% CI [.062, .075]). The standardized factor loadings for the bifactor model at subscale level are presented in Table 2.1, as well as the one-factor model and three-factor model at subscale level.

Table 2.2

*Standardized general and dimension factor loadings of the bifactor model, one factor model and three correlated factor model at subscale-level*

Subscale	Bifactor				One-factor	Three-factor		
	GP	Int	Aff	Life	GP	Int	Aff	Life
Dishonest charm	.76	.24			.80	.82		
Grandiosity	.63	.11			.63	.63		
Lying	.67	.17			.70	.70		
Manipulation	.78	.63			.84	.88		
Remorselessness	.69		.30		.68		.81	
Unemotionality	.58		.48		.58		.70	
Callousness	.27		.48		.30		.42	
Thrill seeking	.61			.33	.62			.73
Impulsivity	.57			.65	.58			.72
Irresponsibility	.62			.24	.62			.69
$\alpha$	.92	.90	.77	.82				
$\omega$	.87	.82	.65	.66				
$\omega_h$	.78	.11	.26	.22				
ECV	.71	.09	.10	.10				

*Note.* GP = General Psychopathy; Int = Interpersonal dimension; Aff = Affective dimension; Life = Lifestyle dimension;  $\alpha$  = Cronbach's alpha;  $\omega$  = omega;  $\omega_h$  = omega hierarchical; ECV = Explained Common Variance. All the factor loadings were significant at  $p < .05$ .



### Dimensionality and Internal Consistency

Comparing the factor loadings of the unidimensional model at subscale level with the factor loadings of the general factor in the bifactor model, the factor loadings are fairly similar (see Table 2.2). On average, the factor loadings differed .02. Furthermore, compared with the factor loadings of the three correlated factors at subscale level, the factor loadings of the dimension in the bifactor model are substantially lower. On average, the factor loadings dropped .35 (ranging from -.06 to .58) when controlling for the general factor. This is a first indication of a strong general factor in the data and that multidimensionality does not distort the unidimensional model.

This view was confirmed by the ECV, which was high (ECV = .71; see Table 2.2), while the percentages of explained variance by the dimensions were low (9%, 10%, and 10% for interpersonal, affective, and lifestyle, respectively). This indicates that the general factor explained a relatively large proportion of variance and that collectively, the dimensions account for nearly 30% of the common variance, above and beyond the general factor.

The internal consistency of the YPI in the present study as measured with Cronbach's alpha for the total score was good ( $\alpha = .93$ ). Cronbach's alphas of the three subscales were also acceptable (see Table 2.2). Alphas of the subscales were comparable with the alphas as reviewed by Pihet et al. (2014), ranging from .57 for unemotionality and callousness, to .80 for manipulation. The omega for the General Psychopathy factor also gave a high reliability ( $\omega = .87$ ; see Table 2.2). The omegas for the specific dimensions were moderate to high, .82, .65, and .66, for the Interpersonal, Affective, and Lifestyle dimension, respectively. However, once accounting for the general factor as represented by omega hierarchical, the reliability of the dimensions dropped. Omega hierarchical for the dimensions were lower than omega for all dimensions, .11, .26, and .22, for Interpersonal, Affective, and Lifestyle dimension, respectively, while the general omega hierarchical remained high ( $\omega_h = .78$ ). The results supported the presence of a strong General Psychopathy factor.

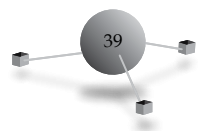
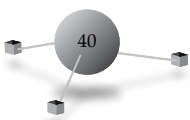


Table 2.3

*Cronbach's alpha, omega, omega hierarchical and the ECV for the General Psychopathy factor and specific dimension group factors for gender, age and ethnic background*

	Gender		Ethnic background			Age	
	Boys	Girls	Native	Western	Non-Western	Younger	Older
			Dutch	immigrants	immigrants		
<i>n</i>	1,635	1,239	1,554	209	1,109	2,169	654
<b>General</b>							
$\alpha$	.92	.92	.93	.92	.92	.92	.93
$\omega$	.86	.87	.87	.89	.87	.87	.87
$\omega_h$	.77	.78	.77	.79	.79	.78	.78
ECV	.74	.70	.70	.64	.73	.71	.71
<b>Interpersonal</b>							
$\alpha$	.90	.89	.90	.90	.90	.90	.91
$\omega$	.81	.82	.81	.82	.81	.82	.82
$\omega_h$	.12	.12	.13	.11	.09	.12	.08
ECV	.10	.09	.09	.08	.07	.09	.08
<b>Affective</b>							
$\alpha$	.73	.74	.79	.76	.74	.76	.78
$\omega$	.61	.61	.67	.73	.62	.65	.66
$\omega_h$	.25	.30	.29	.32	.23	.27	.23
ECV	.09	.11	.11	.15	.09	.10	.08
<b>Lifestyle</b>							
$\alpha$	.81	.84	.83	.83	.82	.82	.84
$\omega$	.70	.72	.70	.76	.72	.71	.70
$\omega_h$	.22	.21	.22	.27	.22	.21	.30
ECV	.11	.10	.10	.13	.11	.10	.13

*Note.* Younger = younger adolescents, under the age of 16 years. Older = older adolescents, 16 years old and older.  
 $\alpha$  = Cronbach's alpha;  $\omega$  = omega;  $\omega_h$  = omega hierarchical; ECV = Explained Common Variance.



For gender, ethnic background, and age, the analyses for the difference in factor loadings, ECV, Cronbach's alpha, omega, omega hierarchical, and the ECV resulted in a similar pattern (see Table 2.3). That is, the differences between the factor loadings of the one-factor model and the general factor of the bifactor model were not large, while there was a large discrepancy between the factor loadings of the specific dimensions in the bifactor model and the factor loadings of the three-factor model. Furthermore, the ECV for the general factor was high, Cronbach's alphas for the total score, dimension scores, and even subscale scores were high, except for the callousness and unemotionality subscales, the omegas for the general factor and the interpersonal dimension were high, while omegas for the affective and the lifestyle dimensions were moderate, and the high general omega hierarchical was combined with low omega hierarchical for the three dimensions for all distinguished subsamples, indicating a relatively strong general factor for psychopathy.

### Multigroup CFA

Results for the group comparisons are shown in Table 2.4. Results showed that at subscale level in all groups (gender, age, and ethnicity), the bifactor model was the best fitting model. At item level, the bifactor model could not be tested in the three ethnic groups, because the sample size of the Western immigrant group was too small ( $n = 209$ ; at least 500 participants are needed per group; Meehan & Stuart, 2007; Pihet et al., 2014). Because the bifactor model at subscale level was the best fitting model in all groups, the measurement invariance was examined for this model.

To start measurement invariance testing, configural invariance was examined. That is, the same factor structure has the best fit for each group. Configural invariance was found for gender, as well as age and ethnic background (see Table 2.4). The second step was testing for metric invariance, where factor loadings were set equal across gender (Van de Schoot et al., 2012). The results showed in Table 2.4 indicate that there was metric invariance. The model still indicated a satisfactory fit, and the difference in CFI was  $<.01$  across gender, age, and ethnic background. Finally, scalar invariance was

Table 2.4

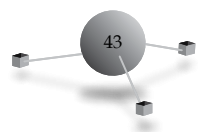
*Fit indices of the measurement invariance models for gender, age and ethnic background*

		S-B $\chi^2$	<i>df</i>	CFI
<i>Single-group solutions Gender</i>				
1 factor subscale-level	Boys	673.81	35	.863
	Girls	592.44	35	.807
3 correlated factors subscale-level	Boys	283.32	32	.946
	Girls	234.41	32	.930
Bifactor item-level	Boys	4647.61	1125	.808
	Girls	4081.40	1125	.773
Bifactor subscale-level	Boys	158.37	25	.972
	Girls	149.93	25	.957
Configural invariance		308.06	50	.965
Metric invariance		341.69	66	.962
Scalar invariance		1336.95	76	.956
<i>Single-group solutions Age</i>				
1 factor subscale-level	Younger	1001.14	35	.843
	Older	347.57	35	.848
3 correlated factors subscale-level	Younger	477.16	32	.928
	Older	148.22	32	.944
Bifactor item-level	Younger	6017.59	1125	.801
	Older	2939.31	1125	.790
Bifactor subscale-level	Younger	286.19	25	.958
	Older	97.55	25	.965
Configural invariance		388.74	50	.960
Metric invariance		414.64	66	.959
Scalar invariance		533.56	76	.959

YPI bifactor model

2

RMSEA [90% CI]	AIC	Difference tests				
		$\Delta$ CFI	$\Delta$ RMSEA	$\Delta$ S-B $\chi^2$	$\Delta$ df	<i>p</i>
.106 [.099, .113]	603.81					
.114 [.106, .122]	522.44					
.070 [.062, .077]	219.32					
.072 [.063, .080]	170.41					
.044 [.043, .045]	2397.61					
.046 [.045, .048]	1831.40					
.057 [.049, .066]	108.37					
.064 [.054, .074]	99.93					
.060 [.054, .067]	208.061					
.054 [.048, .060]	209.691	.003 <sup>a</sup>	.006	35.60	16	.003
.067 [.062, .073]	1184.947	.006 <sup>b</sup>	.013	2390.18	10	< .001
.113 [.107, .119]	931.14					
.118 [.107, .118]	277.57					
.080 [.074, .087]	413.16					
.075 [.063, .088]	84.22					
.045 [.044, .046]	3767.59					
.050 [.048, .052]	689.31					
.069 [.062, .077]	236.19					
.067 [.053, .081]	47.55					
.070 [.063, .076]	288.74					
.061 [.056, .067]	282.64	.001 <sup>a</sup>	.009	28.63	16	.027
.063 [.057, .069]	381.56	.000 <sup>b</sup>	.002	136.26	10	< .001



		S-B $\chi^2$	<i>df</i>	CFI
<i>Single-group solutions Ethnic background</i>				
1 factor subscale-level	NL	771.82	35	.841
	We	120.03	35	.849
	n-We	539.11	35	.845
3 correlated factors subscale-level	NL	291.18	32	.944
	We	89.52	32	.898
	n-We	289.01	32	.921
Bifactor item-level		-	-	-
Bifactor subscale-level	NL	152.42	25	.972
	We	43.63	25	.042
	n-We	204.98	25	.945
Configural invariance		397.39	75	.961
Metric invariance		436.69	107	.960
Scalar invariance		637.36	127	.960

*Note.* Measurement invariance was tested for the bifactor model at subscale-level for all three comparisons. S-B  $\chi^2$  = Satorra-Bentler chi-square; *df* = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; 90% CI = 90% Confidence Interval; AIC = Akaike Information Criterion; Younger = younger adolescents, under the age of 16 years; Older = older adolescents, 16 years old and older; NL = native Dutch; We = Western immigrants; n-We = non-Western immigrants.

<sup>a</sup> difference between configural and metric invariance; <sup>b</sup> difference between metric and scalar invariance.

confirmed across all groups. For gender, age, and across ethnic background, the model remained satisfactory and the difference in CFI did not exceed .01. Overall, measurement invariance was demonstrated, indicating that group comparisons can be meaningfully made for the YPI.

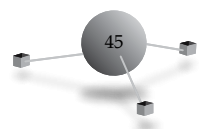
## Discussion

Recently, a bifactor model was proposed for the construct of psychopathy, suggesting that there is a General Psychopathy factor underlying all items that constitute the construct of psychopathy (Patrick et al., 2007). This general factor explains subjects' item responses in addition to the separate and unique influence of group factors, which represent

YPI bifactor model

RMSEA [90% CI]	AIC	Difference tests				
		$\Delta$ CFI	$\Delta$ RMSEA	$\Delta$ S-B $\chi^2$	$\Delta$ df	<i>p</i>
.117 [.109, .124]	701.82					
.108 [.087, .129]	50.03					
.115 [.106, .123]	469.11					
.072 [.065, .080]	227.18					
.093 [.070, .115]	25.52					
.086 [.077, .095]	225.01					
-	-					
.057 [.049, .066]	102.42					
.060 [.028, .089]	-6.37					
.081 [.071, .091]	154.99					
.067 [.061, .074]	247.39					
.057 [.051, .063]	222.69	.001 <sup>a</sup>	.010	42.99	32	.093
.059 [.053, .064]	383.36	.000 <sup>b</sup>	.002	235.90	20	< .001

the psychopathy dimensions (e.g., interpersonal, affective, and lifestyle dimension; Patrick et al., 2007). In line with previously reported results (Pihet et al., 2014), the present study provides support for a bifactor model for the YPI: a General Psychopathy factor and specific dimension factors. Our results show that the bifactor model is invariant across gender, age, and ethnic background, indicating that the scores measure the same construct in different groups, enabling group comparisons with the YPI. Furthermore, internal consistency of the total score, dimensions, and subscales as measured with Cronbach's alpha are consistent with previously reported alpha's, indicating high reliability estimates. The model-based McDonald's omega used as an alternative estimate of reliability also indicates high reliability for the total



and dimension scores. However, the scores of omega are lower than the alphas, indicating that Cronbach's alpha overestimates the reliability of the YPI (Gignac & Watkins, 2013). When inspecting the strength indices to assess multidimensionality of the YPI, omega hierarchical of the dimensions drops significantly once accounting for the General Psychopathy factor. Moreover, the reliability of the general factor remains high, suggesting that the variance of the YPI is primarily explained by the General Psychopathy factor. This finding is supported by the small differences in factor loadings between the one-factor model and the general factor from the bifactor model and the relatively high ECV for the general factor (i.e., 71% of the common variance was explained by the general factor). Around one third of the variance is explained by the specific psychopathy dimensions. Thus, the dimensions do explain variance over and above the general factor, but despite the multidimensionality in the data, the use of observed dimension scores should be discouraged (Ward, Nobles, & Fox, 2014). Significant confounding of the General Psychopathy factor with the dimensions, is a likely result when dimension scores are used without first partialling out the General Psychopathy factor, as is done when using a bifactor model. When examining the relation between the YPI dimensions and an outcome variable, future research should use structural equation modeling. In addition, future research should focus on the external validation of the bifactor model of the YPI, to examine whether the bifactor model has theoretically meaningful relations with outcome variables, such as aggression, delinquency, and impulsivity (Dolan & Rennie, 2007).

The results regarding the superiority of the bifactor model over a higher order factor could imply that there are separate etiological processes that contribute to the phenotypic expression of psychopathy (Patrick et al., 2007). That is, the General Psychopathy factor and the distinct dimensions as represented in the bifactor model, being unrelated to each other, may imply that the general factor has a different etiological process than the dimensions separately. For example, the underlying etiology for externalizing psychopathology could also underlie the General Psychopathy factor, whereas weakness in fear reactivity could underlie the interpersonal dimension more specifically (Patrick et al., 2007). However, as noted by Olatunji, Ebesutani, and

Reise (2015), who also found a bifactor model for disgust proneness, the drop in reliability of the dimensions when accounting for the general factor and the high reliability of the general factor, could indicate that the dimensions share an etiological pathway through a common process. A possible explanation for this shared etiological pathway could be the genetic influence that has formerly been found for psychopathic traits. Several studies have examined heritability of psychopathic traits with twin studies and estimate that 40 to 78% of the variation in psychopathic traits is attributable to genetic factors (Tuvblad, Bezdjian, Raine, & Baker, 2014; Viding & McCrory, 2012). Also having examined the heritability of the second-order psychopathy factor of the YPI, Larsson, Andershed, and Lichtenstein (2006) found that genetic factors explained 63% of the variance. The remaining 37% of the variance was explained by nonshared environmental factors, for example, harsh parental discipline and child maltreatment and seems to be related to the development of psychopathic traits (Farrington, Ullrich, & Salekin, 2010). To further examine whether the psychopathy dimensions provide any additional predictive power over and above the General Psychopathy factor, researchers are well-advised to use bifactor models within structural equation modeling when examining relations between the YPI scores and other outcome variables such as aggression, conduct problems, or anxiety, or when examining the heritability of psychopathy.

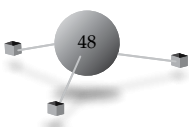
Furthermore, the bifactor model may also give more insight in the stability of psychopathic traits (Ward et al., 2014). There is an ongoing debate on whether the downward extension of psychopathy toward adolescents is justified, as behaviors related to psychopathy, such as impulsivity and sensation seeking, may be rather normative and temporary in adolescence (Seagrave & Grisso, 2002; Skeem & Cauffman, 2003). Most studies show moderate to high stability of psychopathic traits across several years, for most, but not for all individuals (Andershed, 2010). From adolescence to adulthood, it seems that the social deviance factor of psychopathy (antisocial, irresponsible behavior) decreases over time, while the interpersonal-affective factor seems to remain stable over time (Blonigen, Hicks, Krueger, Patrick, & Iacono, 2006; Harpur & Hare, 1994; Ullrich, Paelecke, Kahle, &

Marneros, 2003). This suggests that the general factor of psychopathy and the lifestyle dimension are more fluid. Perhaps they are more influenced by the developmental period of the individual. Using a bifactor model may contribute insight in possible differences throughout developmental periods.

Studies that favor a bifactor model over a higher order model are proliferating (Reise, 2012). Cronbach's alpha is still used as a measure of reliability in these studies. However, omega hierarchical is a model-based reliability index that is more suitable for a bifactor structure (Reise, 2012). Omega hierarchical provides a good indication of the general factor saturation (Revelle & Wilt, 2013). It has been previously argued that omega hierarchical for both the general factor and group factors should be routinely reported to provide more appropriate estimates of reliabilities (Canivez, in press). Using the ECV in addition to the omega hierarchical as an index of unidimensionality, the results of a bifactor model give more insight in the factor structure a questionnaire actually has, next to the fit indexes. Finally, it should be noted that the unidimensionality of a construct is not necessarily similar for different groups of people (Olatunji et al., 2015; Paap et al., 2012). It is possible that the unidimensionality of the YPI in the current study was influenced by sample characteristics and that the YPI dimension scores explain more variance in samples with a higher prevalence of psychopathic traits. Future research regarding the bifactor model, measurement invariance, and unidimensionality in a forensic sample with higher prevalence of psychopathic traits is warranted.

### Limitations and Prospects

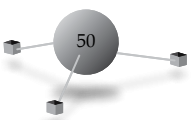
In order to optimize chances to sample adolescents with problem behavior, the current study focused on adolescents in cognitively less demanding schools for vocational education (De Looze et al., 2014). However, only 52% of the Dutch adolescent population follows vocational education, while the remaining 48% follows more academic educational streams (Statistic Netherlands, 2015a). Thus, even though the results cannot be generalized toward the higher educated adolescents, the sample represents half of the Dutch adolescent population. Moreover, in the current sample, the group



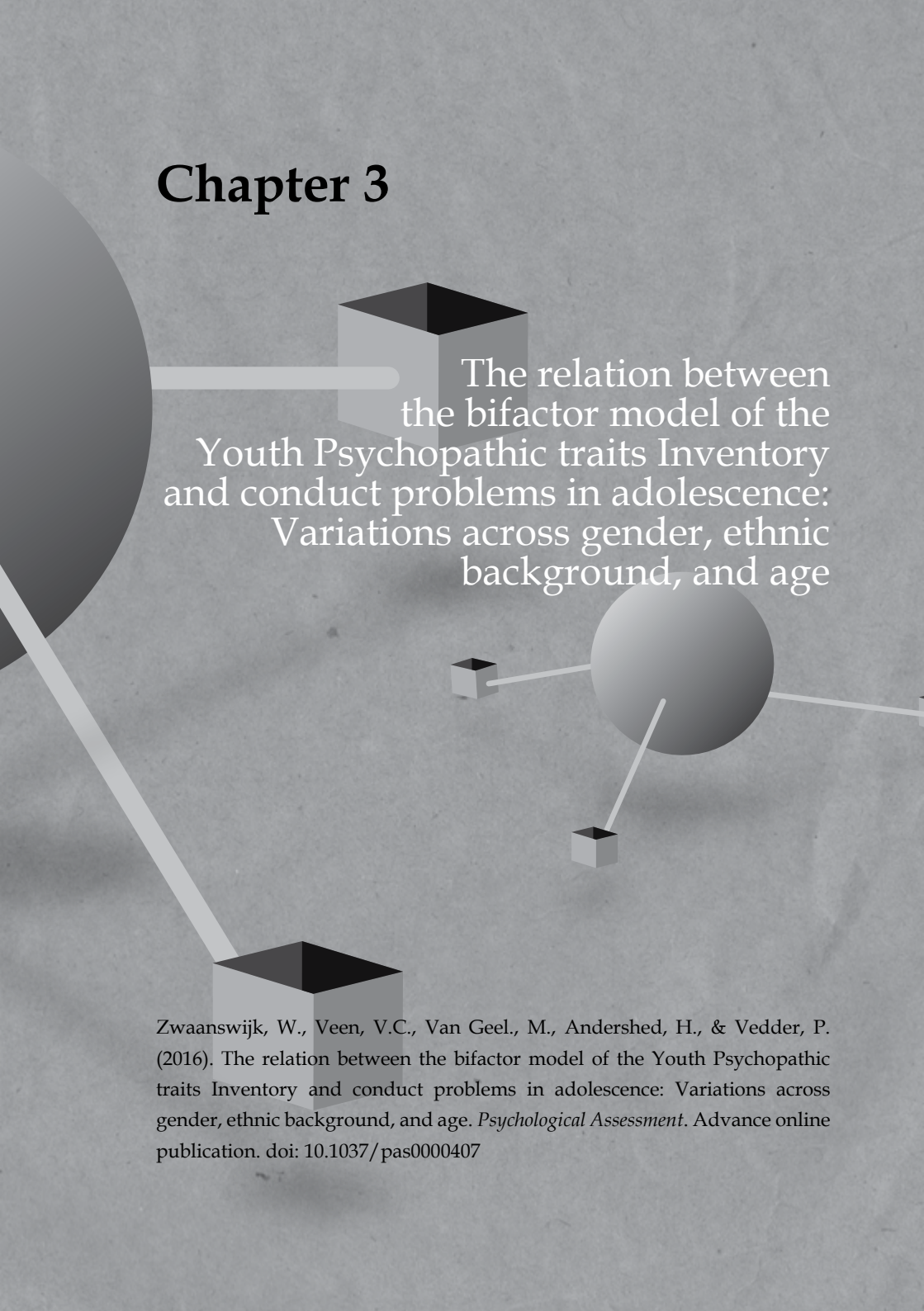
of Western immigrants is small compared with the native Dutch and non-Western immigrants. Although the percentage of Western immigrants in the sample is almost similar to the percentage in the general population (7% in the study vs. 9% in the Dutch population; Statistics Netherlands, 2014), we could not perform measurement invariance analyses at the item level, because the sample size for this subgroup was too small. Using stratification processes, targeting the Western immigrant population, future research should try to oversample this group.

Furthermore, the sample consists of adolescents of the general population, while the prevalence of psychopathy in the general population is low (i.e., 1% to 2%; Neumann & Hare, 2008). In forensic populations, the prevalence of psychopathic traits has been found to range from 15% to 30% (Hare, 2003; Nicholls, Ogloff, Brink, & Spidel, 2005). Although the YPI has been created to examine psychopathic traits in the general population, the YPI is often used in forensic settings (e.g., Cauffman et al., 2009; Poythress, Dembo, Wareham, & Greenbaum, 2006). In these forensic samples, similar factor structures have been found as in the general population (Dolan & Rennie, 2006b; Skeem & Cauffman, 2003).

In conclusion, the bifactor model fits the YPI properly and may be used to compare different groups (e.g., boys vs. girls). Furthermore, the omega hierarchical and ECV show that psychopathy as measured with the YPI within a general population, is primarily a unidimensional construct, indicating that when interpreting scores, the focus should be on the total score of YPI, rather than on dimensional scores. However, as the YPI dimensions do explain some variance and thus the measure is not purely unidimensional, calculating a total observed score confounds the variance associated with the General Psychopathy factor and dimensions (Brown et al., 2011). Therefore, future research should use latent variables modeling techniques such as structural equation modeling to examine the relations between the General Psychopathy score as well as the specific dimension scores with outcome variables. This provides insight into what the General Psychopathy factor and the specific dimension factors represent (Brown et al., 2011; Chen et al., 2006).



# Chapter 3

The background features a large, dark grey sphere on the left side. A thick, light grey line extends from the bottom of this sphere towards the bottom center. In the center, there is a smaller, dark grey sphere with three lines radiating outwards to three small, light grey cubes. Above this central sphere, a light grey cube is positioned, with a horizontal line extending from the left towards it. The text is overlaid on these elements.

The relation between  
the bifactor model of the  
Youth Psychopathic traits Inventory  
and conduct problems in adolescence:  
Variations across gender, ethnic  
background, and age

Zwaanswijk, W., Veen, V.C., Van Geel, M., Andershed, H., & Vedder, P. (2016). The relation between the bifactor model of the Youth Psychopathic traits Inventory and conduct problems in adolescence: Variations across gender, ethnic background, and age. *Psychological Assessment*. Advance online publication. doi: 10.1037/pas0000407

### Abstract

The current study examines how the bifactor model of the Youth Psychopathic Traits Inventory (YPI) is related to conduct problems in a sample of Dutch adolescents ( $N = 2,874$ ; 43% female). It addresses to what extent the YPI dimensions explain variance over and above a General Psychopathy factor (i.e., one factor related to all items) and how the general factor and dimensional factors are related to conduct problems. Group differences in these relations for gender, ethnic background, and age were examined. Results showed that the general factor is most important, but dimensions explain variance over and above the general factor. The general factor, and specific Affective and Lifestyle dimensions of the YPI were positively related to conduct problems, whereas the specific Interpersonal dimension was not, after taking the general factor into account. However, across gender, ethnic background, and age, different dimensions were related to conduct problems over and above the general factor. This suggests that all three dimensions should be assessed when examining the psychopathy construct.

*Keywords:* Youth Psychopathic traits Inventory, psychopathic traits, bifactor model, dimensionality, adolescents

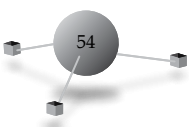
Psychopathy is a personality disorder, consisting of a constellation of interpersonal (e.g., superficial charm, manipulation, and grandiosity), affective (e.g., lack of remorse, shallow emotions, and callousness), and behavioral or lifestyle (e.g., impulsivity, need for excitement, and irresponsibility; Cooke & Michie, 2001) traits. Most studies of psychopathic traits in youth focus on one dimension of psychopathy: the affective or Callous-Unemotional (CU) dimension (Andershed, 2010; Colins et al., 2014; Salekin, 2016). Among youth with conduct disorders, CU traits are used to distinguish a subgroup of youth at high risk for severe and persistent antisocial outcomes from youth at low risk (Frick, Ray, Thornton, & Kahn, 2014). Concerns have been expressed that CU traits have become synonymous with psychopathic personality (Colins et al., 2014), and it has been argued that all three dimensions and the interaction between the dimensions should be studied, as opposed to only CU traits (Colins et al., 2014; Salekin, 2016). According to Lilienfeld and Fowler (2006), psychopathy should be seen as an “emergent composite of separable, often unrelated lower-order traits” (p.127), but traits of all dimensions have to be combined to form the psychopathic personality. Several studies show that all three dimensions of psychopathy together, as measured with the Psychopathy Checklist: Screening version (Andershed, Köhler, Eno Louden, & Hinrichs, 2008) or the Youth Psychopathic Traits Inventory (YPI; Colins, Andershed, & Pardini, 2015), are more predictive of conduct problems or relational aggression than one dimension. Moreover, the dimensions seem to depend on each other to predict behavioral outcomes (Colins et al., 2014). Using a bifactor model to examine the relation between psychopathy measurements and their correlates may clarify the role of the dimensions in understanding psychopathy.

Recent studies show that psychopathy is well represented by a bifactor model (Patrick, Hicks, Nichol, & Krueger, 2007; Zwaanswijk, Veen, & Vedder, 2016), with a General Psychopathy factor underlying all the items of the measure of psychopathy, and in addition, the items also load onto a specific dimensional factor that represents one of the psychopathy dimensions (i.e., interpersonal, affective, and lifestyle dimensions; Reise, 2012). In a bifactor model, overlapping variance between factors is taken into account

by the General Psychopathy factor (Reise, 2012), which allows for a clearer appreciation of what the factors and the psychopathy construct represent, and of the relationships between these factors and outcome measures (Chen, West, & Sousa, 2006; Patrick et al., 2007).

The current study examines the dimensionality of the YPI and the relations between the bifactor model of the YPI and conduct problems in a Dutch community sample. The first aim of the current study is to examine whether the dimensions explain variance over and above the general factor and how the dimensions and general factor are related to conduct problems. Hence, the concurrent validity of the bifactor model for the YPI is examined, which should contribute to a better understanding of what the dimension factors represent (Chen et al., 2006). The positive relation between psychopathic traits and conduct problems has been found for preschoolers (Colins et al., 2014), schoolchildren, and adolescents (e.g., Andershed, Kerr, Stattin, & Levander, 2002). Therefore, it is hypothesized that higher scores on the General Psychopathy factor correspond to higher levels of conduct problems. Furthermore, the dimensions of the YPI are expected to explain variance over and above the variance explained by the general factor. Previous research found positive relations between conduct problems and each of the dimensions when controlling for the other two dimensions (Colins, Noom, & Vanderplasschen, 2012). Based on this finding, it is hypothesized that higher levels of conduct problems are related to higher scores on the specific Interpersonal, Affective, and Lifestyle dimensions. Because the strength of the relation between one dimension and conduct problems decreased when controlling for the other dimensions (Colins et al., 2014), and all three dimensions of psychopathy together were more predictive than one dimension (Andershed et al., 2008), it is also expected that the relation with conduct problems is weaker for each individual psychopathy dimension than for the general factor that accounts for the common variance among all three dimensions.

The second aim is to examine whether the relations between conduct problems and the psychopathy factors differ across gender, ethnic background, and age. Previous studies of the relation between psychopathic traits and



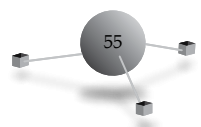
adaptation measures yielded mixed results depending on respondents' gender, ethnic background, and age (see Rubio, Krieger, Finney, & Coker, 2014). If the predictive value of psychopathy and the dimensions varies by group, this may have implications for diagnostic practices in different groups (Skeem, Polaschek, Patrick, & Lilienfeld, 2011; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003).

Across gender, the relation between psychopathic traits and externalizing problem behavior seems similar (e.g., Hillege, Das, & De Ruiter, 2010). However, the relation with overt aggression and externalizing problem behavior appeared stronger for boys than for girls (Marsee, Silverthorn, & Frick, 2005). Therefore, it is expected that the relation between the General Psychopathy factor and dimensions of psychopathy and conduct problems will be stronger for boys than for girls. Studies on differences in psychopathic traits for adolescents with various ethnic backgrounds are scant (Verona, Sadeh, & Javdani, 2010). Available studies have reported mixed results (e.g., Edens & Cahill, 2007; Jackson, Neumann, & Vitacco, 2007). Consequently, no differences are expected between different ethnic groups. Manifestations of psychopathic traits in adolescents might be transient or represent temporary normative behavior (Skeem & Cauffman, 2003), but studies are inconclusive. One study found that the association between psychopathic traits and conduct problems was similar in older and younger adolescents (Colins et al., 2012). Therefore, we expect that for adolescents aged 12 to 15 and adolescents older than 15 years, the correlations between psychopathic traits and conduct problems will be similar.

## Method

### Participants and Procedure

Participants were 2,850 adolescents (43% female) from 21 junior vocational high schools and five senior vocational high schools in the Netherlands ( $M_{\text{age}} = 14.47$  years,  $SD = 1.69$ ; 51 participants did not report their age). We distinguished younger (12–15 years old;  $n = 2,152$ ) and older (16–24 years old;  $n = 647$ ) youth. Adolescents' ethnic background was determined using (grand)parental birth place. About 55% of participants were of native



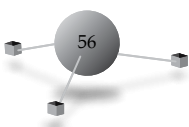
Dutch origin; the other 45% had a different ethnic background (e.g., Moroccan-Dutch, Turkish-Dutch, Surinamese-Dutch). Following Statistics Netherlands (2000), we distinguished three groups: 1,548 native Dutch, 206 Western immigrants (e.g., Polish or French), and 1,094 non-Western immigrants (e.g., Surinamese or Moroccan). Two youth did not report their place of birth.

For participants younger than 16 years, parents signed a consent form. Participants over 16 years signed a consent form themselves. After a short explanation of the study, participants completed the questionnaire behind a computer in the classroom in the presence of the teacher and two members of the research team. The Institutional Review Board of Ethics of the Institute of Education and Child Studies, Leiden University approved of the study.

## Measures

**Psychopathic Traits.** The Youth Psychopathic traits Inventory (YPI; Andershed et al., 2002) is a 50-item self-report measure to assess the “core” traits of psychopathy in youths from the general population. The measure consists of 10 subscales with five items each, loading onto three dimensions: an Interpersonal dimension Grandiose/Manipulative, with subscales Dishonest Charm, Grandiosity, Lying, and Manipulation), an Affective dimension (Callous/Unemotional, with subscales Remorselessness, Unemotionality, and Callousness), and a Lifestyle dimension (Impulsive/Irresponsible, with subscales Thrill Seeking, Impulsiveness, and Irresponsibility). In the bifactor model, the subscales were used as observed variables, yielding a general factor related to all subscales, whereas the general and dimension factors were all unrelated to each other (see also Zwaanswijk et al., 2016). Participants rated statements on a 4-point scale, ranging from 1 (*does not apply at all*) to 4 (*applies very well*).<sup>1</sup> Higher scores indicate higher levels of psychopathic traits. The Dutch translation of the YPI was used (Das & De Ruiter, 2003), which has good construct validity (Hillege et al., 2010). Internal consistency was estimated with the reliability index McDonald’s omega ( $\omega$ ), because omega is model-based and, unlike Cronbach’s alpha, does not assume equal

<sup>1</sup> For item content, see <https://www.oru.se/jps/downloadYPI>



factor loadings (Zinbarg, Revelle, Yovel, & Li, 2005), and was moderate to good. For the total score,  $\omega$  was .87; for the Interpersonal dimension, .82; for the Affective dimension, .65; and for the Lifestyle dimension, .66.

**Conduct Problems.** The Strengths and Difficulties Questionnaire—Self-Report (SDQ; Goodman, 1997; Dutch translation: Van Widenfelt, Goedhart, Treffers, & Goodman, 2003) is a short behavioral screening instrument that measures psychosocial adjustment in adolescence. For the present study, the five-item Conduct Problems scale was used with items referring to antisocial behaviors (e.g., “I take things that are not mine from home, school or elsewhere”). Participants rated an item on a three-point scale: 1 (*not true*), 2 (*somewhat true*), or 3 (*certainly true*). Internal consistency of this scale as estimated with McDonald’s omega was .63.

### Statistical Analyses

The bifactor model of the YPI and the one-factor model of the Conduct Problem scale of the SDQ were correlated using structural equation modeling with maximum likelihood estimations. The use of latent variables, compared with the use of observed variables, gives the opportunity to examine relationships among constructs without measurement error (Oh, Glutting, Watkins, Youngstrom, & McDermott, 2004). Model fit was examined using Satorra-Bentler scaled chi-square (S-B  $\chi^2$ ) and associated degrees of freedom. However, chi square is sensitive to sample size and tends to reject reasonably fitting models if the sample is large (Van de Schoot, Lugtig, & Hox, 2012). Therefore, the comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) were also used (Van de Schoot et al., 2012). An adequate fit was concluded when CFI values were  $> .90$ , while values of  $> .95$  indicate good fit (Hu & Bentler, 1999). Values of the RMSEA and the SRMR between .05 and .08 indicate acceptable fit, while values  $< .05$  indicate good fit (Hu & Bentler, 1999). The factor loadings of the models were fixed at the measurement level to prevent interpretational confounding (Burt, 1976), so that only correlations between the latent factors were estimated. Because the SDQ is an ordinal scale, the correlations were based on a polychoric correlation matrix. To calculate

the correlations between psychopathic traits and conduct problems for each gender, ethnic, and age group, factor loadings based on the total sample were fixed at the measurement level.<sup>2</sup> Significance of the differences between correlations was examined with Fisher's *z*. For all analyses with structural equation modeling, EQS 6.2 (Bentler, 2006) was used.

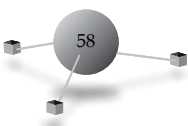
## Results and Discussion

### Psychopathy and Conduct Problems

Results regarding relations between psychopathy factors and conduct problems are shown in Table 3.1 (see also Appendix A). The test of the relationships between the Conduct Problem factor and the factors of the YPI resulted in an adequately fitting model, S-B  $\chi^2(101) = 1,627.80$ , CFI = .931, SRMR = .194, RMSEA = .073, 90% CI [.070, .076]. As hypothesized, the General Psychopathy factor was positively related to conduct problems,  $r(2,848) = .65$ , and over and above the general factor, higher scores on the specific Affective and Lifestyle dimensions were positively related to conduct problems,  $r(2,848) = .17$ , and  $r(2,848) = .15$ , respectively.<sup>3</sup> These results indicate that the psychopathy construct overall is more important in relation to conduct problems than the separate dimensions, but that it remains important to consider the dimensions (Ward, Nobles, & Fox, 2015). The bifactor model suggests that an individual characterized by high levels of psychopathic traits, as indicated by the general factor, in combination with either high levels of impulsivity, as indicated by the specific Lifestyle factor, or high levels of CU traits, as indicated by the specific Affective factor, likely has more conduct problems than an individual characterized by only high levels of psychopathic traits (cf. Ward et al., 2015).

<sup>2</sup> To examine differences in correlations between groups, the models that were compared were kept as similar as possible. For that reason, factor loadings based on the total sample were used, which was possible because the YPI is measurement invariant (Zwaanswijk et al., 2016).

<sup>3</sup> For the total sample, relating a one-factor model of the YPI (Zwaanswijk et al., 2016) to conduct problems resulted in a correlation of .65, which is similar to the correlation with the General Psychopathy factor from the bifactor model. The three-factor model, however, yielded correlations with conduct problems that were clearly higher than those found for the dimensions of the bifactor model: .54 for the Interpersonal, .63 for the Affective, and .63 for the Lifestyle dimension. This confirms the importance of the General Psychopathy factor in the bifactor model.



The specific Interpersonal dimension was unrelated to conduct problems. Colins et al. (2014) reported similar results for parent-reported conduct problems, whereas for self-reported conduct problems, they found a significant positive relation, which decreased significantly when controlling for the other psychopathy factors of the Child Problematic Traits Inventory. Other studies also found a positive, but weaker, relation of the Interpersonal dimension with conduct problems after controlling for the other two dimensions (Colins et al., 2012), or with aggression after controlling for the general factor of the Hare Self-Report Psychopathy Scale (Debowska, Boduszek, Kola, & Hyland, 2014), whereas a negative relation between the interpersonal dimension and externalizing problems has also been found after controlling for the general factor of the Psychopathy Checklist-Revised (Patrick et al., 2007). Taking common variance between the dimensions into account when using a bifactor model (Reise, 2012) can result in a crossover suppression effect (Patrick et al., 2007). That is, when all factors are included in a prediction model, the direction of the relations may reverse compared with when the factors are examined separately (Hicks & Patrick, 2006). The relation between the interpersonal dimension and psychopathy correlates needs further examination, because positive relations seem to become weaker, nonsignificant, or even negative after controlling for the other dimensions or the general factor.

### **Group Differences in Psychopathy and Conduct Problems**

The relations between psychopathy and conduct problems by gender, ethnic group, and age group are presented in Table 3.1. In general, higher general psychopathic traits corresponded to higher levels of conduct problems. Furthermore, the specific dimensions explained variance over and above the general factor in relation to conduct problems, but different dimensions were important for different groups.

For boys, only the general factor was important in relation to conduct problems. For girls, however, in addition to the important role of the general factor, higher scores on the specific Interpersonal dimension corresponded to less conduct problems,  $r(1,230) = -.31$ . This suggests that the dimensions

Table 3.1

*Correlations between conduct problems and the psychopathy general and dimension factors*

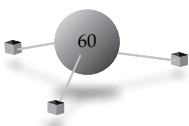
Factor	Gender		
	Total ( <i>n</i> = 2,850)	Boys ( <i>n</i> = 1,618)	Girls ( <i>n</i> = 1,232)
General Psychopathy	.63* [.61, .65]	.63* [.60, .66]	.70* [.67, .73]
Interpersonal	-.07 [-.11, -.03]	-.07 [-.12, -.02]	-.31* [-.36, -.26]
Affective	.17* [.13, .21]	.09 [.04, .14]	.18 [.13, .23]
Lifestyle	.15* [.11, .19]	.12 [.07, .17]	.09 [.03, .15]

Note. Approximation of 95% Confidence Interval between brackets, based on Fisher *r*-to-*z* transformation

\**p* < .05.

related to conduct problems may vary between boys and girls (Hillege et al., 2010; Marsee et al., 2005). Contrary to our expectations, the relation between the General Psychopathy factor and conduct problems was significantly stronger for girls than for boys (Fisher's  $z = -3.33$ ,  $p < .001$ ), which may be related to gender-linked social expectations (Charles, Acheson, Mathias, Michael Furr, & Dougherty, 2012). Due to gender role socialization, conduct problems are conceptualized as more deviant among girls than boys (Keenan & Shaw, 1997), and the youths may have rated themselves in relation to deviation from the gender-related expectations (Charles et al., 2012). Girls may be more sensitive to their own psychopathic traits and conduct problems, and rate themselves as more problematic.

For the native Dutch adolescents, but not for the immigrant groups, the specific Interpersonal dimensions explained variance in conduct problems,  $r(1,546) = -.20$ . Instead, in the immigrant groups, the specific Affective



Ethnic background			Age	
Native Dutch ( <i>n</i> = 1,548)	Western Immigrants ( <i>n</i> = 206)	Non-Western immigrants ( <i>n</i> = 1,094)	Younger ( <i>n</i> = 2,152)	Older ( <i>n</i> = 647)
.69*	.38*	.60*	.64*	.62*
[.66, .72]	[.26, .49]	[.56, .64]	[.61, .66]	[.57, .67]
-.20*	.24	-.04	-.07	-.13
[-.25, -.15]	[.11, .37]	[-.10, .02]	[-.11, -.03]	[-.21, -.05]
.05	.74*	.23*	.14*	.27*
[.00, .10]	[.67, .80]	[.17, .29]	[.10, .18]	[.20, .34]
.15	.64*	.17	.13*	.17
[.10, .20]	[.55, .71]	[.11, .23]	[.09, .17]	[.09, .24]

dimension was positively related to conduct problems, with a significantly stronger relation for Western immigrants than for non-Western immigrants (Fisher's  $z = 9.37$ ,  $p < .001$ ). Moreover, only for Western immigrants, the specific Affective factor was more important than the general factor, and the specific Lifestyle dimension was positively related to conduct problems over and above the general factor. This suggests that the expression of psychopathy differs between ethnic groups, and different social and cultural factors may be involved in the expression of psychopathy (Rubio et al., 2014). The stronger role of the specific Affective dimension in the immigrant groups may reflect anger about negative experiences, such as discrimination, particularly in the non-Western immigrant group (Berry & Vedder, 2016), or not being able to live up to parental expectations, more characteristic of Western immigrant youth (Vogels, Gijssberts, & Den Draak, 2014). Higher scores on the items regarding lack of remorse and callousness may reflect youths' attempts to

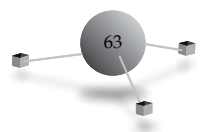
cope with this anger and avoid that others see their anger, because this might attract negative attention (i.e., further discrimination or rejection; Boog, 2014; Vedder, Wenink, & Van Geel, 2016).

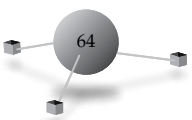
The finding that the relationship between the specific Affective dimension is stronger in the Western immigrant group than in the non-Western immigrant group may find an explanation in better coping in non-Western immigrants, who have lived for two or more generations in the new country of settlement (Vedder et al., 2016). Moreover, Western immigrants' length of residence in the Netherlands is, on average, 10 years, and they are indecisive about wanting to stay or not (Statistics Netherlands, 2015b). This may lead to a strong sense of estrangement and confusion in Western immigrant youths. They are likely to struggle with negative experiences about being a minority, although in appearance they resemble Dutch native youths. In addition, they may struggle with disappointment about not living up to parental expectations (Vogels et al., 2014). Apart from these substantive, but speculative, explanations, there could be other explanations for these relations, and we should not forget that the Western immigrant sample is relatively small, and, consequently, the findings for this group may not be very stable. Our findings underline the importance of further research on differences between ethnic groups in order to increase the feasibility of group-specific, valid, and timely identification of the development of psychopathic traits in youth (Skeem et al., 2011).

In both age groups, the specific Interpersonal dimension was unrelated to conduct problems, whereas the specific Affective dimension was positively related to conduct problems. This relation was significantly stronger for the older adolescents (Fisher's  $z = -3.03, p < .01$ ). Moreover, for the younger adolescents, the specific Lifestyle dimension was also positively related to conduct problems over and above the General Psychopathy factor. Though this study is not longitudinal, this result suggests that traits related to the Lifestyle dimension become less important in relation to conduct problems as youth grow older, which concurs with a normative view of youth development (Skeem & Cauffman, 2003).

## Conclusions

The current study focused on adolescents from a community sample. It is possible that the bifactor model is differently related to conduct problems in other samples, for example, a forensic sample (Paap et al., 2012). Perhaps interpersonal deficits are more important in relation to conduct problems in a forensic sample than in a community sample, though further research should clarify this. Moreover, conduct problems and psychopathic traits were both assessed through self-report measures. It is possible that youth high on psychopathic traits do not answer honestly or lack insight in their problems and do not perceive themselves as problematic (Lilienfeld & Fowler, 2006). Future research could focus on the relations of the bifactor model based on multi-informant data. Nevertheless, the results from this study are in line with the idea that psychopathy is one syndrome that consists of traits on three dimensions (see also Salekin, 2016). The current study stressed the importance of assessing all three dimensions in relation to conduct problems and viewing psychopathy in adolescents as one syndrome, instead of only focusing on CU traits. Restricting assessments and diagnosis to one dimension may impair (violence) risk assessment, the identification of protective factors, and treatment.





# Chapter 4

## Socioeconomic status and psychopathic traits in a community sample of youth

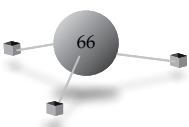
Submitted as:

Zwaanswijk, W., Van Geel, M., & Vedder, P. Socioeconomic status and  
psychopathic traits in a community sample of youth.

### Abstract

The current study aims to address inconclusive research findings regarding the relation between socioeconomic status (SES) and psychopathic traits, and SES as a moderating variable between psychopathic traits and conduct problems in a sample of Dutch adolescents ( $N = 2,432$ , 56% male). Both family and neighborhood SES are measured, with income as a proxy for the level of SES. Furthermore, relations with psychopathic traits are examined using a bifactor model of the Youth Psychopathic traits Inventory. Results show that neither family nor neighborhood SES are related to the General Psychopathy factor, a factor that includes all dimensions of psychopathy at the same time. Furthermore, over and above the General Psychopathy factor, only neighborhood SES was related to the specific Affective and Lifestyle factor. In addition, the relation between the specific Lifestyle factor and conduct problems was stronger in low family SES youth, whereas the relation between General Psychopathy factor and conduct problems was stronger in high family SES youth, and the relation between the specific Lifestyle factor and conduct problems was stronger in high neighborhood SES adolescents. These results show that over and above the General Psychopathy, the relation between SES and the separate specific dimension traits of psychopathy might depend on how SES is measured, and the role of SES as a moderator might depend on how SES is measured as well as on the measurement of conduct problems. These measurement issues may explain why hitherto studies on psychopathy report inconclusive findings as regards the role of SES.

*Keywords:* Psychopathic traits, conduct problems, bifactor model, socioeconomic status, family SES, neighborhood SES

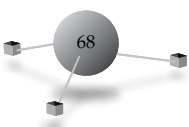


Psychopathy is a personality disorder that consists of interpersonal, affective, and behavioral characteristics (Hare, 2003). The interpersonal dimension refers to superficial charm, manipulation, grandiosity, and lying; the affective dimension includes traits such as lack of remorse or shame, shallow emotions, and callousness; and the behavioral or lifestyle dimension is about behaviors such as impulsivity, need for excitement, and irresponsibility (Cooke & Michie, 2001). For predictive and treatment purposes it is important to examine the construct of psychopathy in youth, and to examine relations between sociocultural factors and juvenile psychopathic traits (Rubio, Krieger, Finney, & Coker, 2014). This paper focuses on the relation between youth psychopathic traits and family and neighborhood socioeconomic status (SES).

SES is often taken into account as an additional or control variable when examining psychopathic traits and its correlates, but rarely the main aim of the study (Mills-Koonce et al., 2016). Studies on SES and psychopathy have provided mixed results. Some studies have found no direct relation between psychopathic traits and family SES (Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007; Mills-Koonce et al., 2016; Walsh & Kosson, 2007) or neighborhood SES (Lynam, Loeber, & Stouthamer-Loeber, 2008), whereas other studies found negative relations with family SES (Kahn, Byrd, & Pardini, 2013; Vachon, Lynam, Loeber, & Stouthamer-Loeber, 2012; Dupéré, Lacourse, Willms, Vitaro, & Tremblay, 2007) and residential instability as measure for neighborhood SES (Dupéré et al., 2007), or positive relations with family SES (Garcia, Moral, Frías, Valdivia, & Díaz, 2012; Farrington, Ullrich, & Salekin, 2010) and neighborhood SES (Mosteiro, Gomez-Fraguela, Boo, Fernandez, & Martin, 2016). Different relations have also been found for the separate dimensions of psychopathy. Negative relations between SES and the lifestyle dimension were reported (Hall, Benning, & Patrick, 2004; Harpur, Hare, & Hakistan, 1989; Vachon et al., 2012), in combination with no relation with the interpersonal and affective dimension (Harpur et al., 1989; Lynam et al., 2007; Vachon et al., 2012), or in combination with a positive relation with the interpersonal dimension (Hall et al., 2004). In short, the relationship between SES and psychopathic traits remains unclear.

The studies mentioned so far considered direct links between SES and psychopathy, but there is also an increasing number of studies that examine SES as a moderator between psychopathic traits and conduct problems. For instance, studies have shown that the relation between psychopathy or callous-unemotional (CU) traits and criminal violence is strongest in samples characterized by lower levels of neighborhood SES (Kroneman, Hipwell, Loeber, Koot, & Pardini, 2011; Markowitz, Ryan, & Marsh, 2015; Walsh & Kosson, 2007). Moreover, adolescents characterized by higher levels of impulsivity who live in low SES neighborhoods run a greater risk of delinquency than non-impulsive adolescents in low SES neighborhoods, and impulsive and non-impulsive adolescents in high SES neighborhoods (Lynam et al., 2000; Meier et al., 2008). In addition, children in residentially unstable (low SES) neighborhoods were found to be at risk for joining youth gangs if they showed psychopathic traits, whereas children in stable high SES neighborhood with or without psychopathic traits were not at risk (Dupéré et al., 2007). However, there are studies that have found the opposite moderation-effect. For example, a stronger relation between psychopathic traits and risky decision-making for children in higher family SES than in lower family SES has been found (Gao, Baker, Raine, Wu, & Bezdjian, 2009). Other studies found no interaction between CU-traits and neighborhood SES on the development of antisocial behaviors or delinquency (Kroneman et al., 2011; Ray, Thornton, Frick, Steinberg, & Cauffman, 2016; Trentacosta, Hyde, Shaw, & Cheong, 2009), but, instead found that irrespective of neighborhood SES, psychopathic traits were positively related to antisocial behaviors. Thus, also the findings on the moderating role of SES in the relation between psychopathic traits and several outcomes are inconclusive.

An alternative structural model of psychopathy might provide a clearer picture of the relationships between psychopathic traits and SES. Patrick, Hicks, Nichol, and Krueger (2007) suggested a bifactor model to conceptualize psychopathy as a compound trait entity, with separable lower-order traits, which are often unrelated to each other, but emerge together (Lilienfeld & Fowler, 2006). In youth, often only the affective dimension (or CU-traits) is taken into account, which is inconsistent with the view of



psychopathy as a compound trait entity. It has been argued that all three dimensions of psychopathy should be studied in youth (Colins et al., 2014; Salekin, 2016) and a bifactor model is consistent with this idea (Zwaanswijk, Veen, Van Geel, Andershed, & Vedder, 2016). With a bifactor model of psychopathy, the overlapping variance between all items is taken into account by the General Psychopathy factor, separating the variance that is explained by all the questions of a questionnaire from the variance that is explained by the questions only related to the dimensions (i.e., interpersonal, affective, and lifestyle dimensions; Reise, 2012). This model has been shown to represent psychopathy well (Patrick et al., 2007; Zwaanswijk, Veen, & Vedder, 2016). A bifactor model allows for a clearer appreciation of what the factors and the psychopathy construct represent, and of the relationships between these factors and outcome measures (Chen, West, & Sousa, 2006; Patrick et al., 2007). The bifactor model of psychopathy could provide an insight in the relations between SES and psychopathy as one construct, and between SES and the specific dimensions of psychopathy at the same time (Chen et al., 2006), which might help in explaining the inconclusiveness of earlier findings.

### Current Study

The goal of the current study is twofold. First, because studies are inconclusive regarding the relation between SES and psychopathy, we want to analyze the direct relations between SES and psychopathic traits in a community sample of youth. Second, neighborhood and family SES are analyzed as moderators in the relation between the bifactor model of psychopathy and conduct problems. We focus on both family SES and neighborhood SES, with income as a proxy for the level of SES. Children who live in poverty have higher risks to develop behavior problems (Qi & Kaiser, 2003). Low income has been found related to family stress and lack of social support (Qi & Kaiser, 2003), and parents experience more problems with parenting than parents with a modal income (Snijders, 2006), which are factors associated with the development of conduct problems (Brotman et al., 2003).

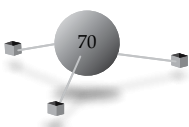
Previous studies have shown that the psychopathy factors of the bifactor model are related to conduct problems (Patrick et al., 2007; Zwaanswijk et al., 2016). However, it has not been examined how the relation between the psychopathy factors of the bifactor model and conduct problems varies with different socioeconomic status. The majority of studies have found that the association between conduct problems and a total score of psychopathic traits or separate dimensions of psychopathy is stronger in low SES than in high SES (e.g., Dupéré et al., 2007; Kroneman et al., 2011; Lynam et al., 2000; Meier et al., 2008; Walsh & Kosson, 2007). Therefore, it is hypothesized that the association between all factors and conduct problems are expected to be stronger in low SES compared to high SES, for both family and neighborhood SES.

By examining the direct relation between psychopathy and SES via a bifactor model, the current study would gain more insight in whether or not SES is an important construct to consider as risk or protective factor in relation to psychopathic traits. By using the bifactor model, it can be established which factors of psychopathy are related to SES. In addition, both family and neighborhood SES are taken into account. This way, the difference between the two types of SES can be examined. This could be important for developing and delivering interventions adapted to the needs of youth with psychopathic traits.

## Method

### Participants

The total sample consisted of 2,855 adolescents. Neighborhood income was based on census data retrieved by postal codes of the participants. Therefore, the participants who did not indicate their postal codes ( $n = 155$ ) and participants who gave a non-existing postal code ( $n = 57$ ) were not included in the analyses. In addition, there were participants who only gave the numerals, and no letters of the postal code ( $n = 211$ ), which made it impossible to establish the neighborhood of the participant. Therefore, these participants were also excluded, which resulted in a final sample of 2,432 participants residing in 817 different neighborhoods. There were 1,351 boys (56%) and 1,081 girls in this sample from 21 junior vocational and five senior vocational high schools across the Netherlands. After completing junior vocational



secondary education, students can continue further vocational training within senior vocational education. The average age of the sample was 14.50 years ( $SD = 1.67$ ), and there were 41 participants who did not report their age. About 55% was from native-Dutch origin, the other 45% had a different ethnic background (e.g., Moroccan-Dutch, Turkish-Dutch, Surinamese-Dutch). Following Statistics Netherlands (2000), we distinguished three groups: 1327 native-Dutch, 168 Western immigrants (e.g., Polish or French), and 937 non-Western immigrants (e.g., Surinamese or Moroccan).

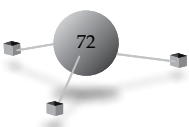
## Measures

**Psychopathic Traits.** The Youth Psychopathic traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002) is a 50-item self-report measure to assess the 'core' traits of psychopathy in youths from the general population. The measure consists of ten subscales (e.g., Dishonest Charm, Grandiosity, Lying, Manipulation, Remorselessness, Unemotionality, Callousness, Thrill Seeking, Impulsiveness and Irresponsibility). A bifactor model was found to fit the questionnaire best, resulting in the subscales loading onto a General Psychopathy factor and simultaneously onto three dimensions; an interpersonal dimension (Grandiose/Manipulative), an affective dimension (Callous/Unemotional), and a lifestyle dimension (Impulsive/Irresponsible; Zwaanswijk, Veen, & Vedder, 2016). Participants were asked to indicate to which degree the 50 statements applied to them on a four-point Likert scale, ranging from 1 (*does not apply at all*) to 4 (*applies very well*). Sample items are, "When I need to, I use my smile and my charm to use others" for the interpersonal dimension, "When other people have problems, it is often their own fault, therefore, one should not help them" for the affective dimension, and "I get bored quickly by doing the same thing over and over" for the lifestyle dimension. We used the Dutch translation of the YPI (Das & De Ruiter, 2003), which has adequate construct validity (Hillege, Das, & De Ruiter, 2010). Internal consistency as estimated with McDonald's omega ( $\omega$ ) for the YPI total score and dimension scores were moderate to good. For the total score  $\omega$  was .87, for the interpersonal dimension  $\omega$  was .82, for the affective dimension  $\omega$  was .65, and for the lifestyle dimension  $\omega$  was .66.

**Conduct Problems.** The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) is a short behavioral screening instrument that measures psychosocial adjustment in adolescence. For the present study, the Dutch translation (Van Widenfelt, Goedhart, Treffers, & Goodman, 2003) of the five item conduct problems scale was used with items referring to antisocial behaviors (e.g., “I take things that are not mine from home, school or elsewhere”). Participants rated an item on a three-point ordinal scale: 1 (*not true*), 2 (*somewhat true*), or 3 (*certainly true*). Internal consistency of this scale as estimated with McDonald’s omega was .63.

**Family SES.** The Family Affluence Scale (FAS-II; Boyce, Torsheim, Currie, & Zambon, 2006) was used to examine Family SES. It is a brief asset-based measure of family wealth in adolescent surveys, which is internationally used (Currie et al., 2008). This self-report measure consists of four questions, developed so that adolescents could give an approximation of their socioeconomic status, assuming that they do not know how much money their parents earn. These questions are “Does your family own a car, van, or truck?”; “Do you have a bedroom for yourself?”; “During the past 12 months, how many times did you travel away on holiday with your family?”; and “How many computers does your family own?”. The FAS has been found to be a valid indicator of family SES when asked directly to youth (Currie et al., 2008). The composite score was divided into two categories; low/moderate SES (score 4-10) and high SES (11-13), following the cut-offs by Boyce et al. (2006). The low and moderate SES category were taken together, because few adolescents reported low SES.

**Neighborhood SES.** Neighborhood membership was determined by the postal codes provided by the participants. In the Netherlands, postal codes consist of four digits and two letters, which were all used to determine the neighborhood of the participant. Neighborhood income, which was used as a proxy for Neighborhood SES, was provided by Statistics Netherlands ([www.cbsinuwbuurt.nl](http://www.cbsinuwbuurt.nl)). Neighborhood income was defined as the average income per resident in a particular neighborhood area. In order to use Neighborhood SES as a moderating variable, neighborhood income was considered low when it was below the poverty level of 2013 at 22,800 euro.



## Procedure

Schools across the Netherlands were approached for participation. Parents of participants in junior vocational high schools were asked to complete and sign an informed consent form before their children could participate in the study. Participants from senior vocational high schools were all over 16 years of age, and hence signed their own consent form. Of all adolescents and their parents who were asked for participation, 3% declined to participate. The questionnaire was digitally administered in a classroom setting. Before completing the questionnaire students received a short instruction explaining the research aims. In addition, students were informed that completing the questionnaire was voluntary and anonymous, and that the information they provided would be treated confidentially. Two members of the research team were always present during the administration in order to answer questions and solve possible computer problems. The teacher was present but not directly involved in the administration. The Institutional Review Board of Ethics at Leiden University approved of the study.

## Statistical Analyses

Because the adolescents are nested within neighborhoods, we examined whether multilevel analyses should be conducted. Using multilevel structural equation modeling, we examined whether latent psychopathy scores of the bifactor model differed per neighborhood. The intraclass correlations (ICCs) of the subscales (i.e., the observed variables) were all .01 or even less. Furthermore, the ICC for the latent factors were .04 for the General factor, .05 for the Interpersonal factor, .04 for the Affective factor, and .01 for the Lifestyle factor, which means that around 4% of the variation in psychopathy scores can be attributed to the neighborhood adolescents live in. Following Hox (2013), small ICCs (i.e., smaller than .05) indicate that there is no need for complex group level modeling. In addition, there were 817 neighborhoods with an average of 2.97 participants per neighborhood (range of 1 to 187 participants in one neighborhood), thus we proceeded with regular structural equation modeling. To prevent interpretational confounding (Burt, 1976), measurement level factor loadings were fixed, and only relations of

the structural model remained free to estimate. The SDQ is an ordinal scale with only three answering options, and therefore the correlations between psychopathic traits and conduct problems were based on a polyserial correlation matrix. Correlations between the high and low SES groups were compared with Fisher  $r$ -to- $z$  transformation. For structural equation modeling EQS 6.3 (Bentler, 2006) was used. Because of multiple factors in one analysis, Bonferroni-correction was performed to reduce family-wise error, and an alpha of .0125 (.05/4) was used to indicate significance.

### Results

Family SES showed a relatively high mean score ( $M = 10.49$ ,  $SD = 1.69$ ) in a range of 4 to 13, indicating that most adolescents indicated to have a high Family SES, and few reported low Family SES. Furthermore, mean Neighborhood SES of the adolescents was relatively low ( $M = 21,862$ ,  $SD = 5,123$ , range 11,200 - 43,300); below the poverty line of 22,800 euro.

### Correlations Between SES and Psychopathy

The direct relation between Family SES, Neighborhood SES and the bifactor model of psychopathy was examined using structural equation modeling, which showed a good fit (S-B  $\chi^2(63) = 343.77$ ,  $p < .001$ , CFI = .932, RMSEA = .043, 90% CI [.039; .048], SRMR=.034). All correlations are displayed in Table 4.1. Family SES and Neighborhood SES were significantly, but not strongly correlated ( $r(2419) = .30$ ,  $p < .001$ ). Neither Family SES nor Neighborhood SES was significantly correlated to the General Psychopathy factor. Over and above the general factor, only Neighborhood SES was significantly correlated to the specific Affective dimension, whereas Family SES was not. Moreover, neither Family SES nor Neighborhood SES was significantly correlated to the specific Interpersonal dimension. In addition, Neighborhood SES was related to the specific Lifestyle dimension, whereas Family SES was not.

Table 4.1

*Relations between Family and Neighborhood SES and the bifactor model of psychopathy*

	Family SES	General Psychopathy	Interpersonal	Affective	Lifestyle
Family SES	-	.04	.06	-.08	.04
Neighborhood SES	.30*	-.05	.05	-.11*	.16*

*Note.* Psychopathy factors of the bifactor model are specified to be uncorrelated.

\*  $p < .0125$

The model relating the bifactor model of psychopathy to conduct problems shows a good fit ( $S-B\chi^2(101) = 1369.31, p < .001, CFI = .931, RMSEA = .072, 90\% CI [.069; .075], SRMR = .192$ ). The general factor of psychopathy was significantly related to conduct problems (see Table 4.2), and over and above the general factor the specific Affective factor and specific Lifestyle factor were related to conduct problems as well. However, the specific Interpersonal factor was not significantly related to conduct problems.

### SES as Moderator between Psychopathic Traits and Conduct Problems

Family SES was divided into high and low Family SES in order to study whether the relation between psychopathic traits and conduct problems would differ for SES groups. Table 4.2 shows the correlations between the psychopathy factors and conduct problems for the different groups. In the high Family SES group conduct problems were positively related to the General Psychopathy factor, as well as to the specific Affective and Lifestyle dimensions, whereas in the low Family SES group, conduct problems were only related to General Psychopathy and the specific Lifestyle dimension. The relation between conduct problems and the General Psychopathy factor was significantly stronger in the high Family SES group than in the low Family SES group (Fisher  $Z = 3.09, p < .01$ ). Furthermore, the relation between conduct problems and the specific Lifestyle factor was weaker in the high Family SES group (Fisher  $Z = -2.54, p < .01$ ).

Similar to Family SES, Neighborhood SES was divided into high and low Neighborhood SES to examine whether Neighborhood SES would

Table 4.2

*Correlations between conduct problems and the psychopathy general and dimension factors*

	Conduct problems			Fisher's Z
	Family SES			
	Total sample ( <i>n</i> = 2,427)	High FSES ( <i>n</i> = 1,792)	Low FSES ( <i>n</i> = 640)	
General Psychopathy	.63*	.65*	.56*	3.09*
Interpersonal	-.11	-.12	-.04	-1.75
Affective	.17*	.16	.23	-1.58
Lifestyle	.21*	.19*	.30*	-2.54*

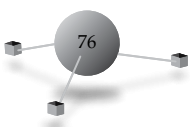
Note. FSES is Family Socio-Economic Status; NSES is Neighborhood Socio-Economic Status.

\*  $p < .0125$

moderate the relation between psychopathic traits and conduct problems. Comparable to the high Family SES group, in the high Neighborhood SES group, conduct problems were positively related to General Psychopathy, and the specific Affective and Lifestyle dimension. However, in the low Neighborhood SES group, conduct problems were only related to General Psychopathy. The strength of the relationship was similar to the one found in the high Neighborhood SES group (Fisher  $Z = 1.62$ ,  $p = .105$ ). The relations between conduct problems and the specific Affective factor and specific Lifestyle factor were stronger for the high Neighborhood SES group than for the low Neighborhood SES group (Fisher  $Z = 2.51$ ,  $p < .01$  for the specific Affective dimension, and Fisher  $Z = 5.71$ ,  $p < .01$  for the specific Lifestyle dimension).

### Discussion

The aim of the current study was to examine the relationships between both Family and Neighborhood SES on the one hand and psychopathic traits on the other. Also the study set out to analyze SES as a moderator in the relation between psychopathic traits and conduct problems. In order to examine these



Conduct problems		
Neighborhood SES		
High NSES ( <i>n</i> = 1,081)	Low NSES ( <i>n</i> = 1,341)	Fisher's <i>Z</i>
.61*	.65*	1.62
-.05	-.15	2.61*
.21*	.11	2.51*
.34*	.12	5.71*

relations and roles of SES it was decided to use an alternative structural model of psychopathy: a bifactor model. In such a model, all measured variables load onto a General Psychopathy factor, whereas only specific subsets of variables load onto separate specific factors that represent the three dimensions, i.e., Interpersonal, Affective, and Lifestyle dimension. The bifactor model is consistent with the idea that the construct of psychopathy should include all dimensions of psychopathy (Salekin, 2016), and it allows for a clearer appreciation of the relationships between the factors and outcome measures (Chen et al., 2006; Patrick et al., 2007).

The results of this study show that there is no direct relation between the General Psychopathy factor and SES. Studies have shown that interpersonal and affective traits are stable over time (Storey, Hart, Cooke, & Michie, 2016; Vachon et al., 2013) and highly heritable (Viding & Larsson, 2010). Studies have shown that non-shared environmental factors influence the development of psychopathic traits, whereas shared environmental factors, like SES, do not (Bezdjian, Raine, Baker, & Lynam, 2011; Larsson, Andershed, & Lichtenstein, 2006). However, this finding might need some qualification in relation to studies showing that in younger samples (i.e., five-

year-old children) shared environmental factors might have an influence on the development of psychopathic traits (Tuvblad, Fanti, Andershed, Colins, & Larsson, 2017). This could indicate that socioeconomic background influences the development of psychopathic traits at an early age, and that, when children grow older this influence diminishes (Rhee & Waldman, 2002).

The current study also showed that family SES was not related to psychopathy dimensions, whereas neighborhood SES was directly associated to the level of impulsivity and irresponsible behavior. The different results for family and neighborhood SES suggest that the relation between SES and psychopathy dimensions depends on the measurement of SES. Furthermore, by using a bifactor model, the current study shows that the relation between psychopathy as a whole is not related to SES, whereas specific affective and lifestyle traits can be related to neighborhood SES.

The moderation-effect of family SES on the relation between the specific Lifestyle factor and conduct problems was as expected; the relation between the specific Lifestyle factor and conduct problems was stronger in low family SES youth than in high family SES youth (e.g., Kroneman et al., 2011; Meier et al., 2008). However, the positive correlation between neighborhood SES and specific Lifestyle dimension was unexpected. Moreover, unexpectedly, the moderation-effect of neighborhood SES on the relation between the specific Lifestyle factor and conduct problems showed a stronger relation in the high neighborhood income group than in the low neighborhood income group. Furthermore, the relation between General Psychopathy and conduct problems was stronger in the high family SES group than in the low family SES group. This might be explained by the social push hypothesis (Raine, 2002; Ray et al., 2016; Walsh, 2008). The social push hypothesis states that relations between individual characteristics and problem behavior only become apparent in a less harmful social context, such as a high-income neighborhood, which causes a stronger relation between the individual characteristics and problem behavior in the less harmful social context than in the harmful social context. In a harmful social context, the problem behavior may emerge regardless of one's individual characteristics. Individual characteristics do not add to the manifestation of problem behavior in these contexts. For the

current study this means that the covariation between psychopathic traits and conduct problems comes only to light in high SES neighborhoods, whereas in low SES neighborhoods psychopathic traits show up regardless of youth's psychopathic traits.

Another possible explanation for the unexpected moderation-effect might be based on the specific type of externalizing problem behavior that has been examined. Markowitz et al. (2015) found that CU traits were more strongly predictive of violent delinquency in low-income neighborhoods, whereas the relation between CU traits and instrumental delinquency was stronger in high-income neighborhoods. Violent delinquency involved using weapons and fighting, whereas instrumental delinquency included stealing and lying. Alternatively, in the current study, the conduct problem subscale of the SDQ has been used, a short screening that focuses on non-aggressive antisocial behavior including questions on stealing and lying. Thus, the SDQ might measure conduct problems related to psychopathic traits which are more prominent in high- than in low-income neighborhoods. Future studies should analyze the dependence of the moderation on the measure used for conduct problems.

### **Limitations and Future Research**

Income was used as a proxy for neighborhood SES, which is a limited measure of neighborhood SES. Other measures, such as unemployment rate and level of education of the residents of a neighborhood, or neighborhood risk factors such as access to drugs, were not taken into account. On the other hand, neighborhood income is a relatively easy marker for policy makers, and defines an easy to target risk group, thus there are also advantages to using only neighborhood income (Markowitz et al., 2015).

In addition, Family SES as measured by the FAS showed that the FAS was not very sensitive to the distribution of wealth in the sample. Consequently adolescents reported themselves with high family affluence and only few were categorized as belonging in the low SES group. Thus, in order to compare high and low family SES, we had to combine the medium and low groups to create the lower family SES group for the moderation-

analysis. Family SES as continuous variable was difficult to implement, because we used a bifactor model in structural equation modeling to examine the relations. Interaction variables are created based on all observed variables involved in the interaction (Little, Card, Bovaird, Preacher, & Crandall, 2007), but in the bifactor model the observed variables are related to two separate latent factors. Therefore, groups of SES had to be created to examine the moderating-effects of SES. Future studies could examine whether the findings could be replicated using different measures of family and neighborhood SES.

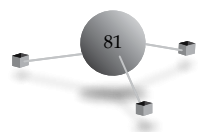
Future studies could also focus on the relation between SES and psychopathy including mediators. For example, a recent study found that household income was not uniquely predictive of callousness, empathy, and conduct problems, but this relation was mediated by sensitivity of the mother (Mills-Koonce et al., 2016). Thus, the relation between SES and psychopathic traits might be influenced by other factors, which might explain why the results of different studies are inconclusive (Bradley & Corwyn, 2002).

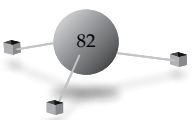
## General Conclusion

There is no direct relation between family or neighborhood SES and General Psychopathic traits in adolescents, when controlling for the three specific dimensions of psychopathy in the bifactor model. In addition, the relation between the specific Lifestyle factor and conduct problems was stronger in low family SES than in high family SES, whereas the relation between General Psychopathy factor and conduct problems was stronger in high family SES. Furthermore, the relation between the specific Lifestyle factor and conduct problems was also stronger in high neighborhood SES. Using a bifactor model to study these relations gives the opportunity to examine how the construct of psychopathy is related to SES and how the individual dimensions, after controlling for the General Psychopathy factor, are related to SES. These results show that there is no direct relation between SES and the General psychopathy construct, when taking into account all dimensions of psychopathy consistent with the view of psychopathy as a compound entity (Patrick et al., 2007). Furthermore, the use of the bifactor shows that over and above the General Psychopathy construct, there are relations between

## Psychopathy and SES

SES and the separate specific dimension traits of psychopathy. Moreover, these relations with the specific dimensions of psychopathy might depend on how SES is measured, because there was a negative relation between neighborhood SES and the specific Affective dimension, a positive relation between neighborhood SES and the specific Lifestyle dimension, but no relation between family SES and the specific psychopathy dimensions. In addition, the current study shows that the role of SES as a moderator might depend on how SES is measured as well as on the measurement of conduct problems. This could explain why studies report such inconclusive result regarding the relation with SES. Furthermore, the results show that high SES would not necessarily be a protective factor for adolescents, and other factors than only SES should be taken into account when developing and delivering interventions for youth that show increased psychopathic traits.

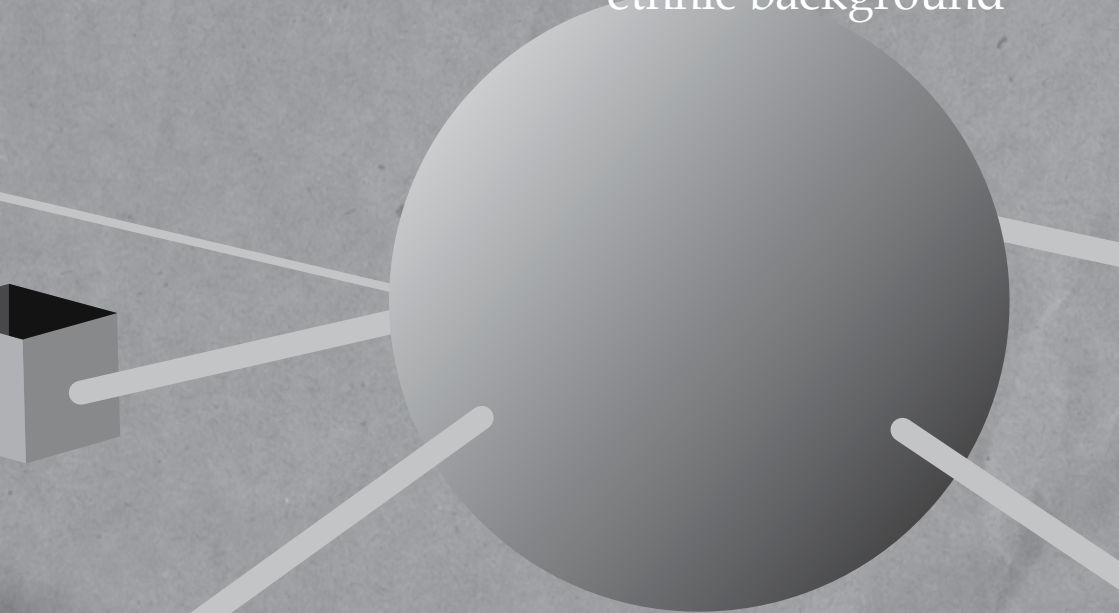




# Chapter 5



## Variants of psychopathy, and the dependence on gender, age, and ethnic background



Zwaanswijk, W., Van Geel, M., Andershed, H., Fanti, K.A., & Vedder, P. (in press). Variants of psychopathy, and the dependence on gender, age, and ethnic background. *Journal of Personality Disorders*.

**Abstract**

The current study examines variants of psychopathy in a community sample of Dutch adolescents ( $N = 2,855$ , 57% male) using three dimensions of psychopathy and trait anxiety. Five subgroups were identified of which two with high levels of psychopathic traits. The first seemed consistent with primary psychopathy, high on all dimensions with additional low levels of anxiety, whereas the second variant showed elevated levels of anxiety, consistent with secondary psychopathy. Two variants low on psychopathic traits were identified: a low-risk variant, and an anxious variant. Furthermore, a moderate-risk group was found, with slightly above average psychopathy traits, and average levels of mental health problems. The secondary psychopathy and the anxious variant reported the most problem behaviors. Girls, younger adolescents, and non-Western immigrant youth were overrepresented in the secondary group. These findings show that in a community sample psychopathy is a heterogeneous phenomenon.

*Keywords:* Psychopathic traits, Youth Psychopathic traits Inventory, psychopathy variants, primary psychopathy, secondary psychopathy

## Variants of psychopathy

Psychopathy is a personality disorder characterized by interpersonal (e.g., superficial charm, manipulation, grandiosity, and lying), affective (e.g., lack of remorse or shame, shallow emotions, and callousness), and behavioral or lifestyle traits (e.g., impulsivity, need for excitement, and irresponsibility; Cooke & Michie, 2001). Despite evidence for the existence of subtypes that differ in phenotypic expression, external correlates, and etiology, psychopathy has often been viewed as an undifferentiated construct (Arieti, 1963; Blackburn, 1975; Drislane et al., 2014; Hervé, 2007; Karpman, 1941; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003; Yildirim & Derksen, 2015). The current study aims to contribute to the literature on identifying and differentiating between variants of psychopathy in a large community sample of Dutch adolescents.

Among the first to distinguish variants of psychopathy, Karpman (1941) noted two groups that seemed largely similar with regard to phenotypic behavior. These variants could be distinguished by their etiology and thus, have different treatment needs and responses (Skeem et al., 2003). Primary psychopathy was conceptualized as a heritable deficit in emotional sensitivity, typically lacking anxiety and fear, whereas secondary psychopathy was thought to develop due to environmentally acquired affective disturbances, exhibiting high levels of anxiety and depression, anger, aggression and impulsiveness (Karpman, 1948). Secondary psychopathy was viewed as a process of adaptation to environmental disturbances such as abuse or trauma, and was deemed more susceptible to treatment compared to primary psychopathy. Other scholars also conceptualized a genetically based variant and a variant with psychopathic traits caused by competition for scarce resources (Mealey, 1995) or by other negative environmental experiences (i.e., child abuse, trauma) which cause children to become dissociated with their emotions (Porter, 1996). Blackburn (1975) empirically identified two variants of psychopathy in non-psychotic male offenders; one variant with low levels of neuroticism which represented the more genetically-based primary psychopathy, and one variant with high levels of anxiety, depression, and impulsivity which Blackburn labeled secondary psychopathy. Further conceptualizations of primary and secondary psychopathy resulted in studies using an additional anxiety measure to distinguish individuals who score

high on psychopathy into low-anxious and high-anxious variants, resembling primary and secondary subtypes respectively (e.g., Skeem, Johansson, Andershed, Kerr, & Loudon, 2007).

Recent research has provided more empirical evidence for a distinction between two groups of individuals scoring high on psychopathy measures (e.g., Hicks, Markon, Patrick, Krueger, & Newman, 2004; Skeem et al., 2007). For example, Hicks et al. (2004) found two subtypes in prisoners scoring high on psychopathy, labeled emotionally stable and aggressive, that resemble primary and secondary psychopathy. However, some scholars doubt whether aggressive psychopathy should be understood as secondary or symptomatic psychopathy (Hervé, 2007; Mokros et al., 2015), or rather as a different type of idiopathic psychopathy (cf. Arieti, 1963; Karpman, 1948). Subgroups of individuals scoring high on psychopathy have been found in youth offender samples (Kimonis, Frick, Cauffman, Goldweber, & Skeem, 2012; Lee, Salekin, & Iselin, 2010; Vaughn, Edens, Howard, & Smith, 2009), and adult and youth community samples (e.g., Coid, Freestone, & Ullrich, 2012; Colins, Fanti, Salekin, & Andershed, 2016; Drislane et al. 2014; Docherty, Boxer, Huesmann, O'Brien, & Bushman, 2016; Fanti, Demetriou, & Kimonis, 2013; Falkenbach, Reinhard, & Arson, 2017; Vincent, Vitacco, Grisso, & Corrado, 2003). Compared to primary psychopathy, secondary psychopathy during adolescence has been found to be associated with emotional instability, withdrawal (Skeem et al., 2007), negative affect (Gill & Stickle, 2016), lower levels of self-esteem (Fanti et al., 2013), reactive aggression, greater histories of childhood maltreatment (Kimonis, Skeem, Cauffman, & Dmitrieva, 2011), delinquency (Vaughn et al., 2009), depression (Kimonis et al., 2012), and internalizing psychopathology (Poythress et al., 2010). Because secondary psychopathy has been found to be related to more negative outcomes, youth with this variant have been thought to be at a higher and unique risk of clinical problems (Gill & Stickle, 2016).

Some studies that examine variants of psychopathy have taken gender into account (e.g., Colins et al., 2016; Falkenbach et al., 2017; Fanti et al., 2013; Gill & Stickle, 2016). Even though both primary and secondary variants have been found in males and females (Falkenbach et al., 2017; Hicks et al., 2004), studies suggest that males are overrepresented in the primary group, whereas

females are overrepresented the secondary psychopathy group (Falkenbach, Stern, & Creevy, 2014; Fanti et al., 2013; Gill & Stickle, 2016; Meehan, Maughan, Cecil, & Barker, 2016). In addition, females with a psychopathic personality, especially secondary psychopathy, may be more pathological and aggressive (Falkenbach et al., 2017), and show less physical aggression but more relational aggression, anxiety, and PTSD symptoms (Colins et al., 2016) than males. Together these differences show the significance of taking gender into account in studies on psychopathy.

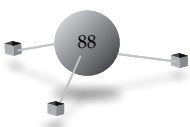
### **Current Study and Hypotheses**

The current study examines whether the three dimensions of the Youth Psychopathic traits Inventory (YPI), a self-report assessing psychopathic traits (i.e., interpersonal, affective, and behavioral aspects) in community samples of adolescents (Andershed, Kerr, Stattin, & Levander, 2002), together with level of anxiety can be used to identify variants of psychopathy in a large community sample of Dutch adolescents. Studying a large community sample expands the knowledge on the total continuum of the psychopathy construct, also including the lower end of the spectrum (Falkenbach et al., 2014). To our knowledge, the present study is the first to examine variants of psychopathy using the three dimensions of the YPI and anxiety in a large community sample of adolescents. Previous studies have shown that the three dimensions of psychopathy and anxiety combined yield different variants in male juvenile offenders (Kimonis et al., 2012), and the current study can give more insight in whether the variants are already visible in youth from the general population. Different from other studies that focused only on callous-unemotional traits among youth (e.g., Gill & Stickle, 2016; Meehan et al., 2016), the current study takes into account all three dimensions of psychopathy. By doing so, intervention efforts can be more specifically focused based on the needs of youth differentiated on the three psychopathy dimensions (i.e., interpersonal, affective, and lifestyle dimensions) in combination with different levels of anxiety. In addition, group differences between gender, age, and ethnic background will be examined to validate the relevance of the variants of psychopathy across these demographic variables (Yildirim

& Derksen, 2015). Based on findings of previous studies (Docherty et al., 2016; Fanti et al., 2013), we expected to find four groups: (1) a variant high on all dimensions of psychopathic traits and low on anxiety (“PP/ANX-”), that resembles primary psychopathy; (2) a variant high on all dimensions of psychopathic traits, especially the lifestyle dimension, and high on anxiety (“PP/ANX+”), that resembles secondary psychopathy; (3) a low-risk group, low on the dimensions of psychopathic traits and low on anxiety; and (4) an anxious group, low on the dimensions of psychopathic traits, but high on anxiety.

To validate the subgroups, we compare the groups on conduct problems, hyperactivity, emotional problems, peer problems, prosocial behavior, and self-esteem. Psychopathy has been related to increased problem behavior (Dolan & Rennie, 2007), and the second hypothesis is that the two high-scoring psychopathy variants will score higher on problem behavior scales and lower on prosocial behavior than the low-risk or anxious subgroup (e.g., Fanti et al., 2013; Poythress et al., 2010; Skeem et al., 2007). Moreover, secondary psychopathy is theorized to be caused by negative environmental disturbances such as maltreatment, and low self-esteem is common among maltreated youth (e.g., Kim & Cicchetti, 2004). Therefore, our third hypothesis is PP/ANX+ to score lower on self-esteem than PP/ANX-. Fourth, we expect that youth in the PP/ANX- group does not differ from low-risk youth on emotional problems and self-esteem. Primary psychopathy has been found to be characterized by relatively normal scores on personality measures (Hicks et al., 2004) and better adjustment than the secondary variant (Fanti et al., 2013; Meehan et al., 2016). Because anxiety, emotional problems, and peer problems are internalizing problems (Van Widenfelt, Goedhart, Treffers, & Goodman, 2003), our fifth hypothesis is that the anxious group will report more emotional problems and peer problems than the other groups.

Moreover, we aimed to distinguish the subgroups on differences in gender, age, and ethnic background. Based on previous studies, we expected that both psychopathy variants will be more representative of boys than girls (e.g., Fanti et al., 2013). Furthermore, most research has been conducted in



North American and Western European males, and it is unclear how the expression of psychopathy generalizes to other cultures and ethnicities (Yildirim & Derksen, 2015). Because different ethnic groups were evenly distributed between primary and secondary variants in previous research, no differences between native Dutch, Western immigrant and non-Western immigrant youth are expected (Docherty et al., 2016; Hicks et al., 2004; Kahn et al., 2013). Furthermore, because the distinction between the variants of psychopathy has been found in both youth and adults, we do not expect differences between younger and older adolescents (Kahn et al., 2013; Lee et al., 2010).

### Methods

#### Participants

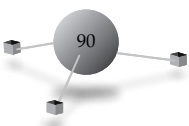
Participants were 2,874 adolescent students from 21 junior vocational high schools and five senior vocational high schools across the Netherlands. Nineteen participants did not finish the questionnaire, leaving 2,855 participants who were included in the analyses. Fifty-seven percent of the participants were male ( $n = 1,635$ ). The average age was 14.47 years ( $SD = 1.69$ ). Fifty-one participants did not report their age. In the current study we distinguished younger (12 - 15 years old;  $n = 2,152$ ) and older (16 - 24 years old;  $n = 640$ ) youth. Adolescents' ethnic background was determined based on the birthplace of the (grand)parents. In order to be classified as an immigrant, at least two grandparents had to be born in the same country outside the Netherlands. When only one grandparent was born outside the Netherlands, the participant was classified as native Dutch. There were 99 participants who did not know their grandparents' birthplace. We classified them based on their parents' or their own birthplace. The sample was diverse in ethnic background: 55% was of native-Dutch origin, 10% had a Moroccan-Dutch background, 8% had a Turkish-Dutch background, 8% was of Surinamese-Dutch origin, 4% of Antillean-Dutch origin, and 16% had other ethnic backgrounds, such as Indonesian, Chinese, or German. Following Statistics Netherlands (2000), we distinguished three groups: 1,554 adolescents were native-Dutch, 209 adolescents had a Western immigrant background (i.e.,

from E.U.-member states), and 1,109 a non-Western immigrant background (e.g., Surinamese or Moroccan).

## Measures

**Psychopathic Traits.** The Youth Psychopathic traits Inventory (YPI; Andershed et al., 2002) is a 50-item self-report measure to assess the 'core' traits of psychopathy in youth from the general population. The measure consists of ten subscales (e.g., Dishonest Charm, Grandiosity, Lying, Manipulation, Remorselessness, Unemotionality, Callousness, Thrill Seeking, Impulsiveness and Irresponsibility), loading onto three dimensions; an interpersonal (Grandiose/Manipulative), an affective (Callous/Unemotional), and a lifestyle dimension (Impulsive/Irresponsible). Participants were asked to indicate to which degree the 50 statements applied to them on a four-point Likert scale, ranging from 1 (*does not apply at all*) to 4 (*applies very well*). Sample items are, "When I need to, I use my smile and my charm to use others", "When other people have problems, it is often their own fault, therefore, one should not help them", and "I get bored quickly by doing the same thing over and over" for the interpersonal, affective, and lifestyle dimension respectively. Higher scores indicate higher levels of psychopathic traits. We used the Dutch translation of the YPI (Das & De Ruiter, 2003), which has adequate construct validity (Hillege, Das, & De Ruiter, 2010). Internal consistency as estimated with McDonald's omega ( $\omega$ ) for the dimension scores were moderate to good. For the interpersonal dimension  $\omega$  was .78, for the affective dimension  $\omega$  was .63, and for the lifestyle dimension  $\omega$  was .69.

**Anxiety.** The State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) consists of two questionnaires. Only the 20 items assessing trait anxiety (STAI-T) were used. Participants answered on a four-point Likert-scale ranging from 1 (*almost never*) to 4 (*almost always*) whether they agreed with the statements. Ten items were positively stated (anxiety present, e.g., "I worry too much over something that does not really matter") and ten items were negatively stated (anxiety absent; e.g., "I am a steady person"). The official Dutch translation of the STAI was used, which has adequate construct validity (Van der Ploeg, 2000). Internal consistency of



the STAI-T scores was adequate (McDonald's  $\omega = .87$ ). Higher scores indicated higher trait anxiety.

**Mental Health Problems.** The Strengths and Difficulties Questionnaire – Self-Report (SDQ; Goodman, 1997) is a short behavioral screening instrument for youth. The official Dutch translation of the SDQ was, which has adequate concurrent validity, and moderate to good internal consistency for each subscale (Van Widenfelt et al., 2003). The 25 items of the SDQ can be divided into five subscales, each consisting of five items. The subscales are emotional problems (e.g., “I have many fears, I am easily scared”), conduct problems (e.g., “I fight a lot. I can make other people do what I want”), hyperactivity/inattention (e.g., “I am constantly fidgeting or squirming”), peer relationship problems (e.g., “I would rather be alone than with people of my age”), and prosocial behavior (e.g., “I am kind to younger children”). Participants were asked to indicate to which degree they rate an item as true for themselves on a three-point ordinal scale: 1 (*not true*), 2 (*somewhat true*), or 3 (*certainly true*). For emotional problems, we found an  $\omega$  of .75, an  $\omega$  of .66 for conduct problems, an  $\omega$  of .77 for hyperactivity, an  $\omega$  of .54 for peer problems, and an  $\omega$  of .73 for prosocial behavior.

**Self-Esteem.** The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) is a 10-item self-report measure for global self-esteem in adolescence and adulthood. The Dutch translation of the RSES was used in the present study, which showed high congruent validity (Franck, De Raedt, Barbez, & Rosseel, 2008). The participants rated how they feel in general on a four-point scale, ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). Items were both positively stated (e.g., “I take a positive attitude toward myself”) and negatively stated (e.g., “I feel I do not have much to be proud of”). Internal consistency in the present study amounted to an  $\omega$  of .82. Higher scores indicated higher self-esteem.

### Procedure

Schools across the Netherlands were approached for participation. Parents of participants in junior vocational high schools were asked to sign a consent form. Participants from senior vocational high schools were

all over 16 years of age, and hence signed their own consent form. Of all adolescents and their parents who were asked for participation, 3% declined to participate. The questionnaires were digitally administered in a classroom setting. Before completing the questionnaires, students received a short instruction explaining the research aims. In addition, students were informed that completing the questionnaire was voluntary and anonymous and that the information they provided would be treated confidentially. During the administration of the questionnaire, two members of the research team were always present to answer questions. The teacher was present but not involved. The Institutional Review Board of Ethics approved of the study.

### Statistical Analyses

Latent profile analysis (LPA) was used to identify distinct variants of psychopathy, based on the interpersonal, affective, and lifestyle dimension of the YPI, and anxiety as continuous indicators. The analyses were run using Mplus 7 statistical software (Muthén & Muthén, 2010). LPA is an extension of latent class analysis that uses continuous indicators rather than categorical indicators in that every individual gets an allocation probability assigned for each latent class. Based on the maximum allocation probabilities, individuals are categorized into manifest clusters. Several separate LPA models are specified that differ in the number of classes to examine the optimal number of groups to retain. To compare the various models, different statistical criteria were used, including the Bayesian information criterion (BIC) and the Lo-Mendel-Rubin (LMR) statistic. The model with the lowest BIC value is preferred. The LMR statistic tests  $k - 1$  classes against  $k$  classes, and a significant p-value suggests that the model with  $k$  class model is preferred over the  $k - 1$  class model (Lo, Mendell, & Rubin, 2001). Finally, entropy values and posterior probabilities greater than .70 are preferred, which indicates clear and more precise classification and greater power to predict class membership and degree to which classes are distinguishable (Nagin, 2005). The scores of the interpersonal, affective, lifestyle dimensions and trait anxiety were standardized (z-scores) for ease of interpretation, before they were used as indicator variables. Chi-square analyses were used to examine

## Variants of psychopathy

whether variants were dependent on gender, ethnic background, and age-groups. Multivariate analyses of variance (MANOVA) were performed to examine main effects of the variants on mental health problems, and gender, ethnic background, and age-groups were added to test their interaction-effects with psychopathy variants. Wilks' lambda was reported as test statistic for the MANOVA (Haase & Ellis, 1987).

Table 5.1

*Descriptive statistics and correlations among the main variables in the total sample*

Mental health	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Interpersonal dimension	1									
2. Affective dimension	.58*	1								
3. Lifestyle dimension	.63*	.45*	1							
4. Trait anxiety	.15*	-.03	.26*	1						
5. Emotional problems	.07*	-.15*	.17*	.68*	1					
6. Conduct problems	.51*	.43*	.52*	.34*	.23*	1				
7. Hyperactivity	.25*	.14*	.56*	.36*	.28*	.35*	1			
8. Peer problems	.14*	.14*	.07*	.36*	.28*	.34*	.03	1		
9. Prosocial behavior	-.27*	-.40*	-.22*	-.09*	.10*	-.31*	-.15*	-.19*	1	
10. Self-esteem	.00	.07*	-.10*	-.61*	-.48*	-.15*	-.20*	-.25*	.03	1
Descriptives										
Mean	1.71	2.00	2.11	1.91	7.57	7.19	9.66	7.19	12.40	3.02
SD	0.52	0.45	0.50	0.49	2.22	1.74	2.54	1.70	2.04	0.57

Note. \* $p < .001$

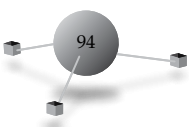
## Results

Means, standard deviations and correlations for the main variables in the study are reported in Table 5.1. The three dimensions were correlated, and the interpersonal and lifestyle dimensions were related to trait anxiety, whereas the affective dimension was unrelated to trait anxiety. All problem behaviors were positively related to the three psychopathy dimensions and anxiety, except for emotional problems. The latter was negatively related to the affective dimension. Higher levels of prosocial behavior were related to less psychopathic traits and anxiety. General self-esteem was negatively related to the lifestyle dimension and anxiety, but positively to the affective dimension, and unrelated to the interpersonal dimension.

### Distinguishing Subgroups

To identify the optimal number of groups to retain, models with one to six classes were estimated using LPA. The BIC statistic increased from Class 5 (BIC=12881.65) to Class 6 (BIC=12944.53) and decreased from Class 4 (BIC=13065.78) to Class 5. In addition, the LMR statistic fell out of significance for the six-class model ( $p = .22$ ). Thus, the 5-class model better represented the data based on the BIC and LMR statistics. The mean posterior probability scores ranged from .84 to .93 and the entropy value was .79, suggesting that the identified classes were well separated.

Figure 5.1 shows the standardized scores and 95% confidence intervals of the groups that were found. The majority of the youth fell into a group labeled 'low-risk group' ( $n = 1,260, 44.2\%$ ), which was characterized by low scores on the three psychopathy dimensions and low anxiety scores. A second group of youth, labeled 'moderate-risk' ( $n = 889, 31.1\%$ ), was characterized by slightly above average scores on the psychopathy dimensions, and low anxiety scores. A third group, labeled 'anxious' ( $n = 183, 6.4\%$ ), showed scores below average on the interpersonal and affective dimension, moderate lifestyle scores, and high anxiety scores. Youth in the fourth group, 'PP/ANX-' ( $n = 302, 10.6\%$ ), had high scores on all three psychopathy dimensions and low anxiety scores. Youth in the 'PP/ANX+' group ( $n = 219, 7.7\%$ ) scored high on all three psychopathy dimensions and also showed a higher than average score on anxiety.



## Variants of psychopathy

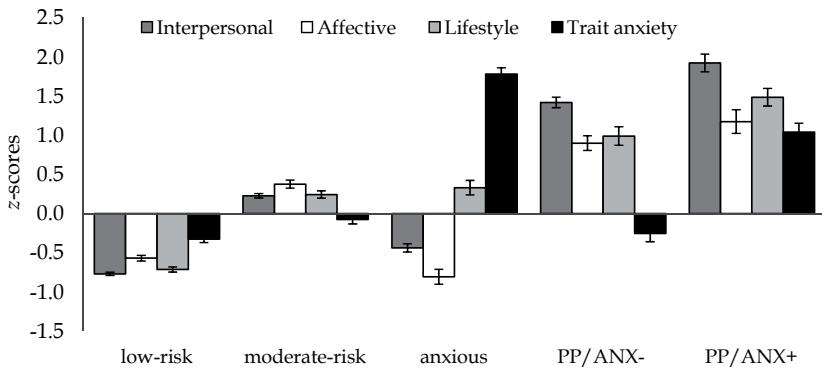


Figure 5.1. The z-scores and confidence intervals for subgroups that were identified using latent profile analysis

Chi-square analyses showed that proportionally more girls than boys were included in the anxious group, and also, albeit to a lesser extent, in the low-risk group [ $\chi^2(4, N = 2,855) = 283.90, p < .001$ ] (see Table 5.2). Boys were more likely to be in the PP/ANX-, PP/ANX+, and moderate-risk group compared to girls. Furthermore, there was significant variation by age [ $\chi^2(4, N = 2,804) = 9.89, p = .042$ ], with older youth slightly more likely to be in the PP/ANX-group, and younger youth more likely to be in the anxious, and PP/ANX+ group. There were no differences in age in the low-risk and moderate-risk groups. Finally, there appeared significant variation by ethnic background [ $\chi^2(8, N = 2,853) = 36.53, p < .001$ ]. Non-Western immigrants were slightly more likely than native Dutch and Western immigrants to be in the PP/ANX+ group. In addition, native Dutch youth were more likely to be in the anxious group.

Table 5.2

*Number of participants in the subgroups including the row percentages*

Characteristic		Low-risk	Moderate-risk	Anxious	PP/ ANX-	PP/ ANX+	Total
Gender	Boy	582 (35.9%)	628 (38.7%)	38 (2.3%)	235 (14.5%)	140 (8.6%)	1,623 (100%)
	Girl	680 (55.2%)	261 (21.2%)	145 (11.8%)	67 (5.4%)	79 (6.4%)	1,232 (100%)
Ethnic background	Native Dutch	684 (44.1%)	472 (30.5%)	155 (10.0%)	133 (8.6%)	106 (6.8%)	1,550 (100%)
	Western immigrant	102 (49.5%)	57 (27.7%)	23 (11.2%)	12 (5.8%)	12 (5.8%)	206 (100%)
	Non-Western immigrant	475 (43.3%)	359 (32.7%)	124 (11.3%)	38 (3.5%)	101 (9.2%)	1,097 (100%)
	Age	Younger	1093 (43.9%)	776 (31.2%)	256 (10.3%)	166 (6.7%)	198 (8.0%)
	Older	144 (45.7%)	98 (31.1%)	44 (14.0%)	15 (4.8%)	14 (4.4%)	315 (100%)

### Validation of the Subgroups

As shown in Table 5.3, the MANOVA results comparing differences between the groups on the subscales of the SDQ emotional problems, conduct problems, hyperactivity, peer problems, prosocial behavior, and the Rosenberg Self-Esteem Scale, identified main effects for the subgroups [Wilks' Lambda = .50,  $F(24, 9901) = 89.56, p < .001, \eta^2 = .16$ ]. The low-risk group showed the lowest levels of problem behavior and highest levels of prosocial behavior and self-esteem compared to the other groups. The moderate-risk group showed slightly elevated levels of conduct problems, hyperactivity, peer problems, and a little less prosocial behavior compared to the low-risk group. The anxious group reported high levels of emotional problems similar to the moderate-risk group, the highest levels of hyperactivity, and the lowest

## Variants of psychopathy

Table 5.3

*Differences between identified variants' raw scores on the validation variables*

Validation variables	M (SD)					MANOVA	
	Low-risk	Moderate-risk	PP/Anxious	PP/ANX-	PP/ANX+	F(4,2843)	$\eta_p^2$
Emotional problems	7.16 (1.96) <sub>a,b</sub>	7.25 (1.91) <sub>a,c</sub>	10.87 (2.28)	7.17 (1.92) <sub>b,c</sub>	8.97 (2.35)	173.85*	.20
Conduct problems	6.29 (1.11)	7.43 (1.55) <sub>a</sub>	7.47 (1.41) <sub>a</sub>	8.26 (1.74)	9.67 (1.99)	341.07*	.32
Hyperactivity	8.74 (2.34)	9.88 (2.40)	11.25 (2.31) <sub>a</sub>	10.59 (2.41)	11.50 (2.28) <sub>a</sub>	116.05*	.14
Peer problems	6.88 (1.57)	7.22 (1.63) <sub>a</sub>	7.95 (1.96) <sub>b</sub>	7.22 (1.63) <sub>a</sub>	8.06 (1.84) <sub>b</sub>	35.49*	.05
Prosocial	12.94 (1.81) <sub>a</sub>	12.09 (2.00)	12.93 (1.85) <sub>a</sub>	11.67 (2.06)	11.09 (2.40)	68.63*	.09
Self-esteem	3.10 (0.51) <sub>a,b</sub>	3.06 (0.53) <sub>a</sub>	2.30 (0.56)	3.17 (0.60) <sub>b</sub>	2.78 (0.58)	106.46*	.13

Note. F-values do not include gender, ethnic background or age. Similar subscripts in a row indicate comparable means for those groups in post hoc Bonferroni pairwise comparisons.

\*  $p < .001$

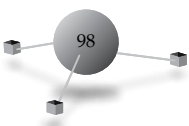
self-esteem levels, but similar levels of prosocial behavior to the low-risk group. PP/ANX- showed the same low levels of emotional problems as the moderate-risk and low-risk groups, the same low levels of peer problems as the moderate-risk group, and the same high levels of self-esteem as the low-risk group. Furthermore, the PP/ANX- group showed above average conduct problems and hyperactivity, and below average prosocial behavior. The PP/ANX+ group reported the highest levels of conduct problems and peer problems, above average hyperactivity similar to the anxious group, and above average emotional problems. Furthermore, prosocial behavior and self-esteem were low and below average.

**Group differences.** The MANOVA showed that there were no interaction-effects between subgroups and gender [Wilks' Lambda = .99,  $F(24, 9884) = 1.03$ ,  $p = .418$ ,  $\eta^2 = .00$ ], and between subgroups and age-groups on mental health outcomes [Wilks' Lambda = .99,  $F(24, 9706) = 1.29$ ,  $p = .158$ ,  $\eta^2 = .00$ ], indicating no differences between variants in relation to mental health measures across gender and age (means and standard deviations in Appendix B).

Furthermore, there was a small significant interaction-effect between subgroups and ethnic background [Wilks' Lambda = .97,  $F(48, 13909) = 1.70$ ,  $p = .002$ ,  $\eta^2 = .01$ ]. In the low-risk group, native Dutch youth reported the highest level of emotional problems (see Figure 5.2). In the anxious group Western immigrants reported most emotional problems, and least emotional problems were reported by non-Western immigrant youth. In the PP/ANX+ group, Western immigrants reported less emotional problems than the native Dutch and non-Western immigrants [ $F(8, 2831) = 3.06$ ,  $p = .002$ ,  $\eta^2 = .01$ ]. In the anxious and PP/ANX- group the native Dutch youth reported the least prosocial behavior, whereas in the PP/ANX+ group these youth reported most prosocial behavior, and Western immigrant youth the least [ $F(8, 2831) = 2.02$ ,  $p = .040$ ,  $\eta^2 = .01$ ] (see Figure 5.3). In the low-risk and moderate-risk groups youth reported similar prosocial behavior for all ethnic backgrounds. In addition, in the low-risk, moderate-risk, and anxious group, native Dutch youth reported less self-esteem than the non-Western and Western immigrant youth [ $F(8, 2831) = 2.68$ ,  $p = .006$ ,  $\eta^2 = .01$ ], and in the moderate-risk group self-esteem levels were highest for Western immigrants (see Figure 5.4). Furthermore, in the PP/ANX+ group, Western immigrant youth reported the least self-esteem.

## Discussion

The current study aimed to distinguish variants of psychopathy in a community sample of Dutch youth using the three dimensions of psychopathy and trait anxiety. Five subgroups were distinguished, of which two with high levels of psychopathic traits, a low-risk group, an anxious group, and a moderate-risk group. As hypothesized, one of the variants



## Variants of psychopathy

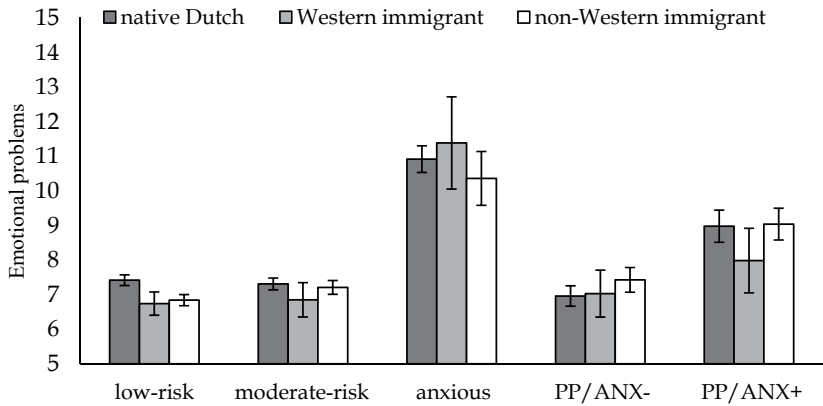


Figure 5.2. Significant subgroup x ethnic background interaction for emotional problems

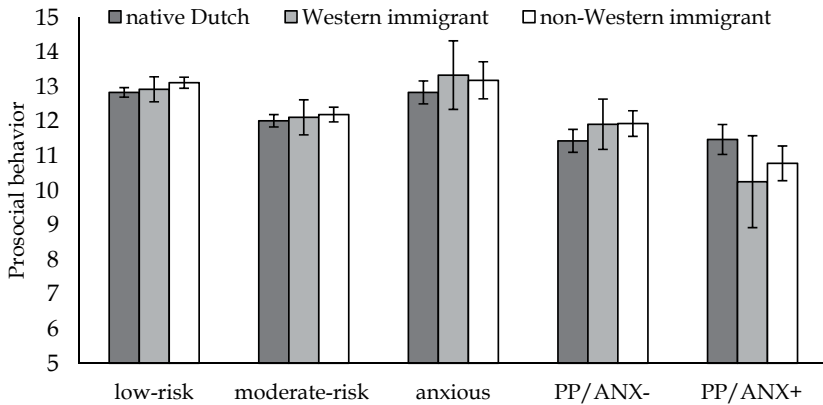


Figure 5.3. Significant subgroup x ethnic background interaction for prosocial problems

with high levels of psychopathic traits had low levels of anxiety, that seems consistent with the conceptualization of primary psychopathy. Similar to findings from earlier studies, this group showed low internalizing problems, high externalizing problems (e.g., Drislane et al., 2014), and high levels of

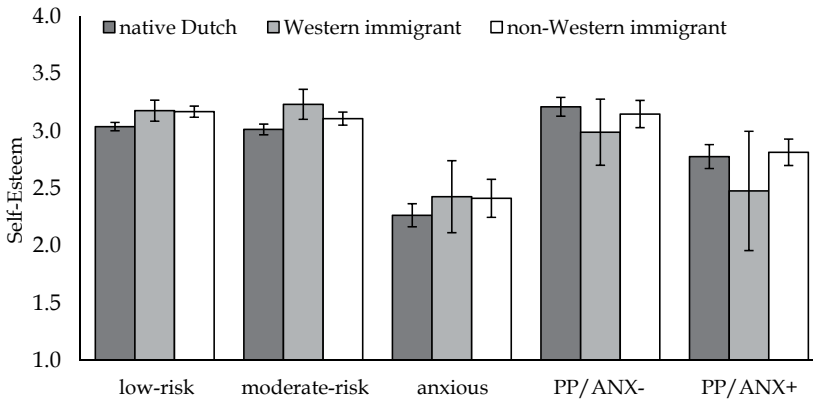
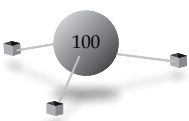


Figure 5.4. Significant subgroup x ethnic background interaction for self-esteem

self-esteem comparable to those in the low-risk group (Fanti et al., 2013). The other variant scored even higher on all three psychopathy dimensions and showed elevated levels of anxiety consistent with secondary (or symptomatic) psychopathy (Arieti, 1963; Karpman, 1948). This variant showed the highest mental health problems, and low self-esteem (e.g., Fanti et al., 2013; Skeem et al., 2007). This is consistent with the idea that secondary psychopathy is related to more negative outcomes than primary psychopathy (Gill & Stickle, 2016), and that treatment should be adapted to the variant of psychopathy (Skeem et al., 2003). Moreover, unlike other studies (e.g., Hicks et al., 2004), and comparable to the findings of Olver, Sewall, Sarty, Lewis, and Wong (2015), youth with a non-Western ethnic background were more likely to be found in the high-anxious psychopathy variant compared to native Dutch and Western immigrant youth. Non-Western immigrants in the Netherlands are more often unemployed, less educated, and experience a lower socio-economic status than native Dutch youth (Statistics Netherlands, 2016). These are indicators of negative environmental circumstances which have been theorized to be related to the development of secondary psychopathic traits (Mealey, 1995; Porter, 1996). This would suggest that our findings on the group high on psychopathy and anxiety are consistent with the conceptualization of symptomatic psychopathy (Arieti, 1963; Mealey, 1995).



As expected, boys were more present in both psychopathy variants than girls, whereas girls were more likely to be in the low-risk and anxious group. This might be explained by gender differences in socialization (Fanti et al., 2013). Girls are taught to show more prosocial and empathic behavior from an early age (Eagly, 2009), not consistent with psychopathic traits. A higher proportion of girls in the anxious group is also consistent with the differential socialization hypothesis, that posits that parents and teachers show sex-differentiated responses to girls that channel girls' problems to become internalizing problems (Keenan & Shaw, 1997). Furthermore, boys and girls in the PP/ANX- and PP/ANX+ group showed similar levels of mental health problems, indicating that low-anxious and high-anxious psychopathy manifestations are similar for boys and girls.

In addition, consistent with previous research in community samples (Docherty et al., 2016; Fanti et al., 2013), a low-risk group and an anxious group were distinguished. The anxious group showed high levels of problem behaviors, but also high prosocial behavior, while the low-risk group reported the least problem behaviors. An unexpected finding in the current study was that of a fifth group that represented a moderate-risk group. This group was represented by above average levels of psychopathic traits and low anxiety levels, but did not report high levels of mental health problems. Possibly, this subgroup represents a group of youth that has a predisposition of psychopathic traits that did not develop into psychopathy. Another possible explanation is that this is a group, although not the largest, that reported typical normative adolescent levels of psychopathic traits, characteristic of the age group in this sample.

### **Limitations and Future Research**

A limitation of the current study is that psychopathic traits, as well as problem behavior and self-esteem were assessed with self-report measures. Previous research has shown that parents of youth with primary psychopathy traits reported more problems for these youth than the youth reported themselves (Kahn et al., 2013). Youth in the primary variant may minimize their behavioral difficulties due to intentional deception, to indifference

about the effects of their behavior on others (Kahn et al., 2013), or to youth's incapability to recognize own behavior as problematic, while other persons do perceive problems (Lilienfeld & Fowler, 2006). Future research should attempt to examine behavioral problems of youth high on psychopathic traits with multi-informant approaches (Kahn et al., 2013).

Moreover, in the current sample the group of Western immigrants was small compared to the native Dutch and non-Western immigrants. Although the percentage of Western immigrants in the sample was almost similar to the percentage in the general population (7% in the study versus 9% in the Dutch population; Statistics Netherlands, 2014), there were only twelve Western immigrants in the PP/ANX+ variant. Therefore, future research should try to oversample this group to confirm that the ethnic differences we found are stable.

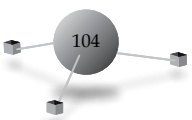
Future research should examine whether current findings can be replicated in general populations in other countries. Studies should examine whether the moderate-risk group is a common phenomenon in community samples of youth. All groups, including the moderate-risk group, would be interesting to follow longitudinally and examine the continuity or change in psychopathic traits and how this stability or change is related to stability or change in youth's mental health.

### **General Conclusion**

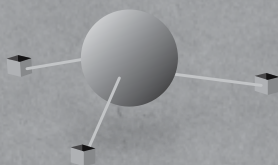
The present study demonstrates that three dimensions of psychopathy in combination with anxiety can distinguish two variants of psychopathy in a large community sample of youth. Using the three dimensions rather than only the affective dimension is in line with the recent argument that all dimensions of psychopathy should be taken into account in youth in order to better capture the concept of psychopathy (Salekin, 2016). The variants found are in line with theory (Karpman, 1948) and previous research (Yildirim & Derksen, 2015) stating that the secondary variant is more anxious and impulsive than the primary variant. Youth characterized by high psychopathy and anxiety show more negative outcomes compared to youth characterized by high psychopathic traits and low anxiety. Thus, even in a community sample of

## Variants of psychopathy

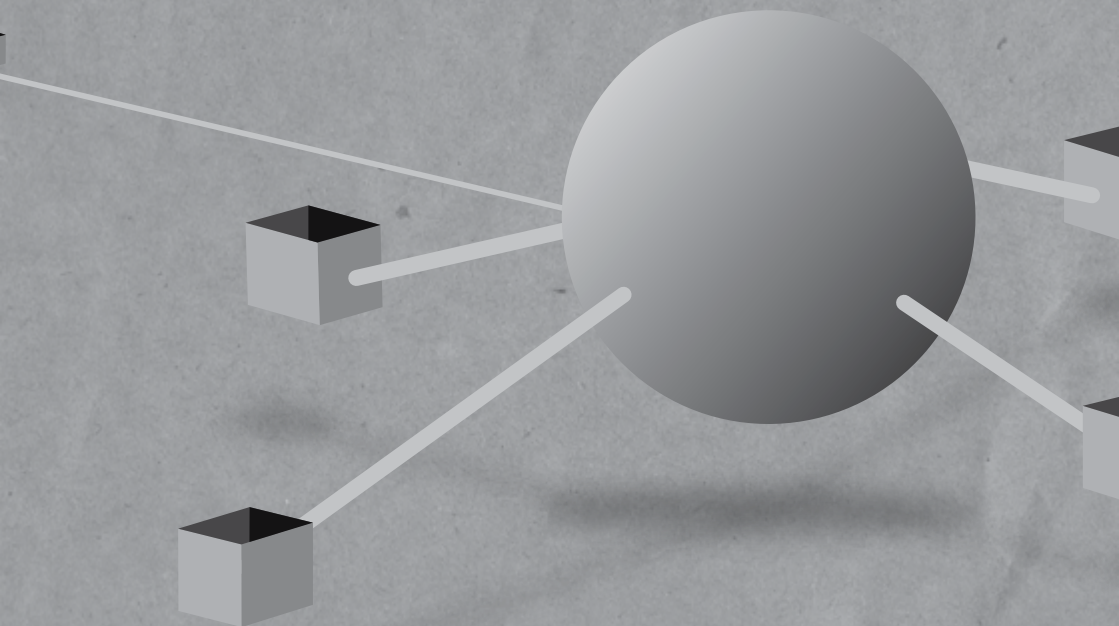
youth, distinctions in psychopathy are possible. The different variants are related to different types and levels of problem behavior, and might have distinct etiological pathways, which suggests that each variant requires specific interventions and treatments that are different from the ones needed for the other variants (Skeem et al., 2003). Especially in a community sample, the presence of both psychopathic traits and anxiety might indicate greater risk for problem behavior, suggesting that this group of youth should be the focus for intervention efforts. In accordance with Karpman (1948), this would be the group high on psychopathic traits that is responsive to treatment. Because the anxious group reported high problem behaviors as well, it could be fruitful to focus intervention or treatment on reducing the anxiety levels by implementing evidence-based cognitive behavior therapy. In addition to the two psychopathy and anxiety groups, we identified two low- and moderate-risk groups, with findings indicating that future research should pay more attention to the moderate-risk group. From the perspective of monitoring, prevention, and intervention it seems worthwhile to further study this group and the health risks that this group encounters. Understanding distinctions in development, identification, and treatment of psychopathic traits and their manifestations is important for youth at risk for severe behavioral problems.

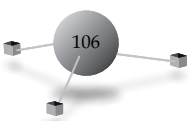


# Chapter 6



## General Discussion





The aim of this dissertation was to study how to best conceptualize and assess psychopathy using a bifactor model for representing and interpreting data collected with the Youth Psychopathic traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002) in a community sample of Dutch adolescents (16 - 24 years old). Furthermore, we aimed to clarify the role of adolescents' socioeconomic background in the manifestation of psychopathy and wanted to validate the distinction between primary and secondary psychopathy. The former refers to psychopathic traits that develop because of a heritable deficit in emotional sensitivity that is characterized by low levels of anxiety, whereas the latter develops due to environmental circumstances such as parental rejection which is accompanied by high levels of anxiety (Karpman, 1948; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). Studying the emergence of psychopathic traits in young people and predicting later negative developmental and social consequences results in knowledge that is important for effective prevention and intervention (Edens, Skeem, Cruise, & Cauffman, 2001).

### Main Findings

In Chapter two we studied the factor structure of the YPI by comparing a variety of possibilities: a one-factor model (i.e., all items load onto one latent variable, psychopathy), a three-factor model (i.e., items load onto one of the three latent psychopathy dimensions), and a bifactor model. With a bifactor model, a General Psychopathy factor accounts for the common variance among all items of the measure used, in this case the YPI. In addition to this general factor, the model specifies specific factors that account for specific dimensions of psychopathy. In the current study the analyses yielded a general factor based on all the traits of the three dimensions, in accordance with earlier conceptualization of psychopathy, i.e., a personality disorder that consists of a constellation of interpersonal, affective, and behavioral or lifestyle characteristics (Lilienfeld & Fowler, 2006). The General Psychopathy factor represents the construct of the psychopathy personality disorder. At the same time, the specific dimension factors represent the separate characteristics that individually do not represent psychopathy (cf. Lilienfeld et al., 2012), but

conceptually comprise constructs referring to characteristics that may have particular meaning for the manifestations and behavioral consequences of psychopathy or perhaps even refer to characteristics of normal development. Chapter two showed that variance of the YPI is primarily explained by the General Psychopathy factor, which is related to all subscales in the questionnaire, but the dimensions of psychopathy seemed to explain some variance as well. In short, the bifactor model was superior compared to the one-factor model or three-factor model. Assessment of dimensionality of the bifactor model suggested that the YPI was primarily unidimensional, and the focus should be on the psychopathy construct as a whole. Measurement invariance (i.e., whether or not the questionnaire measures the same underlying construct with the same structure across different groups; Van der Schoot, Lugtig, & Hox, 2012) for gender, ethnic background, and age was established. The factor structure was examined for different groups and found to be similar for boys and girls, for younger (< 16 years) and older ( $\geq 16$  years) adolescents, and for native Dutch, Western, and non-Western immigrants.

In the third chapter we examined correlations between the bifactor model of psychopathy and conduct problems. We analyzed to what extent the dimension factors of the YPI are correlated to conduct problems over and above the General Psychopathy factor. This chapter shows that the General Psychopathy factor was most strongly related to conduct problems. Moreover, over and above the general factor, the specific Affective and Lifestyle dimensions were positively related to conduct problems, but showed a less strong relation than the General Psychopathy factor, whereas the specific Interpersonal dimension was not related to conduct problems. This indicates that the psychopathy construct overall is more important in relation to conduct problems than the separate dimensions. Furthermore, the specific dimensions showed relations with conduct problems different from the expected relations (i.e., the Interpersonal dimension was not related to conduct problems). A possible explanation is linked to the inclusion of the General Psychopathy factor, that takes the common variance between all items into account, which may have resulted in a crossover suppression effect (Patrick, Hicks, Nichol, & Krueger, 2007). This means that including all factors in a prediction model

may cause the direction of the relations to reverse compared to when the factors are examined separately (Hicks & Patrick, 2006). Group differences for gender, ethnic background, and age in the relation between psychopathy and conduct problems were also examined in this chapter. For all groups, general psychopathic traits were positively related to conduct problems. However, over and above the General Psychopathy factor, different dimensions were important for different groups. For example, for native Dutch, the specific Interpersonal dimension showed the strongest negative relation with conduct problems, whereas for Western and non-Western immigrants, the specific Affective dimension showed the strongest relation with conduct problems, and for the Western immigrants, this relation was even stronger than the relation between the General Psychopathy factor and conduct problems. This suggests that the manifestation of psychopathy might be different for these groups, which in turn may have implications for risk assessment, identifying protective factors for the groups, and treatment tailored to the needs specifically for gender, age and ethnicity specific groups.

In Chapter four, the bifactor model of the YPI was correlated to socioeconomic status (SES). Both Family SES and Neighborhood SES were taken into account to examine possible differences between the type of SES measured. Results showed that there was no direct relation between the General Psychopathy factor and either Family or Neighborhood SES. Furthermore, Family SES was not related to the specific psychopathy dimensions, and Neighborhood SES was directly positively associated to the specific Lifestyle dimension and negatively to the specific Affective dimension. This suggests that SES is not related to the total psychopathy construct, but is related to certain characteristics of psychopathy. A second aim in Chapter four was to examine the moderating role of SES in the relation between psychopathic traits and conduct problems. Results showed that the relation between the specific Lifestyle factor and conduct problems was stronger in the low Family SES group than in the high Family SES group. However, the relation between General Psychopathy factor and conduct problems was stronger in the high Family SES group, and the relation between the specific Lifestyle factor and conduct problems was stronger in the high Neighborhood SES group. These

findings are consistent with the social push hypothesis (Raine, 2002), that proposes that relations between individual characteristics (e.g., psychopathic traits) and problem behavior (e.g., conduct problems) only become apparent in safe, low risk social contexts (e.g., high SES neighborhoods). In such affluent contexts the impact of negative personal predispositions of psychopathy or aggressive behavior are less likely to become overwhelmed by the impact of a dangerous, high risk social context (Raine, 2002; Ray, Thornton, Frick, Steinberg, & Cauffman, 2016). Chapter four showed that results are not similar for Family SES and Neighborhood SES. Being too insensitive or too indifferent to differences in operationalizations of SES may explain why earlier studies yielded inconclusive findings.

Chapter five described a study in which different variants of psychopathy were examined. Already in early writings on psychopathy different variants of psychopathy were mentioned. For instance, Karpman (1948) distinguished clients characterized by psychopathic traits due to a genetic disposition (i.e., primary psychopathy) and clients who primarily developed psychopathy because of environmental circumstances (i.e., secondary psychopathy). Because secondary psychopathy develops due to negative experiences such as trauma and child abuse, secondary psychopathy is believed to be related to high levels of anxiety, whereas primary psychopathy is not (Skeem et al., 2003). Empirical studies have established that individuals who score high on psychopathy can score either high or low on anxiety. These two types, high on psychopathy with high and low anxiety levels, show different adverse outcomes (e.g., Kimonis, Frick, Cauffman, Goldweber, & Skeem, 2012). In Chapter five, using all three dimensions of psychopathy in combination with anxiety, five different groups were identified. Of these five groups, two showed high levels of psychopathic traits, one with additional low levels of anxiety consistent with primary psychopathy (PP/ANX-), and one with additional high levels of anxiety consistent with secondary psychopathy (PP/ANX+). Another two subgroups showed low levels of psychopathic traits. One showed low levels of anxiety. This group was labeled low-risk. The other group was characterized by high levels of anxiety. Therefore it was labeled as the anxious group. Furthermore, a fifth subgroup was identified, a moderate-

risk group, with slightly above average psychopathy traits, and average levels of anxiety. The five subgroups were compared on several mental health problems and the dependence on gender, age, and ethnic background was examined. The PP/ANX+ and the anxious group reported most mental health problems. In the PP/ANX+ group, girls, younger adolescents, and non-Western immigrant youth were overrepresented. The problems in this group were mainly conduct problems. The anxious group reported mainly internalizing problems (i.e., emotional problems and lowest self-esteem). Thus, the two variants high on psychopathy were related to different types and levels of problem behavior, which suggests that each variant requires different interventions and treatments (Skeem et al., 2003). In addition, the commonality of high levels of anxiety in both groups suggests that anxiety is important to consider in interventions and treatment to reduce different kinds of mental health problems.

### **Bifactor Model for Psychopathy**

In Chapter two and three the bifactor model of psychopathy was evaluated. The results showed that the bifactor model indeed allows for better conceptualization and interpretation of YPI data than other models. Also for other forms of psychopathology the bifactor model has been found to be superior over other models. For example, a General Psychopathology factor named the p-factor has been found, in addition to specific Internalizing liability, Externalizing liability, and Thought Disorder liability factors (Caspi et al., 2014). However, other scholars have expressed general concerns about the use of the bifactor model to represent a structure of psychopathology (e.g., Bonifay, Lane, & Reise, 2016). The first concern encompasses the interpretability of the factors in a bifactor model. This concern focuses on the evaluation that all factors in the bifactor model should be meaningful; the specific group factors as well as the general factor. The specific group factors can be considered residuals in that the commonality between the factors has been accounted for by the general factor already, and hence the specific group factors represent unique subconstructs that are unrelated to the general factor and each is unrelated to the other specific group factors. For instance, a study

that extensively examined whether the general factor of the Big Five should be seen as method or meaning, that is, whether the general factor reflects aspects of method such as random error, or could be meaningfully interpreted (Chen, Watson, Biderman, & Ghorbani, 2015). The authors concluded that the five specific factors and the general factor all reflect meaning, rather than method. With respect to psychopathy, the General Psychopathy factor can be understood and interpreted as the factor that represents psychopathy as a whole. The General Psychopathy factor is related to all traits, which is in line with the idea that psychopathy is a compound trait entity, and is a maladaptive configuration of the characteristics of the independent dimensions (Lilienfeld & Fowler, 2006). That is, the psychopathy construct as it is intended to be conceptualized. But, what then is left for the specific group factors? What is the meaning of these specific group factors? Perhaps the factors of the specific dimensions represent traits that are normative to child development. Grandiose and impulsive behaviors are indicative of psychopathy, but are also traits that are characteristic of adolescent development, and might decrease over time (Seagrave & Grisso, 2002). This means that traits from the dimension specific factors may emerge independent of the psychopathy disorder. Further research is needed to clarify the significance and relevance of the specific group factors.

A second concern about the use of the bifactor model as a structure of psychopathology is akin to the reliance on model fit (Bonifay et al., 2016). The bifactor model has a greater number of parameters than other multifactor models, and estimating a greater number of parameters in confirmatory factor analyses tends to result in a better model fit (Bollen, 1989; DiStefano, Greer, & Kamphaus, 2013), hence, in a generally superior fit for the bifactor model compared to other models, which, in addition, might be characterized by more noise. Thus, only using the model fit of the bifactor model as a criterion for model preference is insufficient and may be misleading (Bonifay et al., 2016; DiStefano et al., 2013). Therefore additional criteria should be used (Rodriguez, Reise, & Haviland, 2016a). In Chapter two, this is what we did by taking into account omega reliability coefficients and explained common variance. The use of these criteria led to the conclusion that compared to

the dimension specific factors, the General Psychopathy factor was most reliable, but the dimensions did explain some variance over and above the General factor. In addition to such criteria, it is also important to consider the theoretical rationale behind the models (DiStefano et al., 2013) and examine the validity of the bifactor model even further (Bonifay et al., 2016). For instance, Rodriquez, Reise, and Haviland (2016) contended that statistical fit is not necessarily the same as proof of a psychobiological basis of psychopathy. The validation of this notion using a bifactor model would require evidence that the bifactor model actually can represent biological, neurological data that can be interpreted as psychopathy (Bonifay et al., 2016). This may be achievable in the fields of cognitive neuroscience and behavioral biology, for instance, in studies that examine the information processing style in individuals high on psychopathic traits, characterized by low emotional reactivity to distress of others, and difficulty in learning from punishment (Viding & McCrory, 2012).

### **Implications for Prevention and Intervention**

In the general public, people often think that they know what psychopathy entails (Skeem, Polaschek, Patrick, & Lilienfeld. 2011). The word 'psychopathy' has the connotation of a violent person, pure evil, a serial killer, a chronic offender, a con artist, psychotic, and an untreatable personality disorder (Skeem et al., 2011). There are many misconceptions about psychopathy that are negative and stigmatizing (Edens, 2006; Frick, 2009). One of the misconceptions is that psychopathy is untreatable (Edens, 2006). Indeed, studies have shown that adult and adolescent offenders with high scores on the Psychopathy Checklist-Revised are less susceptible to treatment than non-psychopathic offenders (e.g., Rice, Harris, & Cormier, 1992). Moreover, scholars pointed at a risk that traditional treatments like a maximum security therapeutic community program (Rice et al., 1992) train individuals with psychopathy how to read other people, and thus enhance their competence in manipulating and conning other people (Hare, Clark, Grann, & Thornton, 2000). Furthermore, the core traits of psychopathy may pose challenges for treatment responsivity, particularly because they are linked to reduced sensitivity to punishments and problems with processing

others' emotions (Frick, Ray, Thornton, & Kahn, 2014). Studies that show that psychopathy cannot be treated do not seem to be based on rehabilitation principles that are effective among criminals, for example, because they did not target the specific needs of those high on psychopathic traits (Edens, 2006). Other studies show that individuals with psychopathic traits can benefit of treatment to reduce violent behavior (Skeem, Monahan, & Mulvey, 2002) and recidivism (Polaschek & Daly, 2013). Also for children with higher levels of Callous-Unemotional (CU) traits, intensive programs that focus on the needs of children with CU-traits, particularly the need of warm parenting, may help these children to reduce antisocial behavior (e.g., Dadds, Cauchi, Wimalaweera, Hawes, & Brennan, 2012; Frick et al., 2014; Viding & McCrory, 2012).

The misconception of psychopathy being untreatable, along with the negative and stigmatizing connotations of the word psychopathy is of concern to many scholars and clinicians, and causes restraint in labeling children and youth as psychopathic (Seagrave & Grisso, 2002). However, the assessment of psychopathic traits in youth can provide more insight in their treatment needs and, because children start to show psychopathic traits early in life, the push to start preventing serious adverse outcomes later in life becomes stronger (Frick, 2009). Also in youth forensic settings in the Netherlands, the Psychopathy Checklist: Youth Version is incorporated in the screening and monitoring system aimed at gaining more insight in the psychopathic characteristics of incarcerated youth (Van Spanje, 2015). When such characteristics are reported, they are included in the descriptive diagnosis of the youth. To avoid labeling and stigmatization of the youth, 'psychopathy' or 'psychopathic traits' should not be reported, but specific characteristics of psychopathy such as lack of remorse may be described. Insight in these characteristics can give guidance to formulating treatment indications and risk management strategies.

In order to develop interventions for youth with alleviated levels of psychopathic traits or for youth at risk for developing alleviated levels of psychopathic traits, it is important to establish the risk factors for the development of psychopathy. One risk factor that is related to externalizing problem behavior is SES (Bradley & Corwyn, 2002). Low SES has been used

to target high-risk youth for interventions (e.g., Sciandra et al., 2013). Because of the strong relation between psychopathic traits and externalizing problem behaviors in combination with the often reported higher levels of externalizing problems in low SES youth (Bradley & Corwyn, 2002), one may hypothesize that SES is a risk factor that can provide clues for prevention and intervention for the development of psychopathic traits (e.g., Markowitz, Ryan, & Marsh, 2014). Based on the findings of Chapter four, however, where we reported no correlation between the total psychopathy construct and either Family SES or Neighborhood SES, we are tempted to disqualify this hypothesis. The same Chapter also reported that, depending on the measure of SES and the type and level of conduct problems analyzed, high levels of SES may indicate a group of psychopathy prone youth who are at risk for developing conduct problems.

Another aspect that should be taken into account when developing treatment or interventions for youth with psychopathic traits are variants of psychopathy or psychopathic traits. In the theory on primary and secondary psychopathy different treatment outcomes were reported for these variants (Karpman, 1948; Porter, 1996). Because secondary psychopathy is caused or intensified by environmental circumstances such as trauma or abuse and emerges in combination with high levels of anxiety, scholars suggested that secondary psychopaths are more amenable to treatment than primary psychopathy, which is believed to develop due to a genetic disposition (Skeem et al., 2003). Chapter five shows that in a community sample, the presence of both psychopathic traits and anxiety is likely to be related with greater risk for externalizing problem behavior than the presence of psychopathic traits only. This indicates that the former group should have higher priority in intervention efforts. In addition, only high levels of anxiety was related to more internalizing problem behavior, and anxiety should be taken into account to target a vulnerable group.

In sum, this thesis suggests that different groups are characterized by different treatment needs. Chapter three clarified this for amongst others, boys and girls, whereas Chapters four and five suggested this for groups living in different contextual circumstances akin to SES and to different types of variants of psychopathy. According to Mealey (1995), secondary psychopathy

develops in lower SES, and the development of secondary psychopathy may be prevented by reducing social stratification in society and by providing early interventions and social support for disadvantaged youth at risk, whereas primary psychopathy can be detected and managed, but is difficult to prevent or treat (Skeem et al., 2003). Thus, scholars should consider SES or child abuse. In any case they should pay close attention to the role of anxiety, either or not in combination with psychopathy. High anxious youth either or not in combination with high levels of psychopathic traits run a high risk of developing maladaptive outcomes.

As mentioned before, psychopathy cannot be diagnosed in children and youth, because it is a personality disorder and personality is not stable until adulthood. However, it has also been argued in this dissertation that studying and recognizing psychopathic traits in youth can be important for the development of prevention and possibly intervention of children at risk. Recently, a first step has been taken to incorporate psychopathic traits in diagnoses. In the *Diagnostic and Statistical Manual of Mental Disorders* (5<sup>th</sup> ed.; DSM-V, American Psychiatric Association, 2013), the Limited Prosocial Emotions (LPE) Specifier is included for the diagnosis of Conduct Disorder (CD). This specifier is based on the research on CU-traits and conduct problems in children and adolescents, and includes four characteristics: a lack of remorse or guilt, lack of empathy, shallow or deficient affect, and unconcerned about performance. To meet the criteria for this specifier, children have to present two or more of these characteristics over the last 12 months and in multiple relationships or settings (American Psychiatric Association, 2013). However, there is limited research on the clinical relevance of the LPE specifier (Jambroes et al., 2016). Even though it shows potential to be relevant, the clinical relevance has yet to be determined (Jambroes et al., 2016; Van Damme, Colins, & Vanderplasschen, 2015). In community and clinical-referred studies, children and adolescents with CD who meet the criteria for the LPE specifier show higher levels of aggression, cruelty, and symptoms of attention-deficit/hyperactivity disorder and oppositional defiant disorder than children and adolescents with only CD (e.g., Kahn, Frick, Youngstrom, Findling, & Youngstrom, 2012), but in samples of detained adolescents, the

LPE-specifier seems less useful because the detained adolescents with CD who met the criteria for the LPE specifier did not differ from adolescents with only CD, in levels of ADHD, ODD, substance abuse, depression, and anxiety (e.g., Colins & Andershed, 2015; Colins & Vermeiren, 2013; Van Damme et al., 2015). Furthermore, there are some concerns about the use of the criterion ‘unconcerned about performance’ of the LPE specifier, that may be applicable to all antisocial youth and is not sufficiently discriminating between types of conduct disorder youth (Colins & Vermeiren, 2013). For example, a study in detained girls showed that the ‘unconcerned about performance’-criterion did not significantly contribute to identifying the CD + LPE individuals (Colins & Andershed, 2015). Another concern about the LPE specifier is that there is little overlap between the items for CD + LPE as presented in the DSM-V and the items that construct psychopathy according to Cleckley (1948) and Hare (2003; Salekin, 2016). The LPE specifier disregards the interpersonal and behavioral dimensions, while, as shown in the current thesis, all three dimensions have stronger and wider predictive power than one dimension (see also Andershed, Köhler, Eno Louden, & Hinrichs, 2008; Colins et al., 2014). The LPE-specifier may be an important initiative that adds to the clinical relevance of research on psychopathy in youth, but including the other two dimensions is likely to add to the validity and to benefit the better identification of youth with CD with a basis or source in psychopathic traits.

### Limitations and Directions for Future Research

The use of a bifactor model also has some limitations. One limitation of the bifactor model is that this conceptualization is difficult to implement in some statistical analyses, because the observed variables are represented by two latent variables or factors, rather than one. This means that neither does aggregating a total score take the variance explained by the specific dimensions into account, nor does aggregating dimension-scores take the common variance explained by the general factor into account (Reise, Moore, & Haviland, 2010). In order to continue with common statistical analyses such as regression analyses rather than with complex structural equation modeling, factor score estimates can be computed (e.g., Caspi et al., 2014).

However, there are many techniques to calculate factor score estimates, each with its own procedures, advantages, and considerations (DiStefano, Zhu, & Mîndrilă, 2009). Moreover, factor determinacy (i.e., the correlation between the factor and the factor score estimate) should be high in order for the factor score estimates to properly represent the factor (Rodríguez et al., 2016a). A second limitation of the bifactor model is that it is not easily accessible for clinical practice. If used in clinical practice, factor scores are difficult to calculate and interpret, for instance, to see if a child is at risk and would need a different treatment than a child that has conduct problems. Therefore, based on the findings in Chapter two and Chapter five, we would recommend to use either the total score of the YPI, or use all three dimension scores concurrently.

The current study is limited to a particular community sample and a particular instrument, i.e., the YPI. Future studies should further examine the bifactor structure in community samples, but also in forensic and clinical samples. Moreover, it is important to analyze the applicability and added value of the bifactor model using data collected with other instruments (e.g., Patrick et al., 2007), and from children, adolescents, as well as from adults. The eventual aim is to know whether the findings presented in this dissertation as well as findings from other studies using the bifactor model can be generalized to other samples, instruments, in short, other data structures and indeed provide a good representation of the construct psychopathy.

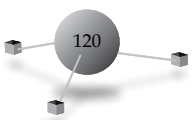
Using only self-reports for the assessment of psychopathy is a limitation of the current study. Lying and manipulation are characteristics of psychopathy. To study psychopathy, individuals that are characterized by alleviated levels of psychopathic traits are asked to participate and to report on the presence of these same characteristics. However, psychopaths frequently lie for the fun of it, which makes it questionable whether they will report truthfully when completing the self-report (Lilienfeld & Fowler, 2006). Valid reporting may also be hampered because adolescents with psychopathic traits may not always perceive themselves as others see them. They are likely to lack insight in their own problems (Lilienfeld & Fowler, 2006). More in general, it can be difficult for someone who has never experienced a particular affective state (e.g., guilt), to report on its absence. In short, the combination of

the need of self-reflection necessary for completing a self-report while being a psychopath is a challenge that may invalidate responses.

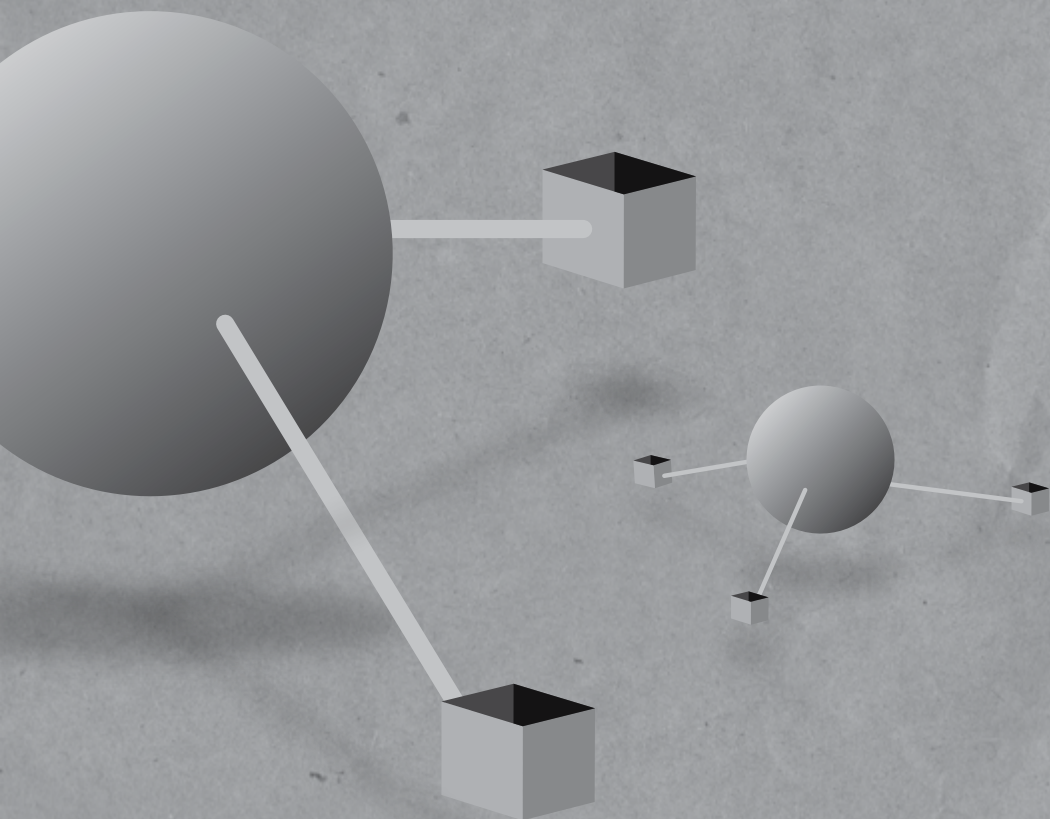
After these critical remarks, a few more optimistic arguments are in place. The use of self-reports does have some advantages. For example, it is cost- and time effective, and more useful information on the absence of affective states and traits such as guilt, empathy, and fear, can be given by the individuals themselves than by others (Lilienfeld & Fowler, 2006). Furthermore, the developers of the YPI have tried to counteract the opportunity for biased self-reporting. They have worded items in such a way that respondents do not necessarily see the psychopathic traits as deficits, but rather as neutral or positive characteristics. Moreover, some traits are measured indirectly, e.g., “What scares others usually doesn’t scare me” (Andershed et al., 2002; Hillege, Das & De Ruiter, 2009). However, inspired by the idiom “better safe than sorry” future studies should work toward less dependence on self-reports and seek to include other assessment methods, such as parent-reports or teacher-reports, or use more cognitive or biological methods such as heart rate or skin conductance.

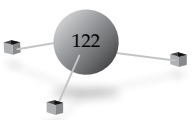
### General Conclusion

The current dissertation described studies on the use of the bifactor model for the construct of psychopathy, SES as a predictor, and the distinction between primary and secondary psychopathy. The YPI was shown to be a valid instrument for use in a community sample of Dutch adolescents, and invariant for gender, age, and ethnic background. Moreover, SES was not a simple risk factor for General Psychopathy. Furthermore, in youth high on all three dimensions of psychopathic traits, a group with high levels of anxiety could be distinguished from a group with low levels of anxiety, with the former showing the most behavior problems. This group, together with anxious youth that reported most internalizing problems, seem important targets for intervention and treatment programs. An important finding from these studies is that it is important to consider all three dimensions (i.e., interpersonal, affective, and behavioral) when studying psychopathy in youth.



# Nederlandse Samenvatting (Dutch Summary)





Psychopathie is een persoonlijkheidsstoornis die tot uiting komt in interpersoonlijke, affectieve en gedragskenmerken (Cleckley, 1948). Onder interpersoonlijke kenmerken worden eigenschappen verstaan zoals oppervlakkige charme, liegen, arrogantie, manipulatie, en een opgeblazen eigenwaarde. De affectieve kenmerken zijn eigenschappen zoals onverschilligheid, ongevoeligheid, harteloosheid, oppervlakkige gevoelens, en een gebrek aan empathie, schaamte of schuldgevoel. Onder de gedragskenmerken worden eigenschappen verstaan als impulsiviteit, onverantwoordelijkheid, behoefte aan opwinding, en grensoverschrijdend gedrag (Hare, 2003; Skeem, Polaschek, Patrick, & Lilienfeld, 2011). In de algemene populatie komt psychopathie bij ongeveer 1-2% van de mensen voor, terwijl het percentage in een gevangenenpopulatie ligt tussen de 15 en 30% (Hare, 2003; Nicholls, Ogloff, Brink, & Spidel, 2005). Vergeleken met niet-psychopathische criminelen plegen psychopathische criminelen eerder gewelddadige misdaden, vertonen een grotere verscheidenheid aan misdaden en lopen een hoger risico op recidive (Hart & Hare, 1997, Skeem et al., 2011). Dit zorgt ervoor dat mensen met meer psychopathische eigenschappen een groot risico hebben om een gevaar te vormen voor zichzelf en de samenleving. Daardoor kosten ze de samenleving veel geld (Viding, 2004). Ook bij jeugdigen worden psychopathische kenmerken vastgesteld. Wat dit betreft is er wel meer voorzichtigheid geboden dan bij volwassenen, want bij jongeren is nog sprake van een zich ontwikkelende, niet stabiele persoonlijkheid (Seagrave & Grisso, 2002). Toch worden psychopathische trekken steeds meer onderzocht bij jeugdigen. Dit gebeurt om beter zicht te krijgen op de ontwikkeling van psychopathie en op de kenmerken die vooral van belang zijn voor de ontwikkeling en onderkenning. Dergelijk onderzoek biedt allicht ook aanknopingspunten voor preventie en behandeling (Skeem et al., 2011).

Het doel van de huidige dissertatie was om te bestuderen hoe psychopathie het beste geconceptualiseerd en vastgesteld kan worden middels een bifactor model. Er is gebruik gemaakt van een zelfrapportage, de Youth Psychopathic traits Inventory (YPI), in een algemene steekproef van Nederlandse adolescenten (16 - 24 jaar oud). Daarnaast hebben we de

rol van sociaal-economische achtergrond als risicofactor voor psychopathie onderzocht, en wilden we het onderscheid onderzoeken tussen primaire en secundaire psychopathie. Primaire psychopathie wordt verondersteld zich te ontwikkelen op basis van een genetische predispositie. Primaire psychopathie gaat gepaard met weinig angst. Dit is heel anders bij secundaire psychopathie. Hierbij valt juist de intensieve en hogere mate van angst op. Deze variant van psychopathie komt voort uit de ervaring van negatieve omgevingsomstandigheden zoals kindermisbruik (Karpman, 1948; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003).

### **Factorstructuur**

Om psychopathie te meten kunnen er interviews of vragenlijsten worden afgenomen. Door de antwoorden te analyseren met een factor- of een componentenanalyse is in eerder onderzoek geprobeerd te achterhalen welke factoren, dimensies, of constructen kunnen worden onderscheiden bij psychopathie en hoe die factoren, dimensies of constructen onderling samenhangen (Kline, 1994). In het geval van psychopathie werd er in het begin uitgegaan van een twee-factor structuur. Factor 1 betrof de interpersoonlijke en affectieve eigenschappen, zoals harteloosheid en de afwezigheid van schuldgevoel, en bij Factor 2 zou het gaan om gedragingen, zoals een onstabiele en antisociale levensstijl (Harpus, Harkistan, & Hare, 1988; Hart & Hare, 1997). Er werd echter getwijfeld aan de twee factorstructuur, en op basis van ander onderzoek werd een drie-factor structuur voorgesteld, waarbij de eerdere Factor 1 werd opgesplitst in twee verschillende factoren; een interpersoonlijke factor en een affectieve factor (Cooke & Michie, 2000). Er is later zelfs een vier-factor structuur voorgesteld, die ook de gedragsfactor weer in tweeën splitst; een algemene levensstijls-factor en een antisociale factor (Neumann & Hare, 2008).

Recentelijk is voorgesteld dat een alternatieve factorstructuur beter gebruikt kan worden om psychopathie goed te vatten: een bifactor model (Patrick, Hicks, Nichol, & Krueger, 2007). In een bifactor model zijn alle geobserveerde variabelen gerelateerd aan een algemene factor, en tegelijkertijd ook aan een aparte specifieke groep-factor (Reise, 2012). In het

geval van psychopathie betekent dat dat alle items gerelateerd zijn aan een Algemene Psychopathie factor, en aan één specifieke dimensie-factor waartoe een item behoort. De overlap die bestaat tussen verschillende specifieke dimensies van psychopathie wordt gerepresenteerd door de algemene factor. Dit betekent dat in het bifactor model alle factoren ongerelateerd zijn (Chen, West, & Sousa, 2006). Daardoor kan de voorspellende validiteit van de specifieke factoren onderscheiden worden van de voorspellende validiteit van de algemene factor (Chen, Hayes, Carver, Laurenceau, & Zhang, 2012). Het bifactor model speelt een belangrijke rol in deze dissertatie.

In Hoofdstuk twee, waarin het eerste onderzoek uit deze dissertatie wordt gerapporteerd, is de factorstructuur van de YPI onderzocht. De YPI is een zelfrapportage vragenlijst om psychopathische eigenschappen te meten onder jongeren vanaf 12 jaar oud in de algemene populatie (Andershed, Kerr, Stattin, & Levander, 2002). De YPI bestaat uit tien subschalen met elk vijf vragen over kernkenmerken van psychopathie. De YPI heeft een drie-factor structuur, met een grandioos/manipulatieve factor (of interpersoonlijke dimensie), een harteloos/emotieloos factor (of affectieve dimensie), en een impulsieve/onverantwoordelijk factor (of gedrags- of levensstijl dimensie). In de studie zijn verschillende factorstructuren vergeleken om na te gaan welke van deze structuren de antwoorden op de YPI het best representeert en dus welke factoren of constructen onderliggend zijn aan de antwoorden die gegeven zijn. Daarnaast zijn dimensionaliteit en meetinvariantie van de YPI onderzocht. Bij dimensionaliteit gaat het om de vraag of de vragenlijst unidimensioneel is en de totaalscore het best gebruikt kan worden, of dat de vragenlijst multidimensioneel is en dimensie-scores de vragenlijst het best representeren. Bij meetinvariantie gaat het om de vraag of de vragenlijst hetzelfde onderliggende construct meet in verschillende groepen (Schoot, Lugtig, & Hox, 2012). De resultaten in deze studie lieten zien dat in deze steekproef het bifactor model met subschaal-scores als geobserveerde variabelen het beste paste bij de YPI. De Algemene Psychopathie factor beïnvloedde de tien subschalen van de YPI sterk. Dit geeft aan dat de YPI voornamelijk unidimensioneel is. Toch verklaren de dimensies van psychopathie nog ongeveer één-derde van de variantie. Dit betekent dat de

drie dimensies niet volledig buiten beschouwing gelaten kunnen worden (Ward, Nobles, & Fox, 2014). Het bifactor model bleek bovendien invariant voor geslacht, leeftijd en etnische achtergrond. Dit betekent dat de vragenlijst dezelfde concepten meet voor jongens en meisjes, oudere en jongere jeugd, en Nederlandse, Westerse- en niet-Westerse immigranten. Op basis hiervan wordt geconcludeerd dat deze groepen goed met elkaar mogen en kunnen worden vergeleken met de YPI (Van de Schoot, Lugtig, & Hox, 2012). De bevindingen betekenen ook dat voor het onderzoeken van de relatie tussen YPI andere maten, bijvoorbeeld, maten voor probleemgedrag, het bifactor model beter gebruikt kan worden dan de andere onderzochte modellen. Daarbij moet vooral worden gelet op de totaalscore van de YPI.

In hoofdstuk drie is het bifactor model van de YPI gebruikt om de relatie tussen psychopathie en gedragsproblemen te onderzoeken. Hierbij is ook gebruik gemaakt van het bifactor model, en onderzocht in hoeverre de specifieke YPI dimensies variantie verklaren bovenop de verklaarde variantie van de Algemene Psychopathie factor in relatie tot gedragsproblemen. Daarnaast zijn de groepsverschillen in deze relaties voor geslacht, etnische achtergrond en leeftijd onderzocht. De Algemene Psychopathie factor had de sterkste relatie met gedragsproblemen, maar de specifieke dimensie factoren verklaarden toch aanvullend nog variantie. Hogere niveaus van Algemene Psychopathie samen met specifieke Affectieve en Levensstijl eigenschappen waren gerelateerd aan hogere niveaus van gedragsproblemen, maar de Interpersoonlijke eigenschappen vertoonden geen relatie met gedragsproblemen. De resultaten laten zien dat eigenschappen van alle drie de dimensies meegenomen moeten worden wanneer psychopathie wordt onderzocht. Bij alle groepsvergelijkingen bleek de Algemene Psychopathie factor ook de sterkste relatie met gedragsproblemen te hebben, maar de relatie tussen de dimensies en gedragsproblemen verschilden per groep. Zo bleek bijvoorbeeld voor jongeren met een Nederlandse achtergrond de specifieke Interpersoonlijke factor de sterkste negatieve relatie te hebben met gedragsproblemen, terwijl voor jongeren met een Westerse en niet-Westerse achtergrond de specifieke Affectieve factor de sterkste relatie liet zien. Voor Westerse immigranten was deze relatie zelfs sterker dan de relatie tussen

de Algemene Psychopathie factor en gedragsproblemen. Deze resultaten suggereren dat de manifestatie van psychopathie kan verschillen tussen deze groepen. De betekenis hiervan voor risicobeoordelingen, het identificeren van beschermende factoren en behandeling verdient verder onderzoek.

### **Implicaties voor Preventie en Behandeling**

Naast het vaststellen van de onderliggende constructen van psychopathie middels de YPI is het ook belangrijk om vast te stellen welke risicofactoren er zijn voor het ontwikkelen van psychopathische eigenschappen. In Hoofdstuk vier is gekeken naar een mogelijke risicofactor voor het ontwikkelen van psychopathie, nl. sociaal-economische status (SES). SES is op verschillende manieren meegenomen in eerder onderzoek naar psychopathie, maar de uitkomsten van de betreffende studies zijn niet eenduidig. Er zijn positieve relaties gevonden tussen SES en psychopathie (bv., Farrington, Ullrich, & Salekin, 2010), negatieve relaties (bv., Kahn, Byrd, & Pardini, 2013), en zelfs geen relaties (bv., Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007). De relatie tussen SES en psychopathische eigenschappen is in Hoofdstuk vier onderzocht middels het bifactor model van de YPI. Zowel gezins-SES als buurt-SES zijn meegenomen in de studie, met inkomen als maat voor SES. Daarnaast is onderzocht of SES een modererende variabele zou kunnen zijn in de relatie tussen psychopathische eigenschappen en gedragsproblemen. Dat wil zeggen, of de relatie tussen psychopathische eigenschappen en gedragsproblemen verschillend is voor hoge en voor lage SES. Uit de studie bleek dat noch gezins- noch buurt-SES gerelateerd is aan de Algemene Psychopathie factor. Bovenop de algemene factor was alleen buurt-SES gerelateerd aan de specifieke Affectieve en Levensstijl factor. Daarnaast bleek de relatie tussen de Levensstijl factor en gedragsproblemen sterker bij jongeren uit gezinnen met een lage SES, terwijl de relatie tussen Algemene Psychopathie factor en gedragsproblemen sterker was bij jongeren uit gezinnen met een hoge SES, en de relatie tussen de Levensstijl factor en gedragsproblemen was sterker bij jongeren die in een rijkere buurt woonden. De verschillende resultaten voor buurt-SES en gezins-SES tonen aan dat de relatie tussen SES en de specifieke dimensie

eigenschappen en SES als moderator afhankelijk zouden kunnen zijn van hoe SES wordt gemeten. Dit zou kunnen verklaren waarom eerdere studies geen eenduidig beeld opleverden voor de relatie tussen SES en psychopathie.

Een ander aspect van psychopathie dat verder onderzocht moet worden om een beter beeld te krijgen van de mogelijkheden tot interventies en behandeling voor jongeren met psychopathische eigenschappen zijn verschillende varianten van psychopathie. Al in de eerdere literatuur werd er geschreven over verschillende varianten van psychopathie. Karpman (1948) onderscheidde primaire psychopathie van secundaire psychopathie. Volgens Karpman kenmerkten beide varianten zich door dezelfde gedragingen, maar de ontwikkeling van de eigenschappen verschillen. Primaire psychopathie zou zich ontwikkelen door voornamelijk genetische aanleg, terwijl secundaire psychopathie zich zou ontwikkelen door negatieve omgevingsfactoren, zoals trauma en kindermishandeling. Door de ervaringen met negatieve omgevingsinvloeden die leiden tot de ontwikkeling van secundaire psychopathie wordt secundaire psychopathie in verband gebracht met hoge niveaus van angst, terwijl primaire psychopathie juist gerelateerd is aan lage niveaus van angst (Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). Empirische studies hebben bij personen met hoge niveaus van psychopathie verschillen aangetoond in angst en verduidelijkt dat psychopathie, afhankelijk van het al of niet gepaard gaan met angst, verschillend samenhangt met negatieve ontwikkelings- en gedragsconsequenties (bv., Kimonis, Frick, Cauffman, Goldweber, & Skeem, 2012). In Hoofdstuk vijf hebben we het onderscheid tussen primaire en secundaire psychopathie onderzocht met de YPI. Met behulp van de drie dimensies van psychopathie en een maat voor angst zijn varianten van psychopathie onderzocht. Er konden vijf groepen onderscheiden worden, waarvan twee met hoge niveaus van psychopathische eigenschappen. Eén van deze groepen werd, net als de eerdere beschrijving van primaire psychopathie, gekenmerkt door hoge scores op alle dimensies van psychopathie en lage niveaus van angst. De tweede groep met hoge scores op alle dimensies van psychopathie en hoge niveaus van angst, kwam overeen met de beschrijving van secundaire psychopathie. Daarnaast werden er nog twee groepen met lage psychopathische eigenschappen gevonden,

één met lage angst en één met hoge angst-niveaus. De laatste groep was een verhoogd-risico groep, met enigszins bovengemiddelde psychopathische eigenschappen. Deze groep vertoonde gemiddelde gedragsproblemen. De secundaire psychopathie vertoonde het hoogste antisociale gedrag, en de angstige groep vertoonden de hoogste internaliserende problemen. In deze secundaire groep bleken meisjes, jongere adolescenten, en jongeren met een niet-Westerse achtergrond overgerepresenteerd te zijn. De bevinding van de twee verschillende varianten die hoog scoren op psychopathische eigenschappen die een andere relatie met gedragsproblemen hebben suggereert dat elke variant andere behoeften heeft qua interventies en behandeling (Skeem et al., 2003). Het verhoogde risico op psychiatrische problematiek van de groep met psychopathische eigenschappen en angst en de angstige groep in de algemene populatie suggereert dat deze groepen een hogere prioriteit zouden moeten krijgen in interventie-inspanningen.

## Discussie

Het bifactor model lijkt goed aan te sluiten bij de conceptualisering van psychopathie. De algemene factor van psychopathie is waar het om draait, omdat alle verschillende eigenschappen daarin samenkomen, die gezamenlijk psychopathie vormen. Daarnaast representeren de specifieke dimensies van psychopathie eigenschappen waar jongeren hoog op kunnen scoren, maar dergelijke hoge scores kunnen ook passend zijn voor de fase van hun ontwikkeling. Impulsiviteit is bijvoorbeeld typisch voor de adolescentie, maar ook een kenmerk van psychopathie.

We hebben in dit proefschrift de kracht van het gebruik van een bifactor model van psychopathie verduidelijkt. Dit is echter beperkt gebleven tot gebruik voor onderzoekfuncties. Het gebruik van een bifactor model om psychopathie omvattend te conceptualiseren moet nog wel verder gevalideerd worden voor andere populaties. Daarnaast is het gebruik van een bifactor model lastig in een eventuele klinische context, omdat er twee factoren betrokken zijn bij het creëren van scores in plaats van de gebruikelijke ene factor. De eerste stap in het diagnosticeren van psychopathische eigenschappen is inmiddels wel gezet in de Diagnostic and

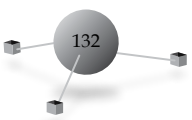
Statistical Manual of Mental Disorders (5th ed.; DSM-V, American Psychiatric Association, 2013), door het toevoegen van 'Limited Prosocial Emotions' aan de Antisociale Gedragsstoornis. Deze toevoeging heeft vier kenmerken: een gebrek aan schuldgevoel; gebrek aan empathie; oppervlakkige emoties; en onverschilligheid over prestaties. Het zijn kenmerken die behoren bij de affectieve dimensie van psychopathie, die wordt gezien als de kern van psychopathie bij jeugdigen (Frick, 2009). Er zijn echter verschillende studies die laten zien dat naast de affectieve dimensie ook de interpersoonlijke en gedragsmatige dimensies gezamenlijk een sterkere voorspellende waarde hebben dan een enkele dimensie (bv., Andershed, Kohler, Eno Loudon, & Hinrichs, 2008). Ook de huidige dissertatie laat zien dat alle dimensies van psychopathie nodig zijn om psychopathie bij jongeren te representeren. Op basis van de bevindingen in de huidige dissertatie raden wij aan, wanneer het niet mogelijk is gebruik te maken van het bifactor model zelf, om gebruik te maken van de totaalscore, of van alle drie de dimensiescores gezamenlijk.

Een beperking van het gebruik van een bifactor model is dat dit model lastig te implementeren is in de meer gebruikelijke statistische analyses zoals een regressie analyse, omdat de geobserveerde waarden worden gerepresenteerd door twee factoren, en niet door één factor. De totaalscore neemt de variantie die verklaard wordt door de dimensies niet mee, terwijl dimensiescores de variantie die wordt verklaard door de algemene factor niet meenemen (Reise, Moore, & Haviland, 2010).

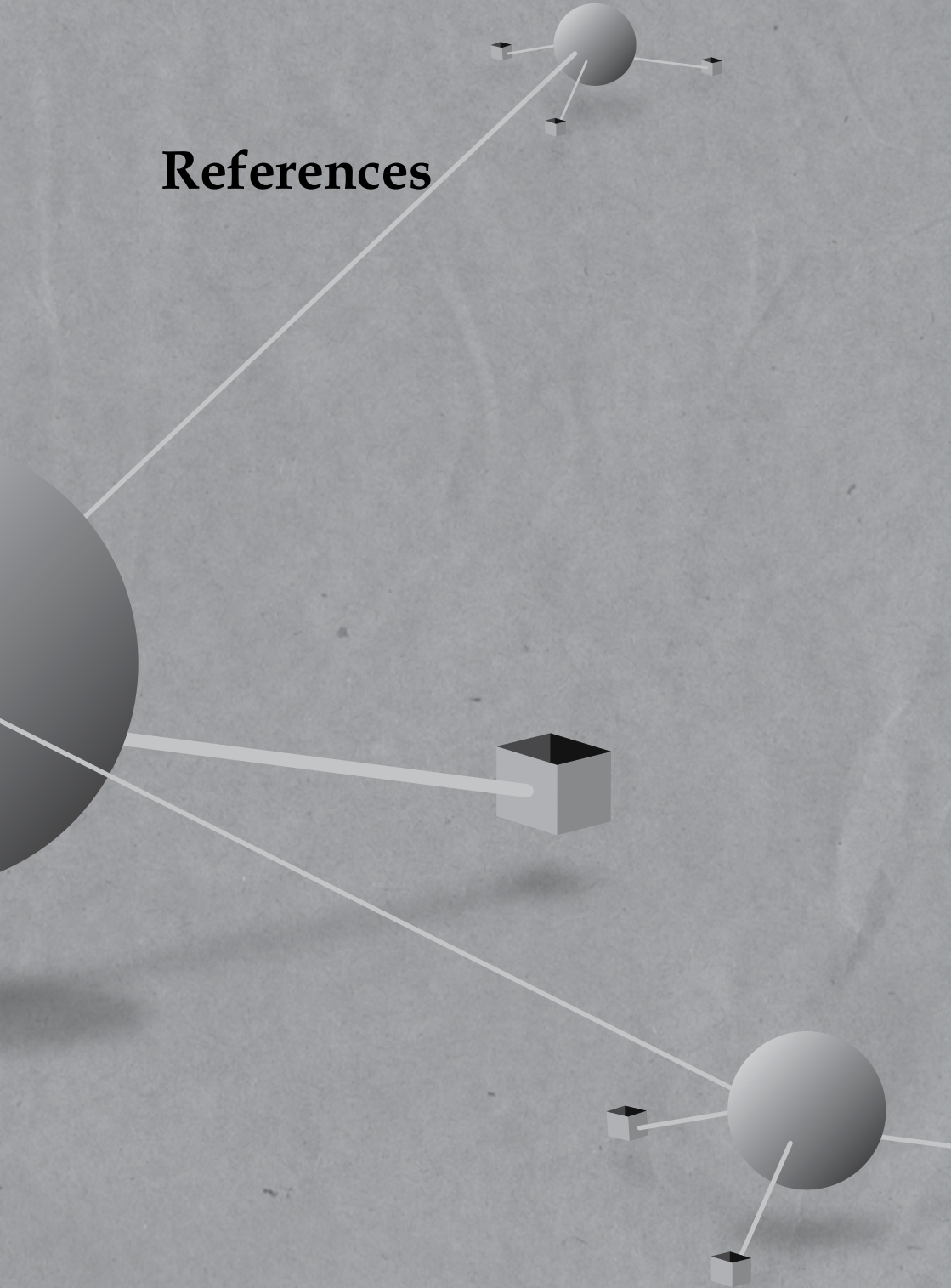
Een beperking van het huidige onderzoek betreft het uitsluitende gebruik van zelf-rapportages. Hoewel er voordelen zitten aan het gebruik van zelf-rapportage, zoals besparing van kosten en tijd en inzicht in gevoelens en emoties die niet van de buitenkant zichtbaar zijn, heeft zelfrapportage voor psychopathie ook nadelen (Lilienfeld & Fowler, 2006). Liegen en manipuleren zijn bijvoorbeeld kenmerken van psychopathie, en het is moeilijk te controleren of mensen met veel psychopathische eigenschappen niet ook zullen liegen en manipuleren bij het invullen van een vragenlijst. Daarom is het verstandig in vervolgonderzoek om náást vragenlijsten ook gebruik te maken van bijvoorbeeld ouderrapportage of interviews.

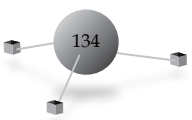
## **Conclusie**

De huidige dissertatie beschrijft studies over het gebruik van het bifactor model voor het construct van psychopathie, SES als voorspeller van psychopathie, en het onderscheid tussen primaire en secundaire psychopathie. Een belangrijke bevinding is dat het belangrijk is om alle drie de dimensies van psychopathie (d.w.z., interpersoonlijk, affectief, en gedrag) mee te nemen in onderzoek naar psychopathische eigenschappen bij jeugdigen. Verder bleek SES niet zonder meer een risicofactor voor algemene psychopathie. Dit maakt het een uitdaging met SES rekening te houden bij het aanbieden van interventie programma's. Opmerkelijk was dat er een groep jongeren kon worden onderscheiden met hoge scores op psychopathie en hoge niveaus van angst, waarin de meeste externaliserende gedragsproblemen werden gerapporteerd en ook een groep jongeren met lage scores op psychopathie en hoge niveaus van angst waarin de meeste internaliserende gedragsproblemen werden gerapporteerd. Dit zijn belangrijke risicogroepen die prioriteit verdienen bij interventies



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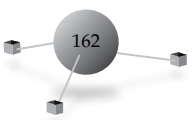
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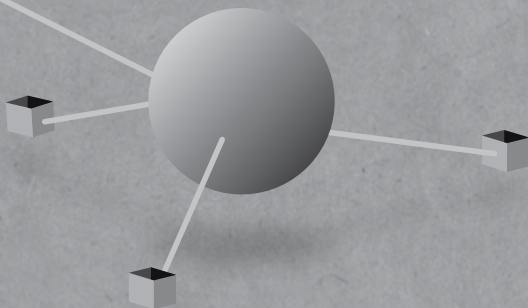
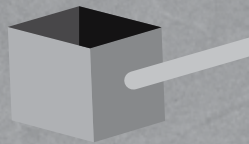
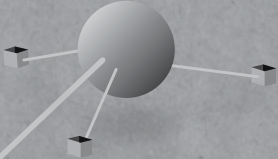
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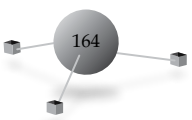
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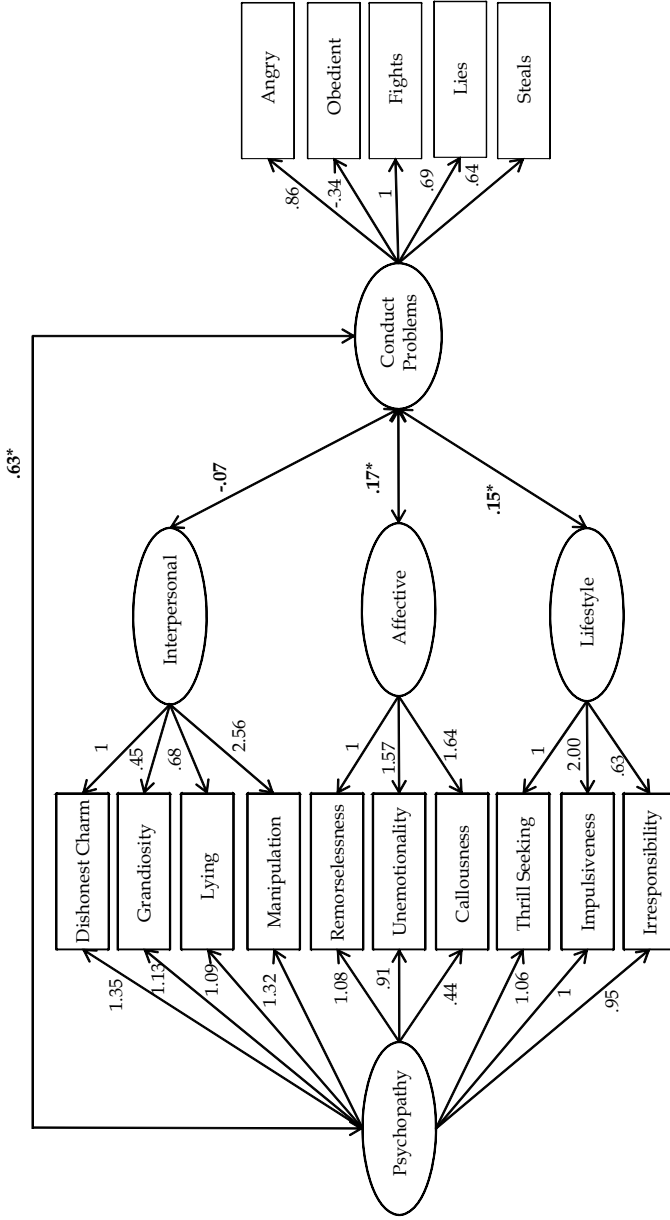


# Appendices





**Appendix A**  
 The relation between the YPI bifactor model and conduct problems for the total sample ( $N = 2,850$ ) (Chapter 3)



Note: Bold numerals are correlations being estimated, non-bold numerals are fixed factor loadings.  
 \*  $p < .05$

## Appendix B

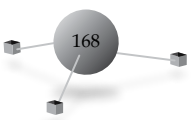
### Means and Standard Deviations of the Subgroups for Differences in Gender, Age, and Ethnic Background (Chapter 5)

Characteristic	<i>n</i>	Emotion	Conduct	Hyperactivity	Peer	Prosocial	Self-esteem
Low-risk	580	6.41 (1.56)	6.32 (1.15)	8.54 (2.29)	6.98 (1.65)	12.46 (2.02)	3.21 (0.49)
	Boy						
	678	7.80 (2.05)	6.26 (1.07)	8.91 (2.36)	6.80 (1.50)	13.35 (1.50)	3.00 (0.50)
	Girl						
	1091	7.23 (1.98)	6.30 (1.12)	8.77 (2.36)	6.87 (1.57)	12.89 (1.85)	3.08 (0.51)
	Younger						
Moderate-risk	142	6.56 (1.62)	6.20 (1.00)	8.51 (2.03)	6.87 (1.52)	13.27 (1.55)	3.23 (0.42)
	Older						
	681	7.43 (2.07)	6.17 (1.05)	9.11 (2.24)	6.84 (1.61)	12.83 (1.83)	3.04 (0.49)
	Native Dutch						
	102	6.75 (1.72)	6.29 (1.08)	8.91 (2.43)	6.58 (1.40)	12.92 (1.84)	3.17 (0.47)
	Western immigrant						
	474	6.85 (1.80)	6.46 (1.17)	8.16 (2.33)	7.00 (1.55)	13.11 (1.77)	3.17 (0.54)
	Non-Western immigrant						
	625	6.86 (1.75)	7.41 (1.53)	9.70 (2.39)	7.22 (1.68)	11.92 (2.01)	3.11 (0.52)
	Boy						
Anxious	261	8.20 (1.95)	7.50 (1.60)	10.31 (2.38)	7.21 (1.52)	12.49 (1.93)	2.96 (0.53)
	Girl						
	775	7.25 (1.90)	7.44 (1.55)	9.87 (2.41)	7.23 (1.63)	11.99 (2.00)	3.05 (0.54)
	Younger						
	96	7.28 (2.02)	7.42 (1.59)	9.95 (2.39)	7.13 (1.71)	12.82 (1.84)	3.13 (0.49)
	Older						
	471	7.32 (1.90)	7.26 (1.48)	10.46 (2.36)	7.06 (1.67)	12.01 (1.97)	3.01 (0.52)
	Native Dutch						
	57	6.86 (1.88)	7.53 (1.62)	9.37 (2.70)	7.07 (1.69)	12.11 (1.91)	3.23 (0.49)
	Western immigrant						
Anxious	357	7.22 (1.93)	7.64 (1.60)	9.19 (2.20)	7.45 (1.54)	12.19 (2.04)	3.11 (0.55)
	Non-Western immigrant						
	38	9.61 (2.14)	7.37 (1.17)	10.71 (2.29)	8.45 (2.01)	12.47 (2.02)	2.41 (0.65)
	Boy						
	145	11.20 (2.21)	7.50 (1.47)	11.39 (2.30)	7.81 (1.94)	13.06 (1.79)	2.28 (0.54)
	Girl						
Anxious	166	10.95 (2.29)	7.53 (1.40)	11.30 (2.29)	7.96 (1.92)	12.84 (1.87)	2.29 (0.56)
	Younger						
	15	9.67 (1.68)	6.93 (1.44)	10.67 (2.53)	7.67 (2.38)	13.80 (1.32)	2.45 (0.59)
Older							

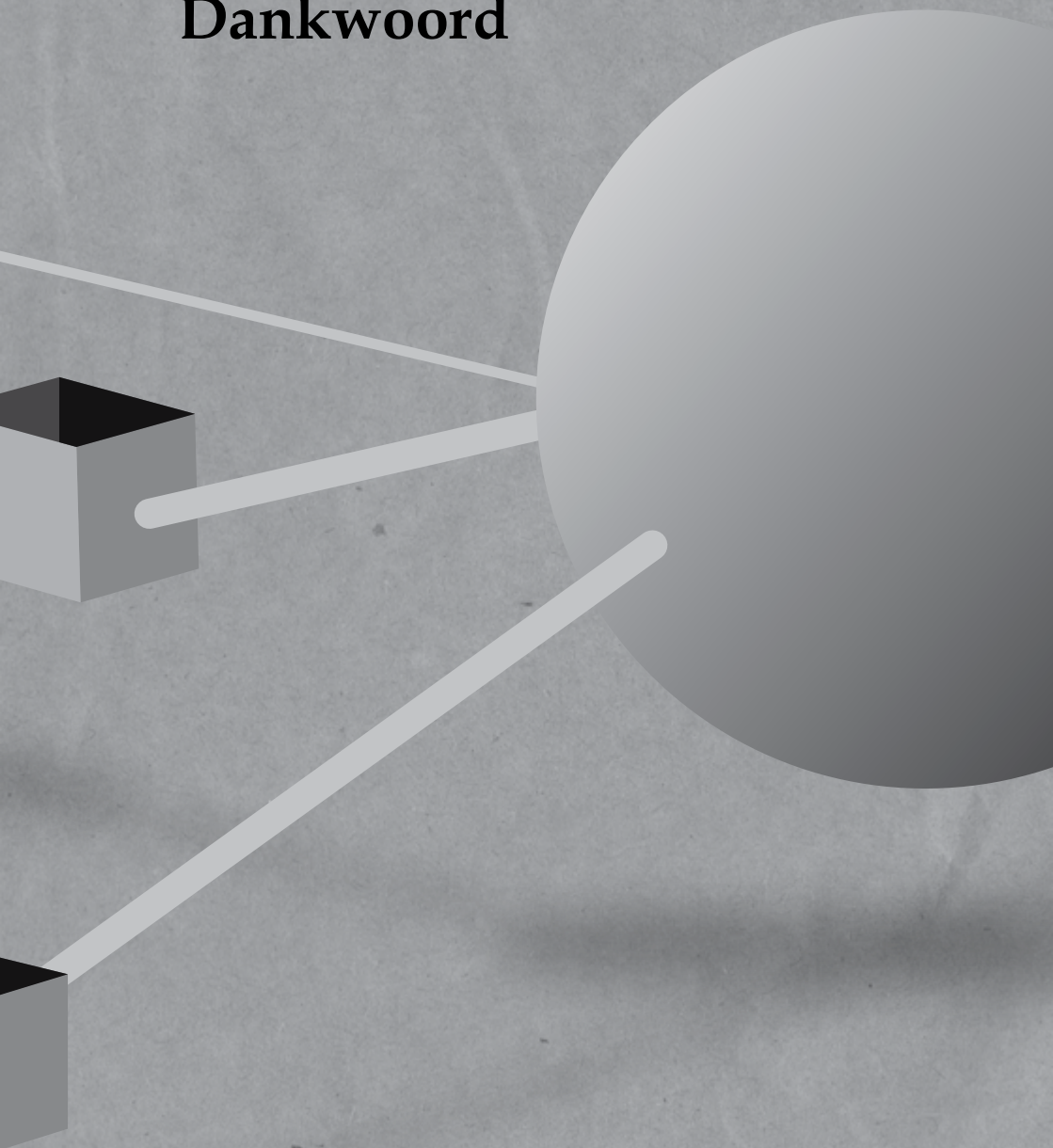
## Appendices

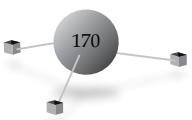
Characteristic	<i>n</i>	Emotion	Conduct	Hyperactivity	Peer	Prosocial	Self-esteem
Native Dutch	133	10.95 (2.26)	7.43 (1.38)	11.41 (2.20)	7.93 (2.03)	12.83 (1.93)	2.26 (0.58)
Western immigrant	12	11.42 (2.11)	7.67 (1.15)	11.08 (2.91)	8.25 (1.96)	13.33 (1.56)	2.43 (0.49)
Non-Western immigrant	38	10.39 (2.38)	7.55 (1.59)	10.76 (2.70)	7.89 (1.74)	13.18 (1.63)	2.41 (0.50)
PP/ANX- Boy	235	6.90 (1.78)	8.22 (1.73)	10.40 (2.40)	7.28 (1.79)	11.54 (2.13)	3.20 (0.60)
Girl	67	8.10 (2.09)	8.42 (1.79)	11.25 (2.32)	7.24 (1.74)	12.12 (1.77)	3.06 (0.58)
Younger	256	7.19 (1.91)	8.35 (1.78)	10.57 (2.44)	7.26 (1.81)	11.59 (2.10)	3.17 (0.57)
Older	44	7.07 (2.02)	7.70 (1.47)	10.68 (2.26)	7.34 (1.67)	12.20 (1.82)	3.14 (0.73)
Native Dutch	155	6.97 (1.87)	8.24 (1.71)	11.04 (2.41)	7.05 (1.71)	11.43 (2.09)	3.21 (0.52)
Western immigrant	23	7.04 (1.58)	8.39 (1.99)	10.43 (1.83)	7.57 (1.70)	11.91 (1.68)	2.99 (0.67)
Non-Western immigrant	124	7.44 (2.02)	8.27 (1.75)	10.05 (2.41)	7.49 (1.85)	11.93 (2.08)	3.15 (0.67)
PP/ANX+ Boy	140	8.51 (2.20)	9.81 (1.90)	11.15 (2.38)	8.21 (1.86)	10.80 (2.21)	2.86 (0.56)
Girl	79	9.78 (2.41)	9.67 (1.99)	12.11 (1.96)	7.80 (1.79)	11.59 (2.65)	2.63 (0.59)
Younger	198	1.80 (0.47)	1.95 (0.39)	2.29 (0.46)	1.61 (0.36)	2.22 (0.48)	2.76 (0.58)
Older	14	1.67 (0.47)	1.74 (0.47)	2.36 (0.42)	1.56 (0.34)	2.26 (0.45)	3.00 (0.57)
Native Dutch	106	9.00 (2.43)	9.51 (2.04)	12.02 (2.00)	7.81 (1.89)	11.47 (2.25)	2.77 (0.54)
Western immigrant	12	8.00 (1.48)	9.75 (2.34)	11.08 (3.18)	8.00 (1.95)	10.25 (2.09)	2.48 (0.82)
Non-Western immigrant	101	9.06 (2.34)	9.83 (1.89)	11.00 (2.35)	8.33 (1.75)	10.78 (2.54)	2.81 (0.58)

*Note.* Standard deviations given in parentheses.



# Dankwoord





## Dankwoord

Hier ligt dan het product van vijf jaar hard werken. Hard werken vind ik niet erg, en soms vind ik het zelfs heel leuk. Ik heb het niet in mijn eentje gedaan en wil graag een aantal mensen bedanken voor de afgelopen vijf jaar.

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I also would like to thank Henrik for the support from a distance, the opportunity to visit Sweden, and the inspiring 'psychopathy-talks'. I really enjoyed working with you.

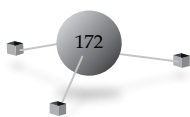
Ook bedank ik mijn stagiaires en studenten voor alle ondersteuning, hulp en inzet tijdens de dataverzameling.

Uiteraard mag ik ook mijn lieve roomies Anouk en Rianne niet vergeten, mijn fantastische ganggenootjes, collega's, en ook Coen. Bedankt voor alle gesprekken over van alles en nog wat, het luisterend oor, het meedenken, de etentjes, de lunches buiten op de grond uit de wind, en alle positieve woorden wanneer ik die nodig had.

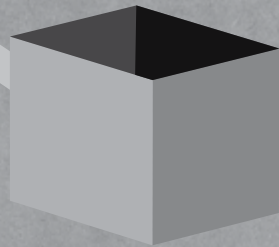
Margo, mijn steun en toeverlaat in het begin van mijn PhD-traject, bedankt voor alle hulp en je vriendschap.

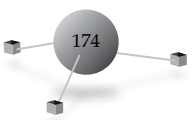
Pap en mam, Riny en Arnold, bedankt voor afleiding, de steun en het luisterend oor die jullie mij afgelopen jaren hebben gegeven, ook al was mijn statistische verhaal niet altijd even gemakkelijk te volgen. Patje, je mag dan wel ver weg zitten, jouw positieve en relaxte houding hangen altijd om mij heen.

En Rick, lieverd, bedankt voor alles. Voor dat je me met beide benen op de grond houdt en mij van het leven naast mijn werk laat genieten. Voor de troostende en aanmoedigende woorden, maar ook de trotse en blijde woorden op de momenten dat ze nodig waren. Nu nog even samen genieten, straks gaan we met z'n drieën het geluk tegemoet.



# Curriculum Vitae



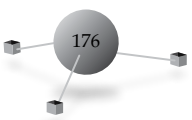


## Curriculum Vitae

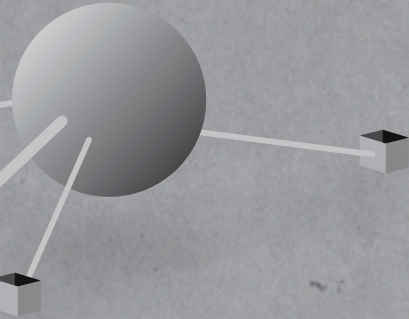
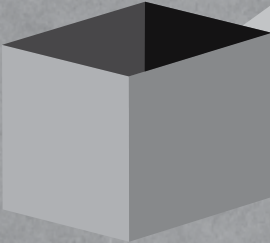
Wendy Zwaanswijk was born on March 7th 1989 in Voorburg, the Netherlands. She completed her secondary education in 2007 at the Alfrink College in Zoetermeer. In 2010, Wendy obtained her bachelor degree Education and Child Studies, after which she continued with the research master Developmental Psychopathology in Education and Child Studies at Leiden University and graduated in 2012. During the years of the research master, Wendy worked as a tutor for first year Education and Child Studies-students and as a research assistant on a project dealing with curriculum based measurement in schools for secondary education.

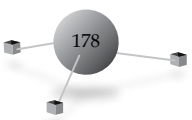
In May 2012, Wendy started as a PhD-candidate at the Department of Clinical Child and Adolescent Studies under the supervision of prof. dr. Paul Vedder, dr. Violaine Veen, and dr. Mitch van Geel. In 2015-2016 Wendy worked at the Bachelor Atelier to assist students with their thesis. During her last year of her PhD-study, she went on a two-week visit to the Örebro University in Örebro, Sweden, to work together with prof. dr. Henrik Andershed, a specialist on the emergence and assessment of psychopathy. They worked on RESUMÉ data collected in Sweden.

At the moment, Wendy is working as a postdoc at ICLON, Leiden University, on a project within the Academic Workshop Diversity (*Kenniswerkplaats Diversiteit*), focusing on school-related questions of three schools for secondary education in The Hague.



# List of Publications





## List of Publications

- Zwaanswijk, W.,** Veen, V.C., & Vedder, P. (2016). The Youth Psychopathic traits Inventory: A bifactor model, dimensionality, and measurement invariance. *Assessment*. doi: 10.1177/1073191116632340
- Zwaanswijk, W.,** van Geel, M., Veen, V.C., Andershed, H., & Vedder, P. (2016). Brief Report. The relation between the bifactor model of the Youth Psychopathic traits Inventory and conduct problems in adolescence: Variations across gender, ethnic background, and age. *Psychological Assessment*. doi: 10.1037/pas0000407
- Van Geel, M., Toprak, F., Goemans, A., **Zwaanswijk, W.,** & Vedder, P.H. (2016). Are Youth Psychopathic Traits Related to Bullying? Meta-analyses on Callous-Unemotional Traits, Narcissism, and Impulsivity. *Child Psychiatry & Human Development*. doi: 10.1007/s10578-016-0701-0
- Geel, M., van & Vedder, P.H. & Wenink, E. G., & **Zwaanswijk, W.** (2011). Rapportage 'Come-Together' week. University Leiden.
- Zwaanswijk, W.,** van Geel, M., Andershed, H., Fanti, K.A., & Vedder, P. (in press). Variants of psychopathy, and the dependence on gender, age, and ethnic background. *Journal of Personality Disorders*.
- Zwaanswijk, W.,** van Geel, M., & Vedder, P. (submitted). Socioeconomic status and psychopathic traits in a community sample of youth.
- Van Geel, M., Goemans, A., **Zwaanswijk, W.,** Gini, G., & Vedder, P. (submitted). Does peer victimization cause low self-esteem, or does low self-esteem 'attract' victimization: metaanalyses on longitudinal studies.

