High and Low Anxiety Subgroups of Individuals with Psychopathic Personality in a Community Sample of Young Adults – Primary and Secondary Subtypes?

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Abstract

Theory and research suggest that at least two subgroups of individuals with psychopathic personality that can be differentiated based on their levels of anxiety. What we know so far of the distinction between these subgroups is based predominantly on relatively small samples of males in institutionalized populations. The present study is the first to use a large and randomly selected sample of the general population to try to identify subgroups of individuals with psychopathic personality separately for males and females ($n=2500$; $52.6\%$ females; $M=22.15$; $SD=1.38$). Latent profile analysis suggested a two-group solution; where both subgroups were high on psychopathic traits, but low respectively high on a measure of anxiety. The identified subgroups differed across theoretically and empirically relevant constructs in that the high anxious group reported significantly more maltreatment history, aggression, symptoms of ADHD and post-traumatic stress, and treatment involvement. Generally, the differences between the high anxious and the low anxious subgroups were the same for males and females, but an important difference was that the female high anxious subgroup reported being significantly more involved in treatment. In conclusion, the gained subgroups are in several ways, but not in all, in line with theories of primary and secondary psychopathy.

*Keywords:* psychopathy, subtypes, subgroups, primary, secondary, anxiety, LPA
High and Low Anxiety Subgroups of Individuals with Psychopathic Personality in a Community Sample of Young Adults – Primary and Secondary Subtypes?

Few personality disorders attract so much attention as psychopathy, also referred to as individuals with psychopathic personality. Psychopaths have long been described as a group of particularly deviant individuals often characterized by their criminal and violent behavior, and suggested being deficient of fundamental human abilities to feel guilt, remorse, anxiety, and empathy; making change an unlikely outcome (Cleckley, 1941; Karpman, 1941). As a group, they have been looked upon as being incurable, thus not being amenable for treatment (Karpman, 1941). But is this really so? Are psychopaths a homogeneous group of criminal, violent individuals, lacking affective capacity, or are there subtypes of psychopathy that differ from each other in constellation of psychopathic personality traits as well as degree and that differ in their ability to experience deeper human emotions and whether or not they are amenable for treatment efforts? The overall aim with this study is to examine if there are subgroups of individuals with psychopathic traits that can be identified based on their level of anxiety and whether these subgroups can be found among both males and females using a large community sample of young adults, thus testing the theory of primary (low anxious) and secondary (high anxious) subtypes of psychopathy (e.g., Karpman, 1941; Porter, 1996).

What is Psychopathy and Why is it Important to Examine?

Before the classical and seminal works of Cleckley (1941) and Karpman (1941) what was known about psychopathy has been suggested to be based on clinical description of cases which mainly tried to define the construct and the symptoms, in other words, what is psychopathy and how is it expressed (Porter, 1996; Wilson, Frick, & Clements, 1999). In retrospect, researchers (Wilson et al., 1999) have concluded that early research on psychopathy (e.g., Cleckley, 1941) focused on the “interpersonal and affective style” of the syndrome (Wilson et al., 1999, p. 222),
such as pathological lying, manipulating of others, lack of empathy, remorse and guilt. The difficulty in assessing these traits seems to have inclined researchers to later focus on the behavioral aspects of psychopathy (Wilson et al., 1999). These behavioral aspects included expressions of deviant behavior, offending, and an irresponsible lifestyle, which are easier to assess by an observer due to concrete manifestations. The development of the assessment tool the Psychopathy Checklist-Revised, PCL-R (Hare, 1991), brought the interpersonal-affective aspect of psychopathy back into focus. This was because the PCL-R included both the interpersonal-affective dimension (Factor 1) and the antisocial behavioral dimension (Factor 2).

Factor 1, the interpersonal-affective dimension, is thought to represent the core characteristics of psychopathy (Hare & Neumann, 2008), comprising two aspects or facets, an interpersonal aspect and an affective aspect: The interpersonal aspect includes how the psychopath relates him- or herself to others, such as thinking that he or she is much better than everybody else, manipulating and lying to get what he wants, but coming across as very charming which is only a part of how he relates to people to get what he wants. The affective aspect can better be described as affective deficits. This aspect is characterized by what the psychopath lacks, such as the ability to feel deeper human emotions, including anxiety, regret, and empathy, as well the ability to experience guilt. Nor will he take blame for his actions (Hare & Neumann, 2008).

Factor 2, the lifestyle-antisocial dimension, is expressed in the psychopath’s impulsivity and need for stimulation, becoming easily bored. It is further expressed in the psychopath’s irresponsible lifestyle, where he will parasitically exploit others, lacking the ability of creating personal long-term goals, or at least, realistic ones. These aspects, and an overall deficient behavioral control, can lead to antisocial consequences such as early conduct problems and juvenile delinquency and then future offending including a range of offenses (Hare & Neumann (2008).
Today, most researchers agree that the construct of psychopathy includes a minimum of two dimensions, an interpersonal-affective dimension and a behavioral-lifestyle dimension, but there is theoretical and empirical evidence to suggest that the construct includes more than the two dimensions originally suggested (Hare, 1991). Three dimensions (Cooke & Michie, 2001) and four dimensions (Hare & Neumann, 2008), making psychopathy a multidimensional construct. The three-factor model, developed by Cooke and Michie (2001), includes three factors or facets, all which are distinct parts of the syndrome psychopathy, but closely associated as well. This model focuses on the core personality traits of psychopathic personality, and excludes items that are thought to measure antisocial and criminal behavior. The three facets are labelled “Arrogant and Deceitful Interpersonal Style”, “Deficient Affective Experience”, and the “Impulsive and Irresponsible Behavioral Style” (Cooke & Michie, 2001).

Early clinical work (Cleckley, 1941; Karpman, 1941, 1948), such as case studies on psychopathic individuals, showed that what was considered a homogeneous group, judged by the displayed behavior, might in fact be different subgroups of individuals that were quite different from each other. In subsequent years, this finding was not supported by much conceptual and empirical work, until more recently. During the last two decades there has been a growing interest in finding ways of “disaggregating psychopathy” (Poythress & Skeem, 2006) into subgroups based on different traits such as level of anxiety. A possible reason for this growing interest is the demand on professionals working with risk-assessment to prevent violent and criminal recidivism, and whose main job is to make well-informed decisions concerning management of these antisocial individuals within institutionalized settings, as well as on release from institutionalized settings back into society (Douglas, Vincent, & Edens, 2006). Additionally, with the inconsistent results from the treatment of individuals with psychopathic personality, some which are positive and others that are dishearteningly negative (see Harris & Rice, 2006), it is not far-fetched to assume that
psychopathy is a heterogeneous construct. Consequently, if psychopathy is a heterogeneous construct comprising subgroups of individuals who respond differently to treatment efforts it is important to pursue the investigation of such subgroups in order to maximize positive treatment outcomes.

Theories of subtypes of psychopathy

The idea of subtypes of psychopathy was first mentioned by Karpman (1941), who suggested that there was a “need of separating psychopathy into two distinct clinical types” (p. 112). Karpman (1941) meant that a secondary subtype of psychopathy could also be identified, assuming that the one that Cleckley (1941) had described was the primary psychopath (Poythress & Skeem, 2006). The primary psychopath, Cleckley (1941) explained, would give an overall positive first impression, most likely coming across as a sociably competent and reliable individual, but at following encounters it would soon become obvious that this first impression was just a “mask of sanity”. Behind the mask, we could expect to find an individual who, without no sense of shame, would cheat, lie, and use violence if needed for very little winnings, and without “any apparent goal at all”, showing no remorse or being able to learn from mistakes, as well as a general “poverty of emotions” (Cleckley, 1941, p. 240).

The secondary psychopath Karpman (1941) described as only “present[ing] a psychopathic façade” (p. 284), but expressing concrete manifestations very similar to the primary psychopath. He suggested that a core difference between the primary and secondary subtype was that, instead of having inherent deficits that could explain character and behavior, which was the suggested cause of the primary psychopath’s personality, the secondary psychopath was a product of his or her environment (Karpman, 1941). Karpman’s reason for calling his subtype secondary was because what was expressed as a psychopathic personality was only the result of, that is secondary to, a “primary neurosis or ... psychosis” (Karpman,
1941, p. 284), which he firmly believed was the result of parental rejection or early abuse. These adverse experiences early in life were proposed to later surface as increased levels of anxiety, hostility, and reactive aggression (Karpman, 1941).

Karpman (1941) further believed that the differentiation between primary and secondary psychopathy had important consequences for the handling and treatment of psychopaths. He meant that since environmental factors had shaped the secondary subtype, later environmental factors, that is, prevention and treatment efforts could reshape the individual. Karpman also based this assumption on empirical evidence, since the secondary psychopath had shown some responsiveness towards treatment whereas in Karpman’s work with the primary subtype no matter how much effort was put into treating these primary subtypes they still remained unchanged, and consequently should therefore not be let back into society (Karpman, 1941).

Later, Lykken (1995) combined Karpman’s theory and Gray’s biological personality theory (Gray & McNaughton, 1996), and proposed that the primary psychopath had an underactive “stop-system” (Behavioral Inhibition System, BIS; Gray, 1981). This underactive stop-system would make the primary psychopath pursue impulses that in a non-psychopathic person would have experienced a red stop light straight away. The secondary psychopath, had instead an overactive “go-system” (Behavioral Activation System, BAS; Gray, 1981), like a green light all the time. According to Lykken (1995), the secondary psychopath has the fundamental ability of getting a red stop light, that is, that they have a functioning stop-system (BIS), but at the same time their overactive go-system (BAS) would push them into actions and behaviors which a non-psychopathic individual would have refrained from doing, due to the negative emotions and consequences associated with such behavior. Consequently, the primary psychopath is not hindered in advance by his or her consciousness and empathy, experiencing no fear and anxiety to stop him or her from acting on impulses, nor would the primary psychopath experience any negative emotions afterwards which might have stopped him or her from acting
on similar impulses at other occasions (Lykken, 1995). The secondary psychopath, on the other hand, has the ability to receive warning signals in advance and will also experience the negative emotions afterwards, but the situation will seem so attractive in that moment and the push of the go-system too strong to withstand (Lykken, 1995).

Porter (1996) agreed with Karpman’s idea that the primary psychopaths were most likely born with affective deficits that caused the prototypical characteristics of the psychopathic individual, and that the secondary psychopath would be more influenced by environmental factors. Environmental factors such as abuse and neglect, which in turn led to a disturbed ability to experience deeper emotions (Skeem & Poythress, 2006). Porter did not agree with Karpman that these environmental factors would lead to a neurotic disposition; instead Porter proposed that adverse environmental factors might lead to a “dissociative” disposition where the individual at an early stage, as a child, learned to switch off feelings due to the negative experiences the child was exposed to (1996).

Thus, supported by theory, we find that the suggested subtypes of psychopathy are phenotypically similar, that is, superficially alike, but at closer inspection, looking behind the mask, the suggested subtypes differ from each other in several meaningful ways.

**Empirical Support for Subtypes; Subgroups that Resemble the Proposed Subtypes**

The theoretical literature of psychopathy has suggested different subtypes of psychopathy, such as the primary and secondary subtypes. In empirical research the validity of these subtypes is tested through identifying subgroups of individuals who resemble the proposed subtypes. What empirical support is there for subgroups of psychopathy?

Empirical support for the disaggregating of psychopathy into subgroups is presented by several studies (e.g., Alterman et al., 1998; Blagov et al., 2011; Coid, Freestone, & Ulrich, 2012). A common distinction between subgroups of psychopathy is the one between the primary and secondary subgroups (for a review see Skeem, Poythress, Edens, Lilienfeld, &
Cale, 2003). As concluded above in the section on theoretical support for subtypes of psychopathy, though the subgroups may seem very similar, they are theorized to differ on several important aspects and one such key aspect is suggested to be level of anxiety (Karpman 1941; Blackburn, 1998). Following the overall aim of the present study to examine whether there are subgroups of psychopathy that can be identified on their level of anxiety, the following review of empirical findings only includes studies that have used a measure of anxiety to distinguish or validate the psychopathy subgroups. For descriptive purposes the low and high anxiety subgroups will also be referred to as the primary subgroup and secondary subgroup, respectively, regardless what the studies label the subgroups, as long as they are high on psychopathic traits and low respectively high on anxiety.

Anxiety. The relative lack of anxiety was given a particular focus in the early clinical descriptions of psychopathy (Cleckley, 1941; Lykken, 1957), since this trait was thought to be a defining feature of psychopathy. Later research paid little attention to trait anxiety, whether low or high, in the assessment of psychopathy. This research was predominantly based on Hare’s PCL-R, which does not include a measure of anxiety (Schmitt & Newman, 1999). Hare and Neumann (2008) even went so far as to conclude that “psychopathy… is at best only weakly related to various measures of anxiety” (p. 229), but they also admit that this needs further research. Worth bearing in mind is, if psychopathy is in fact uncorrelated with anxiety, this would lend support to the heterogeneity of the syndrome, that is, some psychopathic individuals will have low levels of anxiety and others higher levels and still others will have even higher or even lower levels of anxiety than the first mentioned.

In spite of the original idea of trait anxiety as an overall deficit for psychopaths (Cleckley, 1941), trait anxiety has shown to vary within psychopathy and this variation has been suggested to help differentiate between a low-anxious subgroup, and a high-anxious subgroup of individuals with psychopathic personality, resembling the theorized primary and secondary
subtypes respectively (Kimonis, Frick, Cauffman, Goldweber, & Skeem, 2012; Lee, Salekin, & Iselin, 2010; Newman & Schmitt, 1998; Porter, 1996; Skeem et al., 2007; Swogger & Kosson, 2007). Researchers have tried to validate this finding in different settings and different populations, such as in institutionalized samples, both among adult males (Blagov et al., 2011; Hicks, Markon, Patrick, Krueger, & Newman, 2004; Poythress et al., 2010; Swogger, Walsh, & Kosson, 2008; Swogger & Kosson, 2007; Vassileva, Kosson, Abramowitz, & Conrod, 2005) and females (Hicks, Vaidyanathan, & Patrick, 2010), as well as among adolescent males (Kimonis, Frick et al., 2012; Kimonis, Tartar, & Cauffman, 2012; Tartar, Cauffman, Kimonis, & Skeem, 2012; Vaughn, Edens, Howard, & Smith, 2009). Studies in non-institutionalized populations, more specifically student samples, including both males and females, also report support for the differentiation between primary and secondary subgroups, being low respectively high on anxiety; among adolescent high-school student samples (Salihovic, Kerr, & Stattin, 2014) as well university student samples (Falkenbach, Stern, & Creevy, 2014; Lee & Salekin, 2010; Levenson, Kiehl, & Fitzpatrick, 1995; Wilson et al., 1999). Similar support has also been found among adult student samples with only males (Falkenbach, Poythress, & Creevy, 2008).

**Psychopathic traits.** To measure psychopathic traits, the majority of the studies (e.g., Blagov et al., 2011; Hicks et al., 2010; Lee et al., 2010; Poythress et al., 2010; Swogger et al., 2008) have used the Psychopathy Checklist-revised (PCL-R, Hare, 1991), or measures that are derivatives of the PCL-R (e.g., PCL-SV, screening version; PCL-YV, youth version). This means that the two-factor structure of the PCL-R is used in most studies to describe the differences between and thus identify the primary and the secondary subgroups.

Overall, empirical findings on how primary and secondary subgroups differ on psychopathic traits show that the primary subgroup scores higher on the interpersonal-affective dimension compared to the secondary subgroup, across different settings, gender, and age: among institutionalized adult males (Blagov et al., 2011; Skeem et al., 2007; Swogger et al.,
2008; Swogger & Kosson, 2007; Vassileva et al., 2005), as well as among non-institutionalized (undergraduate students) adult males (Falkenbach et al., 2008) and among male and female students (Falkenbach et al., 2014; Lee & Salekin, 2010; Wilson et al., 1999). A contrasting result is from male juvenile sample, where the secondary subgroup scored higher on the interpersonal-affective dimension (Kimonis et al., 2011), however the majority of the findings support the strong association between the interpersonal-affective dimension and primary psychopathy.

The secondary subgroup, on the other hand, is found to score higher on different aspects of the lifestyle-antisocial dimension compared to the primary subgroup both among institutionalized adult males (Blagov et al., 2011; Hicks et al., 2004; Poythress et al., 2010; Skeem et al., 2007; Swogger et al., 2008; Swogger & Kosson 2007; Vassileva et al., 2005) and females (Hicks et al., 2010), as well as adolescent males (Kimonis, Frick et al., 2012; Kimonis, Tartar et al., 2012) and of adolescent males and females (Lee & Salekin, 2010; Wilson et al., 1999), providing consistent report of the strong association between the lifestyle-antisocial dimension and secondary psychopathy.

Results also show that the secondary subgroup scored higher on total psychopathy scores among institutionalized adolescent males (Kimonis, Frick et al., 2012; Kimonis, Tartar et al., 2012) as well as among non-institutionalized adolescent males and females (Salihovic et al., 2014). Contrasting results are reported from research among institutionalized adult males (Skeem et al., 2007), where the primary subgroup scored higher on a total psychopathy score compared to the secondary subgroup, but in general, these empirical findings support the theorized differences in psychopathic traits between the primary and secondary subgroups.

The subgroups are also theorized to differ on other variables such as maltreatment history, including physical and sexual abuse, and early neglect, type of offending and aggression as well
as forms of violence, and treatment responsivity (Karpman, 1941; Lykken, 1995; Porter, 1996).

But what empirical support do these theorized differences actually have?

**Maltreatment history.** The causes of primary and secondary psychopathy are theorized to be a matter of nature versus nurture. Primary psychopathy is suggested to have developed due to inherent factors, that is, factors the individual was born with, whereas the cause of secondary psychopathy is proposed to be environmental, that is, something which has influenced the individual after birth, while growing up (Karpman, 1941; Porter, 1996). To test for inherent differences it has been suggested that one needs to use a genetically informed design (Rhee & Waldman, 2006), which have the “advantage of disentangle[ing] genetic and environmental influences, the effects of nature and nurture” (p. 205). Using genetically informed design means that these differences would be tested in adoption or twin samples (Rhee & Waldman, 2006). As yet, it is foremost history of maltreatment, including physical and sexual abuse, and early neglect that have been used to find support for an etiological distinction between primary and secondary psychopathy depending on whether it is environmentally conditioned after birth or indeed innate. Empirical support for the greater influence of history of maltreatment on individuals with secondary psychopathic personality, compared to primary psychopathic personality, has been found in institutionalized settings, among adult males (Blagov et al., 2011; Poythress et al., 2010) as well as among male adolescents (Kimonis, Frick et al., 2012; Kimonis et al., 2011; Kimonis, Tartar et al., 2012; Tartar et al., 2012; Vaughn et al., 2009). Findings from a female institutionalized sample (Hicks et al., 2010) showed that the primary and secondary subgroups did not differ significantly from each other on the amount of traumatic events but that the secondary variant reported significantly more post-traumatic stress symptoms and suicide attempts.

**Externalizing problems.** Negative, problematic behaviors directed towards others, or where the effects of the problematic behavior are likely to harm others, such as offending,
different forms of aggression, ADHD-problems, and alcohol and drug use and abuse are theorized to differ between the primary and secondary subgroups. It is theorized that the secondary subtype would more likely manifest antisocial behavior at an early age not being able to control the emotional conflict inside. The secondary subtype’s general behavior and also offending would often be characterized by impulsivity and violence (Karpman, 1941) and risk taking (Lykken, 1995). The primary subtype is theorized to be less impulsive and more emotionally stable, and more planful (Karpman, 1941; Lykken, 1995), and using other people for their own purpose, not necessary using violence to achieve what they want. The results from previous research on offending and psychopathic subgroups are however not consistent. The results from a study using an institutionalized population of adult males (Hicks et al., 2004) showed that the secondary subgroup was younger at first criminal charge than the primary subgroup. Another study (Blagov et al., 2011), also examining institutionalized adult males, found support to suggest that primary subgroups were younger at first criminal charge. Studying violent offending has also shown contradicting results. Violent offending has been found to be characteristic of the secondary subgroup (Vaughn et al., 2009) as well as of the primary subgroup (Vassileva et al., 2005). The examined samples were drawn from institutionalized male populations, both adolescents and adults.

There are also some consistent findings concerning offending for the two subgroups. The secondary subgroup has shown to be younger at criminal onset than the primary subgroup both among institutionalized adult males (Hicks et al., 2004) and females (Hicks et al., 2010). The primary subgroup on the other hand, have been found to be charged for more non-violent offenses than the secondary subgroup, both among institutionalized adult males (Swogger & Kosson, 2007; Swogger et al., 2008) and females (Hicks et al., 2010).

**Aggression.** Another area in which primary and secondary psychopaths are theorized to differ, and closely related to offending, is the manifestation of violence and aggression. The
secondary subtype is proposed to be characterized by an unstable hostile temperament and reactive aggression (Karpman, 1941), and the primary subtype is characterized as being more stable, using instrumental calculated aggression, or violence to get what is desired (Cleckley, 1941). Empirically this have been validated among institutionalized adult males (Blagov et al., 2011; Hicks et al., 2004; Poythress et al., 2010; Skeem et al., 2007), females (Hicks et al., 2010), and adolescent males (Kimonis, Frick et al., 2012; Kimonis et al., 2011), as well as among non-institutionalized adult males (Falkenbach et al., 2008) and among non-institutionalized samples of adult males and females (Falkenbach et al., 2014), and adolescent males and females (Salihovic et al., 2014).

ADHD-symptoms. The secondary subgroup is theorized to be more impulsive and hyperactive than the primary subgroup, which according to Lykken (1995) is due to an over-active go-system. This makes these individuals act on a spur of the moment, although warning bells are ringing, and because of this over-active go-system (hyperactive) this group is theorized to experience a lot of ‘spur of the moments’ to act on. The primary subtype, on the other hand, is theorized to have an under-active stop-system (Lykken, 1995), which means that if and when an idea is born, there are no warning bells ringing to stop the primary psychopath from acting out the idea. Empirically, there are few studies that have used the presence of impulsivity, hyperactivity, and attention problems, all symptoms of ADHD, to validate the differences between the two subgroups (e.g., Blagov et al., 2011; Kimonis, Frick et al., 2012; Salihovic et al., 2014). The results show that the secondary subgroup report significantly more symptoms of ADHD compared to the primary subgroup, both among institutionalized adult males (Blagov et al., 2011) and adolescent males (Kimonis, Frick et al., 2012; Vaughn et al., 2009), as well as among non-institutionalized adolescent males and females (Salihovic et al., 2014).

Alcohol consumption and drug use. Excessive alcohol use is theorized to be common among psychopaths, although some psychopaths use very little alcohol and some none at all
Excessive alcohol use is suggested to be in line with the psychopath’s inclination for taking risks, not paying attention to the warning bells (Lykken, 1995). There are some empirical studies that have used alcohol consumption to validate the differences between the suggested subgroups. The secondary subgroup has been found to have an excessive alcohol consumption, a finding that has been replicated both among institutionalized adult males (Hicks et al., 2004; Swogger et al., 2008; Swogger & Kosson, 2007; Vassileva et al., 2005) and females (Hicks et al., 2010), as well as among institutionalized adolescents (Kimonis, Tartar, & Cauffman, 2012; Vaughn et al., 2009). The secondary subgroup is further reported to score higher than the primary subgroup on overall substance use and abuse, and dependency among institutionalized adult males (Hicks et al., 2004; Swogger et al., 2008; Swogger & Kosson, 2007; Vassileva et al., 2005), females (Hicks et al., 2010), and adolescent males (Kimonis, Tartar, & Cauffman, 2012; Vaughn et al., 2009).

**Internalizing problems.** Negative, problematic behaviors directed towards oneself are theorized to characterize the secondary subgroup, the high-anxious subgroup, which is thought to have the fundamental ability to experience deeper emotions (Karpman, 1941; Lykken, 1995). The underlying factors of the internalizing problems of this subgroup are suggested by Karpman (1941) to be due to “Parental rejection… [which] in the absence of other neutralizing and sufficient emotional outlets, is likely to lead to hostility which, if turned on itself, may lead to the child’s suicide.“ (p. 117). Post-traumatic stress symptoms, and suicidal thoughts, are thus suggested to be characteristic of the high-anxious subgroup, the secondary subgroup. Empirical findings show that the secondary subgroup, scores higher on measures of negative emotionality, depression, and distress scales, both among institutionalized adult males (Blagov et al., 2011, Skeem et al., 2007) and adolescents (Kimonis, Frick et al., 2012; Kimonis et al., 2011; Kimonis, Tartar et al., 2012; Vaughn et al., 2009), as well as among non-institutionalized adult males and females (Falkenbach, 2014). The secondary subgroup have also been reported to score higher on
post-traumatic stress symptoms than the primary subgroup among institutionalized adult females (Hicks et al., 2010) and adolescent males (Tartar et al., 2012). The low probability for psychopaths to commit or attempt to commit suicide was on Cleckley’s list of criteria (1941) of what characterizes a psychopath (the primary type). Previous empirical findings are in line with this, in that the primary subgroup reported significantly fewer suicide attempts compared to the secondary subgroup both among institutionalized adult females (Hicks et al., 2010), and males (Poythress et al., 2010) and adolescent males (Vaughn et al., 2009).

**Treatment involvement.** It is theorized that secondary subgroup will be more involved in treatment, be more treatment motivated, and that they will show more responsiveness to treatment compared to the primary subgroup (Blackburn, 1998; Karpman, 1941, 1946, 1948; Porter, 1996). Empirical findings from institutionalized populations show that the secondary subgroup were significantly more involved in treatment than primary subgroup; adult males reported being more treatment motivated (Poythress et al., 2010), and also more responsive to treatment efforts (Skeem et al., 2007), although the latter result was not significant, merely showing a trend towards treatment responsiveness. In an institutionalized sample of adolescent males, results show that the secondary subgroup changed more in their violent behavior after treatment (Kimonis et al., 2011), but the study concluded that it was not unlikely that these changes were due to other effects than treatment effects. The female secondary subgroup has also been found to score significantly higher than the female primary subgroup on a measure of mental health treatment in institutionalized settings (Hicks et al., 2010).

**Proportion of individuals in the respective subgroup**

Previous research shows that the identified subgroups of individuals with psychopathic personality are rarely equal in size. Often the secondary subgroup has been found to be smaller than the primary subgroup, both in studies using institutionalized samples (see e.g., Kimonis et al., 2011, 39 secondary/77 primary; Skeem et al., 2007, 41 secondary/ 66 primary) as well as in
studies using non-institutionalized samples (Salihovic, 2014, 12 secondary/22 primary; Falkenbach et al., 2008, 16 secondary/41 primary; Falkenbach et al., 2014, 25 secondary/106 primary). There are also exceptions to this pattern, where the secondary subgroup is the larger subgroup. In studies using non-institutionalized samples (Lee & Salekin, 2004, 324 secondary/126 primary) as well as in studies using institutionalized samples (see e.g., Hicks et al., 2004, 66 secondary/30 primary; Hicks et al., 2010, 39 secondary/31 primary).

The present study

Although there is general empirical support for the differentiation between the primary and secondary subgroup, as proposed by seminal theory (Karpman, 1941), the review of theoretical and empirical literature above reveals some limitations. What we know today about psychopathy and the theorized subgroups of psychopathy is mainly based on research among males in smaller institutionalized samples, of which the majority of the samples, 80%, are smaller than 500 individuals. Geographically, the focus has been on North American offender populations, in which clinical psychopathy is suggested to range from 15-30% (Hart & Hare, 1997), which can be compared to the estimated 1% prevalence of psychopathic personality in general community samples (Hare, 2003). In Sweden, The Prison and Probation Service have reported slightly lower prevalence rates for psychopathy in offender populations, ranging between 17.5% (Haggård, 2007) and 19.1% (Johansson, Dernevik, & Johansson, 2010). A recent study (Ginsberg, Hirvikoski, & Lindefors, 2010) reported a prevalence rate as low as 10%, also using a Swedish offender population. No estimated prevalence rate has been found for a Swedish general community sample. This focus on institutionalized samples in research on psychopathic personality has been criticized, since it is suggested to offer limited knowledge of the complexity of the syndrome, with regards to prevalence, etiology, and defining traits. Widening the focus to include the study of “representative sample[s] of community residents [would] .. capture the nature, prevalence, and full range of psychopathy subtypes” (Poythress & Skeem, 2006, p. 185).
This range also includes the so-called “successful” psychopaths, who have a psychopathic personality but it is not expressed in an antisocial way, at least not enough to be arrested. Therefore, studying this range of psychopathic personality traits in a general community sample is thought to yield knowledge about protective factors (Lilienfeld, 1994). Identifying subgroups of psychopathy in a non-institutionalized setting turns the focus for the present study from psychopathy as a personality disorder based on clinical guidelines to individuals with pronounced levels of psychopathic personality traits.

The first aim of the present study is two-fold. First: Is it possible to identify subgroups of individuals with psychopathic personality using constellations and levels of psychopathic traits and anxiety? Second: Can similar subgroups be identified among both males and females in the sample? There is some evidence to support the notion that the expression of psychopathic personality differs between genders (Verona & Vitale, 2006), and therefore all the analyses were performed separately for males and females. To address the first aim, Latent Profile Analysis (LPA; see Method section) was conducted in two stages. In the first stage the full sample was used to identify groups, a male and a female, high on all three dimensions of psychopathic personality as measured with the Youth Psychopathic Traits Inventory-Short Version (YPI-S; van Baardewijk et al., 2010), which is a self-report measure developed to assess psychopathic traits in general populations. In the second stage, another LPA was performed, using only the identified high psychopathic groups, male and female. The grouping variables in the latter LPA were level of anxiety and total score of YPI-S. We hypothesized that we would find two subgroups, among both males and females, within the high psychopathic traits group, of which one would be low on anxiety and the other high; these would resemble the theorized primary and secondary subtypes, respectively. The second aim was to examine if the high and low anxiety subgroups differed from each other in theoretically and empirically meaningful ways. To do this the subgroups were compared on relevant variables that has been suggested or shown to aid in
the distinction between the subgroups. Based on theory and previous findings, we hypothesize that the high anxious subgroup will have higher mean scores than the low anxious subgroup on measures assessing experiences of negative environmental factors, such as physical and sexual abuse, and neglect, in other words maltreatment history; problematic externalizing behavior, such as aggression, offending, foremost violent criminal acts, alcohol and drug risk use, and symptoms of ADHD; as well as internalizing problems, post-traumatic stress symptoms, and suicidal attempts. Finally, we also hypothesize that the high anxious subgroup will be more involved in treatment.

Method

Participants

The participants in the present study were young adults, aged 20-24 (M=22.15; SD=1.38), randomly selected from the general population in Sweden for the RESUMÉ-project. The name RESUMÉ stands for the REtrospective Study of yoUng Men and women’s Experiences and it is a cross-sectional retrospective study of a Swedish sample of 2,500 individuals, of which 1,186 were males and 1,314 were females, representing 47.7% and 52.6% respectively. These proportions can be compared with the distribution of males and females in the same age cohort all over Sweden, which is 51.2% and 48.8% respectively. The participants were randomly selected among those born between 1987 and 1991, using a national statistics agency, Statistics Sweden’s (SCB), national inhabitant register. A register which have names, date of births, and addresses of all Swedish citizens registered.

In order to reach the goal of recruiting 2,500 individuals a total of 25,670 individuals were randomly selected from the national inhabitant register. To make the sample representative of all the young adults of Sweden, the sample was stratified by gender and county, which means that an equal proportion of both males and females were drawn from each and every one of Sweden’s 21 counties. Of the selected 25, 670 individuals almost a fifth did not have a telephone number
registered and was therefore excluded (4,843), two fifths were contacted but not reached (9,312), slightly more than a fifth did not want to participate (6,285), and 479 could not participate for various reasons. Almost a fifth, 4,455 individuals, agreed initially to participate but in the end 1,955 were excluded because of reasons such as not being able to schedule a time for the interview. The participant changed his/her mind to participate, or did simply not show up at the agreed appointment. Another 296 were not contacted since the goal of recruiting 2,500 individuals had then been reached. Some deviations from the goal of having an equal proportion of males and females from all Swedish counties, born 1987-1991 exist. This was due to the disproportionate number of individuals that agreed to participate from different areas; more individuals from the two large urban areas in Sweden agreed to participate, whereas less individuals from the counties surrounding the two larger urban agreed to participate. To examine if the 2,500 individuals that chose to participate were significantly different from the ones that did not chose to or could not participate, thirty randomly selected males and females (50/50) were contacted if they had a telephone number registered. A telephone interview was conducted using some of the questions from the interview and questionnaire. This comparison showed that there were no significant differences between the participants and non-participants in their educational level, offending, alcohol risk use, physical victimization, prevalence of psychiatric diagnoses, or subjective well-being. The non-significant differences were very small, ranging from .00 to .04 in effect size (Cohen’s $d$), and therefore not likely caused by problems with power (i.e., that the non-responding group only consisted on 30 individuals in these analyses). There was only one significant difference ($p<.001$) between the participants and non-participants, 5.6% of the participants reported having been forced to sexual activities. In the non-participant group no one reported having been forced to in sexual activities. The results of this comparison show that the participant sample was not biased on important variables.
Measures

**Clustering variables.** We used the participants self-reports of psychopathic personality traits and level of anxiety as clustering variables to address the first aim of the present study: Identifying subgroups of individuals within a high psychopathic group depending on their level of psychopathic traits and trait anxiety.

**Psychopathic traits.** To measure psychopathic traits the Youth Psychopathic Traits Inventory-Short version (YPI-S; van Baarderwijk et al., 2010) was used. The YPI-S is a self-report instrument that is designed to assess psychopathic traits based on Cooke and Michie’s (2001) three-factor model. The YPI-S uses 18 items of the original 50 YPI items (Andershed et al., 2002), and the short version is strongly related to the original (van Baarderwijk et al., 2010). Both instruments use the same response scale, ranging from 1 (“Does not apply at all”) to 4 (“Applies very well”). The reliability, factorial validity, and criterion validity of the YPI-S have recently been validated across gender, ages, and settings (Colins, Noom, & Vanderplasschen, 2012; van Baarderwijk et al., 2010). The YPI-S has three subscales comprising six items each. The subscales correspond to factors in the three-factor model; the Grandiose-Manipulative or Interpersonal Dimension subscale measures dishonest charm, manipulation and lying, and grandiosity, with a Cronbach’s alpha value ($\alpha$) of .79. Typical items used to measure this dimension are “I have the ability to trick people by using my charm and my smile” and “I have talents way beyond other people”; the Callous-Unemotional or Affective Dimension measure callousness, unemotionality, and remorselessness ($\alpha$=.70), with items such as “When other people have problems it is often their own fault and therefore one should not help them” and “To be nervous and worried is a sign of weakness”; the Irresponsible or Behavioral Dimension measures impulsivity, irresponsible behavior, and thrill-seeking and proneness to boredom ($\alpha$=.68). Examples of items used are “I have probably skipped school and work more than most people” and “I quickly become bored by doing the same thing”. The factor structure of the YPI-
S fit the data well across gender (for further details see Colins & Andershed, under review) and the YPI-S scores correlated as expected with the variables of interest, that is, offending, aggression and substance use. In the present study, both the separate factor scores and the total YPI-S scores were used.

**Anxiety.** To measure anxiety the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was used. The HADS has two subscales comprising 7 items each. HADS-A measuring anxiety ($\alpha=.79$), and HADS-D measuring depression ($\alpha=.69$). Both subscales use a four-point response scale, with slightly different wordings, but essentially ranging from, “Not endorsing the item” to “Endorsing the item”, 0-3. In the present study only the HADS-A subscale was used and items were “I get worrying thoughts” and “I feel tensed and uptight”. The Hospital Anxiety and Depression Scale has been validated in hospitalized patients as well as in the general population (Bjelland, Dahl, Haug, & Neckelmann, 2002)

**Variables for validating the clusters.** To validate the subgroups of individuals with psychopathic personality in the present sample the identified groups were compared, using theoretically relevant variables comprising environmental factors, externalizing and internalizing problems, and treatment involvement.

**History of maltreatment.** Physical abuse over the life-course was measured via eleven items ($\alpha=.86$), six of which were from the Juvenile Victimization Questionnaire (JVQ; Finkelhor, Hamby, Ormrod, & Turner, 2005), adapted to give a life-time perspective and the possibility of more than one perpetrator, like in the following item “Has anybody ever hit you or attacked you using an object or a weapon?” The JVQ has shown to have good construct validity (e.g., Turner, Finkelhor, & Ormrod, 2010). The remaining five items were included to measure physical abuse as assessed in earlier studies (see e.g., Janson, Långberg, Svensson, & Allmänna Barnhuset, 2007; May-Chahal & Cawson, 2005). Sexual abuse was measured via seven items ($\alpha=.84$), of which five were from the JVQ, adapted to give a life-time perspective and the
possibility of more than one perpetrator, examples are “Has anybody ever forced you to do sexual things?” and “Has anybody ever hugged you or kissed you in a sexual way against your will or in a way that made you feel uncomfortable?” . The remaining two items were included from a large retrospective study of child maltreatment in the UK, the National Society for the Cruelty to Children-study (the NSPCC-study, May-Chahal & Cawson, 2005), to cover a type of sexual abuse which in one sense could be seen as more indirect, such as showing pictures or film with pornographic content against the individual’s will or writing sexual remarks about the individual’s body or as a person. *Neglect* early in life, was measured via five items ($\alpha=.77$); one of which was from the JVQ, “When you were a child, were you neglected?” . The remaining four items were included from other studies having assessed neglect (e.g., May-Chahal & Cawson, 2005), and examples are “When you were a child, was it ever the case that your home or your clothes were so dirty or broken that you felt uneasy about it or ashamed of it?” . The same six-point response scale, ranging from “Zero times” to “Five times or more” was used for all the items comprising history of maltreatment.

**Offending.** Previous offending, the last 12 months, was measured via 19 items classified into six offending categories: Minor property offenses (three items); Serious property offenses (seven items); Minor violent offenses (three items); Serious violent offenses (four items); Vandalism (one item); and Substance-related offenses (one item). This measure has been used in previous published studies (e.g., Andershed, Kerr, Stattin, & Levander, 2002) to measure concrete criminal acts ranging from minor property offenses and vandalism to serious violent offenses, using items such as “Have you taken something from a compartment store, kiosk, or shop without paying?”, and “Have you intentionally hurt somebody with a knife, switchblade, brass knuckles, or something like that?” All the items used the same response scale: 1: “No, that has not happened”, 2: “1 time”, 3: “2-3 times”, 4: “4-10 times”, and 5: “More than 10 times”. Reliability was not calculated for these categories since they were not intended to measure
homogenous concepts. To reflect the variety of an individual’s offending, that is, the different types as well as the frequency of criminal acts, a variable called Versatility was created, based on the six offending categories above.

**Aggression.** To measure aggression, four different subscales of the Aggression Questionnaire (AQ; Buss & Perry, 1992) were used. The Physical aggression scale (α=.81) was made up by nine items, such as “I end up in fights more often than most others”, the Verbal aggression scale (α=.79) five items. One example being, “When I get irritated with other people; I tell them what I think about them”, the Anger scale (α=.82) with seven items, “I feel like a bomb, which is on its way to explode”, and the Hostility scale (α=.83) eight items, “I feel suspicious towards strangers who are kind”. All scales used the same seven-point response alternatives ranging from 1: “Not at all like me”, to 7: “Exactly like me”. No time period was specified. The psychometric properties of the AQ has been found valid in several studies using different samples (Reyna, Ivacevich, Sanchez, & Brussino, 2011; Valdivia-Peralta, Fonseca-Pedrero, González-Bravo, & Lemos-Giráldez, 2014).

**Relational aggression.** To measure romantic relational aggression, the Self-Report of Aggression and Social Behavior Measure (SRASBM; Morales & Crick, 1998; Murray-Close, Ostrov, Nelson, Crick, & Coccaro, 2010) was used. The scale is made up by five items (α=.73), such as “I have been unfaithful towards my partner, because I was angry at him/her” and “If my partner makes me angry, I will flirt with others in front of him or he.”. The response alternatives, ranging from 1: “Not at all like me”, to 7: “Exactly like me”. No time period was specified. The SRASBM has shown good construct validity in previous studies (e.g., Dahlen, Czar, Prather, Dyess, 2013).

**ADHD symptoms.** To measure ADHD, the Adult ADHD Self-Report Scale (ASRS; Kessler et al., 2005) was used. This scale, comprising 18 items (α=.90), is based on the 18 criteria in the DSM-IV (American Psychiatric Association, 2000) that measure symptoms of
ADHD. Examples of items are “How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?” and “Do you have difficulties in waiting on your turn?”. All the items used the same five-point response scale; 0: “Never”, 1: “Rarely”, 2: “Sometimes”, 3: “Often”, and 4: “Very often” The time-frame was the previous six months. The ASRS has demonstrated satisfactory validity using different samples (Kessler et al., 2007; Kim, Lee, & Joung, 2013).

**Alcohol consumption.** To measure risky alcohol consumption, the Alcohol Use Disorders Identification Test (AUDIT; Allen, Litten, Fertig, & Babor, 1997) was used. This measure comprises ten items ($\alpha=.80$), such as “How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?” and “How often, during the last year, have you not been able to stop drinking once you have started; the majority of which are using a five-point response scale, ranging from 0: “Never” to 4:”Daily or almost daily”. A recent systematic review (Meneses-Gaya, Zuardi, Loureiro, & Crippa, 2009) of the full version and modified versions of the AUDIT show that the measure have good to satisfactory psychometric properties.

**Drug use.** To measure marijuana use and other drugs two items were used: “Have you ever used hashish/marijuana?”, and “Have you ever used other narcotics than hashish/marijuana?”. A seven-point response scale was used, ranging from 1: “Never” to 7: “More than 50 times”.

**Post-traumatic stress symptoms.** To measure post-traumatic stress symptoms (not the disorder), the Impact of Event Scale-Revised (IES-R; Weiss, 2004) was used. IES-R is a tool for assessing symptoms of post-traumatic stress and has three subscales: Avoidance, made up of 8 items, “I tried not to think about it” and “I tried to remove it from my memory”($\alpha=.91$), Intrusion, 8 items, “Other things kept making me think about it” and “Pictures about it popped into my mind” ($\alpha=.92$), and Hyperarousal, 6 items, “Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart” and “I felt watchful
and on-guard” ($\alpha=.89$). All items used a past week time frame. The validity and reliability of the IES-R was evaluated in a literary review (Sundin & Horowitz, 2002) including results from 23 studies using the IES-R instrument. The overall conclusion was that the IES-R has good psychometric properties.

**Suicidal attempts.** To measure suicidal attempts, one item was used, “Have you ever attempted taking your own life?” The response alternatives were on a five-point scale, 1: “No”, 2: “Once”, 3: “A few times”, 4: “Many times regularly”, and 5: “Many times during a short period of time, and then further in between the times”.

**Treatment involvement.** To measure treatment involvement, two items were used. One item was aimed at assessing whether the individual had searched professional help, and was worded: “Have you ever sought support from a professional, to have someone to talk to, get help to straighten things out, or to develop yourself as a person?”. Alternative responses were, 1: “No”, 2: “No, but support from family/friends”, 3: “Yes”. The other item was aimed at assessing whether or not the participant had ever been admitted to a mental health facility, “Have you ever been admitted to a hospital because of psychological/mental problems?”. The response scale was, 1: “No”, 2: “Yes, at one occasion”, and 3: “Yes, at several occasions”. Response alternative 2 and 3 were added together, in this study, since both alternatives represented that the individual had been admitted to a mental facility at some point or other.

**Procedure**

The data for the present study was collected between March and December 2011 within the RESUMÉ-project. A survey and marketing company, using trained interviewers, did all the recruiting, interviewing, and administration of the questionnaire. A total of thirty recruiters, interviewers, and administrators, all 30 years old or more, were chosen due to their previous experience in doing interviews covering sensitive topics, such as offending, alcohol and drug use, physical and sexual abuse. They received training from the company for this particular
project. Background information and purpose of the RESUMÉ project was given to the interview and questionnaire (I/Q) administrators by the research group in charge.

All participants were contacted and recruited by telephone. The recruiters used a manuscript developed by the researchers in charge of the project and the survey company so that every individual would be given the same information about the background and purpose, as well as information about the ethical principles which governs all social sciences research, when people are involved. In sum, these ethical principles involve the demands to duly inform the participants about the purpose of the study, that participation is voluntarily and needs to be agreed upon, as well as that participation can be terminated at any point, and finally that any information gathered will be kept and treated confidentially and only used for research purposes (Vetenskapsrådet, 2002). If the individual chose to participate he or she was asked to decide a time and place for the interview and filling out the questionnaire, and whether or not he or she would like a male or female I/Q administrator to be present. The majority of the participants chose to be at home, at the office of the survey company, or in a public place, such as a library, for the interview and filling out the questionnaire.

The I/Q administrators gave the participants oral and written information about the study at the beginning of the scheduled interview. Then the I/Q administrator asked a few questions using a computer. This computer was then handed over to the participant who answered the questions on the computer. While the participants filled out the questionnaire, the I/Q administrator stayed nearby in case the participant had any questions. Having finished the questionnaire the computer was handed back to the I/Q administrator who asked a few follow-up questions, such as if the participant had any difficulties in answering the questions. The participants were informed that there were professionals within the project to which they could turn had they experienced any negative feelings due to the questions during the interview or questionnaire. The whole procedure took approximately an hour and a half and the participants got a 400 SEK voucher for
the effort. A regional ethical board, which is part of The Swedish Ethical Review Board (“Etikprövningsnämnden”) evaluated and approved the RESUMÉ-project (#2010/463).

**Plan of analyses**

In order to identify, and possibly validate distinct subgroups of psychopathy, the data analyses were conducted in three steps. First, latent profile analysis (LPA) was conducted with Mplus 6.1 statistical software (Muthén & Muthén, 2010). LPA is a statistical method for data reduction, using the response patterns of individuals to cluster them into homogenous subgroups (Muthén, 2000); in the present study this was based on their scores on the Grandiose-Manipulative (GM), Callous-Unemotional (CU) and Impulsive-Irresponsible (II) dimensions of psychopathy as measured by the YPI-S (van Baardewijk et al., 2010). The individual’s scores on these variables are considered to be indicators of a latent variable, a latent class or latent profile, which in turn is used to classify the individual as belonging to one or the other subgroup together with individuals with the same latent profile (Muthén, 2000). To examine if similar groups could be found for males and for females, all the analyses were conducted separately for males and for females. In the second step of the analyses, another LPA was conducted within the group of individuals scoring high on all three YPI-dimensions of psychopathy. In this analysis the individual’s scores on anxiety as measured with the subscale of the Hospital Anxiety and Depression Scale that measures anxiety (HADS-A; Zigmond & Snaith, 1983) and YPI-S total score were used as to identify subgroups.

To assess the results of the LPA, that is, to estimate which model that offered the best fit, the following statistical criteria were used: the Bayesian information criterion (BIC), Akaike information criterion (AIC), Lo-Mendell-Rubin Likelihood Ratio Test (LMR-LRT) statistics, entropy value, and latent class probability (Nylund, Asparouhov, & Muthén, 2007). The BIC and the AIC values are criteria to assess the quality of the models tested, the LMR statistics is a likelihood ratio test that provides a significance test comparing more complex models to less
complex models, the entropy value is to assess the accuracy of the classification and the probability estimate is an indicator of the probability that an individual is classified to the right subgroup, that is, it shows classification quality (Nylund et al., 2007). For a model to represent a better model fit the BIC and AIC values should be low, the LMR-LRT should be significant, indicating that the less complex model cannot be rejected, and the entropy and average posterior probability should be high. The higher the latter two values are, ranging from zero to one, the better the fit. For latent class probability, a value from .70 is acceptable, and the same value, .70, is preferred as entropy value (Muthén, 2000). In the third and final step of the analyses, One-way Analysis of Variance (ANOVA) with post-hoc comparisons, were used to validate the identified subgroups by examining mean-level differences on (1) maltreatment history, (2) offending, (3) aggression, (4) alcohol consumption, (5) drug use, (6) ADHD symptoms, (7) post-traumatic stress symptoms, (8) suicide attempts, and (9) treatment involvement. Also in this step analyses were conducted for males and females separately.

### Results

The relationship between the total score of YPI-S, psychopathic personality, and anxiety and the external variables are displayed in Table 1 below, males and females separately. The table shows that the correlations between the clustering variables, psychopathic personality traits and anxiety, and external variables, are similar for the males and for the females. There are some exceptions: violent offending was uncorrelated with psychopathic personality for females, but positively correlated for males, physical and sexual abuse, as well as neglect was significantly associated with psychopathic personality for females, but only physical abuse was significantly correlated with psychopathic personality for males. A similar pattern was repeated for anxiety, where again physical and sexual abuse, as well as neglect was significantly associated with psychopathic personality for females, but only neglect was significantly correlated with anxiety for males.
The correlation between psychopathic traits and anxiety was significant for both gender, but the association was weaker for the males ($r = .25$, $p < .01$), than for the females ($r = .35$, $p < .01$).

**Identifying subgroups on their levels of the three dimensions of psychopathic personality**

Can we identify subgroups of psychopathic personalities using level of anxiety and psychopathic personality among both males and females in a large community sample of young adults? To answer this question we first conducted an LPA using the three YPI-S dimensions in the total samples of males and females respectively which yielded five models. These models comprised two to six groups/classes which were assessed using statistical criteria. In Table 2, fit statistics for the respective models are presented, males and females separately. The BIC and AIC values can be seen to decrease all along until the six-group model. All models had high entropy values and all but the six-group model had significant LMR-LRT tests, suggesting that the five-group model provided the best overall fit. The mean posterior probability for the five-group LPA model ranged from .93 to .99 for the males, and from .91 to .94, for the females.
which further suggests that the assignment of the individuals to the different groups were accurate. The posterior probability values indicate that 93-99% of the times the male participants were classified to the same group, and 91-94% of the times the females, thus saying that the model well represented the data at hand.

Five similar groups, in terms of constellations of the three YPI-S dimensions, were found among both males and females. Most individuals made up the ‘non-Psychopathic Personality (nonPP)’ group, which scored below average on all three YPI-S dimensions (753 males/903 females). The group ‘Grandiose-Manipulative Only (GM)’ group (117 males/101 females), scored high on the YPI-S dimension Grandiose-Manipulative, average on the Impulsive-Irresponsibility dimension of YPI-S and below average levels on the YPI-S Callous-Unemotional dimension. In the group ‘Callous-Unemotional Only (CU)’, the individuals (65 males/78 females) scored high on the YPI-S dimension Callous-Unemotional, but low on the other two YPI-S dimensions. Individuals that scored high on the Impulsive-Irresponsibility dimension of YPI-S, and average scores on the other YPI-S dimensions, comprised the ‘Impulsive-Irresponsibility Only (II)’ group (98 males/69 females). In the last group the individuals scored high on all the YPI-S dimensions, thus called the ‘Psychopathic Personality (PP)’ group (153 males/163 females). There were no differences in prevalence of gender in the different groups, except in the II group. Significantly more males were identified in this group ($\chi^2 (4, N=2500) =14.78, p<.01$). The nonPP, GM, CU, and II groups with their comparatively low levels of psychopathic personality traits, were combined to one group for the sake of comparison, and will be referred to as the Comparison group. The Comparison and the PP groups were compared to see whether or not they differed significantly from each other on the three dimensions of psychopathic personality as well as on the total score, separately for males and females. The results in Table 2 show that the male and female PP groups were significantly more psychopathic than the male and female Comparison groups on all three dimensions.
separately, as well as on total YPI-S. The male and female Comparison groups included a total of 2,184 individuals (1033 males/1151 females), the full sample being 2,500 individuals, to be compared with the male and female PP groups comprising 316 individuals (153 males/163 females).

Table 2

<table>
<thead>
<tr>
<th>YPI-S</th>
<th>Male PP group</th>
<th>Male Comparison group</th>
<th>Female PP group</th>
<th>Female Comparison group</th>
</tr>
</thead>
<tbody>
<tr>
<td>GD</td>
<td>2.80 ± 0.45</td>
<td>1.77 ± 0.54</td>
<td>2.42 ± 0.49</td>
<td>1.48 ± 0.44</td>
</tr>
<tr>
<td>CU</td>
<td>2.31 ± 0.53</td>
<td>1.46 ± 0.39</td>
<td>1.93 ± 0.47</td>
<td>1.26 ± 0.32</td>
</tr>
<tr>
<td>II</td>
<td>2.55 ± 0.55</td>
<td>1.97 ± 0.49</td>
<td>2.61 ± 0.52</td>
<td>1.89 ± 0.50</td>
</tr>
<tr>
<td>Total</td>
<td>2.55 ± 0.28</td>
<td>1.74 ± 0.33</td>
<td>2.32 ± 0.28</td>
<td>1.54 ± 0.29</td>
</tr>
</tbody>
</table>

***p<.001

Having identified a PP group among males and females separately, LPA was conducted only within this PP group using the total score of the YPI-S and anxiety. This analysis was performed separately among males and females. As displayed in the lower part of Table 3, a two-group model gave the best overall fit to the data, for both males and females, as well as the lowest BIC and AIC values, high entropy and posterior probability values, as well as a significant LMR-LRT test. The mean posterior probability for the two-group LPA models, ranged from .90 to .96 for the males, and from .93 to .99, for the females which indicate that the male and female participants were accurately assigned to the respective groups, thus expressing that the two-group model represents the data well. The smaller of the two identified subgroups, both high on all three YPI-S dimensions of psychopathic personality, was characterized by high levels of anxiety (20 males/50 females), while the larger group was
characterized by low levels of anxiety (133 males/113 females). These groups will be referred to as high-anxious PP subgroup, and low-anxious PP subgroup respectively.

Table 3

Model Fit Statistics for the Latent Profile Analyses

<table>
<thead>
<tr>
<th>#Groups</th>
<th>Males</th>
<th>Females</th>
<th>Males</th>
<th>Females</th>
<th>Males</th>
<th>Females</th>
<th>p</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>22553.89</td>
<td>22553.88</td>
<td>24756.20</td>
<td>24735.48</td>
<td>.92</td>
<td>.90</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>3</td>
<td>22343.47</td>
<td>22307.47</td>
<td>24379.15</td>
<td>24342.88</td>
<td>.92</td>
<td>.90</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>4</td>
<td>22209.34</td>
<td>22158.56</td>
<td>24143.49</td>
<td>24091.69</td>
<td>.91</td>
<td>.91</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>5</td>
<td>22149.38</td>
<td>22068.36</td>
<td>24083.06</td>
<td>24015.71</td>
<td>.92</td>
<td>.90</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>6</td>
<td>22162.57</td>
<td>22034.98</td>
<td>24104.60</td>
<td>24021.71</td>
<td>.81</td>
<td>.87</td>
<td>.57</td>
<td>.99</td>
</tr>
</tbody>
</table>

LPA of the YPI-S total score and Anxiety in total the Psychopathic Personality group of males and females respectively.

<table>
<thead>
<tr>
<th>#Groups</th>
<th>Males</th>
<th>Females</th>
<th>Males</th>
<th>Females</th>
<th>Males</th>
<th>Females</th>
<th>p</th>
<th>p</th>
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<tbody>
<tr>
<td>2</td>
<td>1759.88</td>
<td>1927.62</td>
<td>1738.67</td>
<td>1905.96</td>
<td>.92</td>
<td>.83</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>3</td>
<td>1769.32</td>
<td>1932.86</td>
<td>1739.01</td>
<td>1883.36</td>
<td>.83</td>
<td>.80</td>
<td>.20</td>
<td>.12</td>
</tr>
</tbody>
</table>

Note. BIC=Bayesian; AIC=Akaike Information Criterion; LMR-LRT=Lo Mendell Rubin Likelihood Ratio Test.

Validating the subgroups

To address the third aim of the present study, the groups were compared on a number of theoretically and empirically relevant variables. From theory and previous research it had been suggested that the high respectively low-anxious PP subgroups would differ from each other on the selected variables. When the assumption of homogeneity of variance was violated Welch’s F was reported together with the post-hoc test for unequal variances, Games-Howell. For all other measures, where the assumption of homogeneity of variance was met, the F-value of the ANOVA test was reported together with the LSD post hoc procedure for follow-up comparisons.

We hypothesized that the high-anxious PP subgroup would have higher mean scores than the low-anxious PP subgroup on measures of negative environmental factors, such as maltreatment, abuse, and neglect; problematic externalizing behavior, such as aggression, hostility, offending, alcohol and drug risk use; and internalizing problems, post-traumatic stress symptoms and suicidal attempts, and we also hypothesize that the high-anxious subgroup would be more involved in treatment.
In Tables 4 (males) and 5 (females) subgroup means and standard deviations along with test for differences are presented on the variables.

Table 4

Tests for Mean Differences with ANOVAs and Post-Hoc Tests Between the Two Subgroups and the Comparison Group on All the Variables Under Investigation Among Males.

<table>
<thead>
<tr>
<th>Clustering variables</th>
<th>Low-Anxious PP</th>
<th>High-Anxious PP</th>
<th>Comparison group</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=133</td>
<td>N=20</td>
<td>N=1033</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>(df) F</td>
</tr>
<tr>
<td><strong>Clustering variables</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>YPI-S</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total score</td>
<td>2.54a(.26)</td>
<td>2.60ab(.36)</td>
<td>1.74c(.33)</td>
<td>(2, 47)551.13***</td>
</tr>
<tr>
<td>Grandiose,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>manipulative</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>dimension</td>
<td>2.81a(.44)</td>
<td>2.69ab(.49)</td>
<td>1.77c(.54)</td>
<td>(2, 48)326.71***</td>
</tr>
<tr>
<td>Callous,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unmototional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dimension</td>
<td>2.34a(.50)</td>
<td>2.16ab(.66)</td>
<td>1.46c(.40)</td>
<td>(2, 46)191.05***</td>
</tr>
<tr>
<td>Impulsive,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>irresponsible</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>behavior dimension</td>
<td>2.49a(.53)</td>
<td>2.98b(.52)</td>
<td>1.97c(.49)</td>
<td>(2, 1183)98.40***</td>
</tr>
<tr>
<td><strong>Anxiety</strong></td>
<td>4.86a(2.58)</td>
<td>12.99(1.97)</td>
<td>4.44ac(3.31)</td>
<td>(2, 50)172.59***</td>
</tr>
</tbody>
</table>

**Cluster validation variables**

<table>
<thead>
<tr>
<th></th>
<th>Low-Anxious PP</th>
<th>High-Anxious PP</th>
<th>Comparison group</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=133</td>
<td>N=20</td>
<td>N=1033</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>(df) F</td>
</tr>
<tr>
<td>Physical abuse</td>
<td>3.19a(2.16)</td>
<td>3.30ab(2.39)</td>
<td>2.32b(2.14)</td>
<td>(2, 1183)11.32*</td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>.26a(.94)</td>
<td>.85b(1.84)</td>
<td>.14c(.60)</td>
<td>(2, 46)2.46 n.s.</td>
</tr>
<tr>
<td>Neglect</td>
<td>.32a(1.20)</td>
<td>2.50b(2.56)</td>
<td>.32c(1.18)</td>
<td>(2, 46)7.08***</td>
</tr>
<tr>
<td>Property offending</td>
<td>2.40a(.82)</td>
<td>2.85b(1.22)</td>
<td>2.31c(.66)</td>
<td>(2, 46)2.71n.s.</td>
</tr>
<tr>
<td>Violent offending</td>
<td>2.41a(.89)</td>
<td>2.45b(.74)</td>
<td>2.15c(.46)</td>
<td>(2, 45)7.17*</td>
</tr>
<tr>
<td>Versatility</td>
<td>1.30a(1.50)</td>
<td>1.75b(1.86)</td>
<td>.76c(1.20)</td>
<td>(2, 46)10.46***</td>
</tr>
<tr>
<td>Aggression</td>
<td>3.62a(.87)</td>
<td>3.66b(1.28)</td>
<td>2.71c(.80)</td>
<td>(2, 46)68.95***</td>
</tr>
<tr>
<td>ADHD-symptoms</td>
<td>1.56a(.60)</td>
<td>2.31b(.89)</td>
<td>1.16c(.54)</td>
<td>(2, 46)42.44***</td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>10.08a(6.39)</td>
<td>10.55b(7.32)</td>
<td>7.24c(4.82)</td>
<td>(2, 46)13.80***</td>
</tr>
<tr>
<td>Drug use</td>
<td>3.21a(3.80)</td>
<td>3.10b(4.35)</td>
<td>1.65c(2.64)</td>
<td>(2, 45)11.33***</td>
</tr>
<tr>
<td>Post-traumatic stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>symptoms</td>
<td>.35a(.59)</td>
<td>1.15b(.90)</td>
<td>.27c(4.74)</td>
<td>(2, 45)10.34***</td>
</tr>
<tr>
<td>Suicide attempts</td>
<td>1.32a(.47)</td>
<td>1.69b(.50)</td>
<td>1.23c(.42)</td>
<td>(2, 46)7.10*</td>
</tr>
<tr>
<td>Treatment involvement</td>
<td>2.20a(.49)</td>
<td>2.60b(.75)</td>
<td>2.18c(.42)</td>
<td>(2, 46)3.19 n.s.</td>
</tr>
</tbody>
</table>

*Note: YPI-S = Psychopathic traits. Across rows, means with different superscripts (a,b,c) differ significantly from each other, whereas means sharing one of the superscripts do not differ significantly.

*p<.05, ** p<.01, *** p<.001. All p-values were Bonferroni corrected.
used to identify subgroups, that is, YPI-S total score and anxiety, as well as the external variables used to validate the subgroups, such as maltreatment history, offending, and aggression. Included in Table 4 are also the means and standard deviations of the scores for the Table 5

Tests for Mean Differences with ANOVAs and Post-Hoc Tests Between the Two Subgroups and the Comparison on All The Variables Under Investigation Among Females.

<table>
<thead>
<tr>
<th></th>
<th>Low-Anxious PP</th>
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<tbody>
<tr>
<td><strong>Clustering variables</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YPI-S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total score</td>
<td>2.30$a$ (.25)</td>
<td>2.39$ab$ (.33)</td>
<td>1.54$a$ (.29)</td>
<td>(2, 101) 557.81***</td>
</tr>
<tr>
<td>Grandiose, manipulative dimension</td>
<td>2.42$a$ (.48)</td>
<td>2.43$ab$ (.52)</td>
<td>1.48$a$ (.44)</td>
<td>(2, 1311) 313.49***</td>
</tr>
<tr>
<td>Callous, unemotional dimension</td>
<td>1.91$a$ (.45)</td>
<td>1.94$ab$ (.52)</td>
<td>1.26$a$ (.32)</td>
<td>(2, 96) 154.61***</td>
</tr>
<tr>
<td>Impulsive, irresponsible behavior dimension</td>
<td>2.54$a$ (.49)</td>
<td>2.79$b$ (.56)</td>
<td>1.89$a$ (.50)</td>
<td>(2, 1311) 152.61***</td>
</tr>
<tr>
<td>Anxiety</td>
<td>6.00$a$ (.25)</td>
<td>13.48$b$ (.22)</td>
<td>5.60$ab$ (.39)</td>
<td>(2, 119) 277.19***</td>
</tr>
<tr>
<td><strong>Cluster validation variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical abuse</td>
<td>2.17$a$ (.18)</td>
<td>8.86$ab$ (.7)</td>
<td>5.66$a$ (.89)</td>
<td>(2, 97) 13.64***</td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>.12$a$ (.8)</td>
<td>1.72$ab$ (.2)</td>
<td>.80$a$ (.1)</td>
<td>(2, 97) 6.64***</td>
</tr>
<tr>
<td>Neglect</td>
<td>.90$a$ (.88)</td>
<td>2.10$b$ (.49)</td>
<td>.48$a$ (.14)</td>
<td>(2, 96) 12.86***</td>
</tr>
<tr>
<td>Property offending</td>
<td>2.35$a$ (.71)</td>
<td>2.31$ab$ (.74)</td>
<td>2.13$a$ (.14)</td>
<td>(2, 94) 6.46n.s.</td>
</tr>
<tr>
<td>Violent offending</td>
<td>2.11$a$ (.35)</td>
<td>2.10$ab$ (.24)</td>
<td>2.03$a$ (.14)</td>
<td>(2, 94) 4.83n.s.</td>
</tr>
<tr>
<td>Versatility</td>
<td>.74$a$ (.16)</td>
<td>.76$ab$ (.106)</td>
<td>.29$a$ (.64)</td>
<td>(2, 94) 12.71***</td>
</tr>
<tr>
<td>Aggression</td>
<td>2.98$a$ (.100)</td>
<td>2.76$ab$ (.84)</td>
<td>2.19$a$ (.62)</td>
<td>(2, 96) 44.15***</td>
</tr>
<tr>
<td>ADHD-symptoms</td>
<td>1.67$a$ (.66)</td>
<td>2.12$b$ (.72)</td>
<td>1.20$a$ (.61)</td>
<td>(2, 1311) 76.53***</td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>8.39$a$ (.06)</td>
<td>8.86$ab$ (.7)</td>
<td>5.66$bc$ (.39)</td>
<td>(2, 94) 15.36***</td>
</tr>
<tr>
<td>Drug use</td>
<td>2.25$a$ (.37)</td>
<td>1.8$b$ (.29)</td>
<td>1.04$bc$ (.2)</td>
<td>(2, 96) 9.72***</td>
</tr>
<tr>
<td>Post-traumatic stress symptoms</td>
<td>.88$a$ (.85)</td>
<td>1.47$ab$ (.1)</td>
<td>.48$bc$ (.68)</td>
<td>(2, 94) 29.35***</td>
</tr>
<tr>
<td>Suicide attempts</td>
<td>1.45$a$ (.40)</td>
<td>1.64$ab$ (.48)</td>
<td>1.27$a$ (.45)</td>
<td>(2, 99) 19.21***</td>
</tr>
<tr>
<td>Treatment involvement</td>
<td>2.52$a$ (.64)</td>
<td>2.8$b$ (.67)</td>
<td>2.41$a$ (.57)</td>
<td>(2, 99) 9.54***</td>
</tr>
</tbody>
</table>

Note: YPI-S = Psychopathic traits. Across rows, means with different superscripts (a, b, c) differ significantly from each other, whereas means sharing one of the superscripts do not differ significantly. * \(p<.05\), ** \(p<.01\), *** \(p<.001\). All \(p\)-values were Bonferroni corrected.

Three dimensions of psychopathic personality; grandiose-manipulative, callous-unemotional, and impulsive-irresponsible behaviour. Findings concerning the variables used to identify the
subgroups first show that the Comparison group is significantly less psychopathic compared to the two psychopathic subgroups, on total psychopathy score as well as on the three dimensions of psychopathy. This finding adds support to the differentiation between the PP subgroups and the Comparison group. Secondly, the findings show that the high-anxious PP subgroup is significantly more anxious compared to the low-anxious group. The findings also show that the only difference between the low-anxious PP subgroup and the high anxious PP subgroup on the psychopathic personality dimensions were that both the male and female high-anxious PP subgroups scored significantly higher on the impulsive-irresponsible dimension of YPI-S, compared to the low-anxious PP subgroups.

Other significant differences between the high-anxious PP subgroup and the low-anxious PP subgroups were found for cluster validation variables, such as neglect, and ADHD-symptoms among both males and females. Male high-anxious PP individuals had significantly more symptoms of post-traumatic stress than the male low-anxious PP individuals.

With regards to ADHD-symptoms both the male and female high-anxious PP subgroups had significantly more symptoms of ADHD compared to the low-anxious PP subgroups and Comparison groups.

**Discussion**

The present study used a large general population sample, of young adult males and females, to examine whether or not subgroups of individuals with psychopathic personality could be identified based on levels of psychopathic personality and anxiety. LPA, performed separately among males and females, identified a group high on all three YPI-S dimensions of psychopathic personality. Within the identified group, two distinct subgroups were identified based on their total score of psychopathic personality traits and anxiety. The results show that the subgroups of individuals with psychopathic personality where characterized by low respectively high levels of anxiety and similar subgroups were identified among both males and females. On this aspect, the
identified subgroups resemble proposed theoretical subtypes; a primary subtype which is suggested to have inherent affective deficits (Karpman, 1941; Lykken, 1995; Porter, 1996), manifesting low levels of anxiety (Karpman, 1941; Blackburn, 1998), and a secondary subtype, showing striking similarities in psychopathic expression, to the primary subtype, but with elevated levels of anxiety. The secondary subgroup is theorized (Karpman, 1941; Porter, 1996) only to have a “psychopathic façade”; the psychopathic personality being secondary, that is, due to early adverse experiences (Karpman, 1941; Lykken, 1995; Porter, 1996). Using anxiety to distinguish between a primary, low anxious, subgroup, and a secondary, high anxious, subgroup, is in line with previous research findings showing that the primary subgroup is less anxious and more emotionally stable (e.g., Blagov et al., 2011; Hicks et al., 2004) and manifest less negative emotionality (Hicks et al., 2010; Wilson et al., 1999), than the high anxious subgroup. Previous findings show that the secondary subgroup, on the other hand, is characterized by high levels of anxiety (Lee & Salekin, 2010; Levenson et al., 1995), worry and social concerns (Kimonis, Tartar et al., 2012) and negative emotionality (Hicks et al., 2010). We found, as hypothesized and expected from theory (Karpman, 1948; Blackburn, 1998), that the high anxious subgroups, both males and females, with regards to manifestation and features of psychopathic personality, manifested more impulsivity. This is supported from previous empirical findings showing that the secondary subgroup expressed lower constraints (Hicks et al., 2010) and more impulsivity and behaviors of an irresponsible lifestyle (Kimonis, Frick et al., 2012; Poythress et al., 2010; Swogger et al., 2008). We had further hypothesized that the low anxious subgroup would display more psychopathic traits of an interpersonal and affective character. Based on previous work (e.g., Swogger & Kosson, 2007; Wilson et al., 1999) we expected a heightened manifestation of behaviours of a grandiose and manipulative nature, as well callous unemotional expressions. The present findings did not support these previous results; the low anxious subgroup did indeed score highly on these traits, but they were not significantly different from the high anxious
subgroup. Further, the results showed that the secondary subgroup, again both males and females, had experienced more neglect than the primary subgroup which is line with the suggested etiology of the secondary subgroup. This is further in line with seminal theory (Karpman, 1941; Porter, 1996), proposing that adverse life experiences measured in the present study by history of physical and sexual abused and neglect, are characteristic of the secondary subgroup; Karpman (1941) writes about parental rejection as a form of neglect. Previous findings also support the result about maltreatment being significantly more experienced by the secondary subgroup, providing evidence that show that childhood abuse (Blagov et al., 2011) as well as general traumatic experiences, including abuse and neglect (Tartar et al., 2012; Vaughn et al, 2009) are features of the secondary subgroup.

The results of the present study further show that the male high anxious subgroup had suffered more from post-traumatic stress symptoms than the primary subgroup, which has also been shown in previous studies among males (Tartar et al., 2011) and females (Hicks et al., 2010). There is no explicit theoretical support for this, but post-traumatic stress symptoms being consequences of traumatic experiences and as already stated, adverse life experiences which could fathom maltreatment history (experiences of physical and sexual abuse and neglect) and other traumatic experiences are theorized (Karpman, 1941; Porter, 1996) to partly explain the psychopathic personality of the secondary subgroup.

It was hypothesized that the secondary subgroup would have more problems with attention, hyperactivity, and impulsivity, symptoms of ADHD, which was confirmed by the results. There is no explicit theoretical support to claim that symptoms of ADHD should be seen more in secondary subgroups, or on the other hand in primary subgroups. However, Lykken (1995) proposes that the secondary subtype has a functioning stop-system, but an overactive go-system, which makes the subtype sensitive and open to all sorts of stimuli, resulting in a diversity of unwanted behaviours and outcomes. This is in line with previous empirical research
showing that hyperactivity and impulsivity (Blagov et al., 2011; Vaughn et al., 2009) and attention problems (Kimonis, Frick et al., 2012; Salihovic et al., 2014) are characteristics of the secondary subgroup. The results concerning impulsivity, anxiety, neglect, symptoms of ADHD and post-traumatic stress among high anxious individuals with psychopathic personality, are similar for males and females in their respective subgroups, that is, significant results in the male secondary subgroup correspond to significant results in the female secondary subgroup, and vice versa for the female subgroups. There was one exception. The male secondary subgroup reported significantly more symptoms of post-traumatic stress than the male primary subgroup. The female secondary subgroup also reported more symptoms of post-traumatic stress than the primary subgroup, but these results were not significant.

An unexpected finding of the present study was that the subgroups did not differ significantly from each other on offending. We had hypothesized that the subgroups would differ on offending, especially violent offending, since the individuals in the secondary subgroup are theorized to be more hostile and reactive in their aggression. This hypothesis was not supported in the present study. On the other hand, both theory and previous studies report inconsistent and sometimes contradictory findings even from studies using similar settings, such as only prison populations. One of the included studies on prison populations showed that the secondary subgroup is usually younger at onset, but that the primary subgroup is younger at first criminal charge (Hicks et al., 2004). Other studies on prison populations report contradicting combinations such as evidence that violent charges are characteristic of the secondary subgroup (Swogger et al., 2008), whereas other findings report that violent charges are characteristic of the primary subgroup (Swogger & Kosson, 2007; Vassileva et al., 2005). How can these inconsistent and sometimes contradicting findings be explained? Important to remember is that offending has been used as one of “the main determinant[s] of clinician’s diagnosis of psychopathy” (Coid, 2010) and it is still used in the PCL-R (Hare, 1991) which is seen as the “gold standard” to
measure psychopathy in offender populations, and against which all other assessment tools of psychopathy are compared.

Previous research that has been able to identify subgroups of individuals with psychopathic personality has generally found the primary subgroup to be the larger of the two subgroups both in institutionalized settings as well as in non-institutionalized settings. The proportion of the identified subgroups in the present study were thus in line with findings from previous studies, the primary subgroup being the larger of the two subgroups both for males and females (males, 133 primary/20 secondary; females, 113 primary/50 secondary). The previous research included in the present study report some treatment success for the secondary subgroup (Kimonis et al., 2011; Lee et al., 2010), whereas none for the primary subgroup. Considering then that the proportions of individuals belonging to the different subgroups, the smaller proportion can possibly be treated and helped, but the majority needs at least to be handled and managed effectively.

In conclusion, the findings of the present study add support to the literature that claim that individuals with psychopathic personality is not a homogenous population but rather a heterogeneous group, which can be disaggregated into at least two subpopulations, a primary and a secondary subgroup, based on their levels of anxiety as well as constellations and degree of psychopathic traits. The identified subgroups differed across theoretically and empirically relevant constructs of maltreatment history, aggression, symptoms of ADHD and post-traumatic stress. Thus, the gained subgroups are in several ways, but not in all, in line with theories of primary and secondary psychopathy. Generally, the differences between the high anxious and the low anxious subgroups were the same for males and females.

**Strengths and limitations**

The findings of the present study should be considered in the light of some limitations. When data relies on retrospective self-report, several of the items even had a life-time
perspective; there is always a risk for recall bias. Response bias is also a risk with self-report instruments, a questionnaire in the present study, since the participant may be influenced by factors such as how the items are phrased or and wanting to give a good impression or the ‘right answers’ (Bryman, 2012). Both recall and response bias may affect the validity of the questionnaire and are methodological limitations. Examining individuals with psychopathic personality traits, such as being manipulative and deceitful, and to whom lying comes very easily, using self-report pose another threat to the validity of the instrument being used.

In choosing design of a study, it is important to let the research question guide the choice (Bryman, 2012). Using a cross-sectional design, as we do in the present study, could be seen as another methodological limitation since no causal inferences about etiological issues of psychopathic personality can be concluded. A cross-sectional design does not yield knowledge of what preceded the outcome, the outcome being psychopathic personality. It is possible that a longitudinal design could show that. On the other hand, for the purpose of answering the research questions of the present study a cross-sectional design can be argued to be sufficient.

Several strengths should also be mentioned with the present study. Although the data in the present study only relies on self-report, the YPI-S (van Baardewijk et al., 2010) and the majority of the other instruments that were used to assess the variables in focus for this study have been found to be reliable and valid in several previous studies. The present study is also the first to use a large, representative community sample to test for subgroups of individuals with psychopathic personality, thus being able to get a wider picture of the psychopathic subgroups as well as addressing future directions from previous studies that challenge researchers to go “outside [the prison walls]” (Lilienfeld, 1998, p. 122) and other institutions in order to examine subgroups of individuals with psychopathic personality. Although this challenge was put forward almost forty years ago (Widom, 1977) the focus for research of psychopathy and psychopathic personality is still institutionalized populations. A few studies
have begun the examination of subgroups of individuals with psychopathic personality in non-institutionalized populations, but up till now the few non-institutionalized populations that have been used are highly specific populations, such as students. Another strength with the present study is that the sample is also reasonable representative of the gender distribution of Sweden, where roughly 51% are male and 49% are females. The distribution in the selected sample is approximately 48% males and 53% females. This is important since it has been suggested that gender specific differences may have an influence on how psychopathic personality is expressed and manifested (Falkenbach et al., 2014). A final strength concerns the possible differences in the selected sample for the present study (2,500 individuals), compared to those who also belonged to the first randomized sample and were contacted, but chose not to participate. Those who chose to participate in the RESUMÉ study came from more urban areas as well being more educated compared to the average Swedish person. Thus, the relative high drop-out rate slightly biased the selected sample. When testing for the significance of these differences using demographic variables and problem variables, it showed that there were no major differences between the two groups, that is, between those who declined participation, of which 30 individuals were randomly chosen as a comparison group, and those 2,500 who chose to participate. This would indicate that the selected sample was not heavily biased.

**Future research directions**

Directions for future studies are given in relation to the highlighted limitations above. To refute the limitations of the present study design, future studies might want to use longitudinal design which in a non-experimental design could not or at least have less power, to conclude causality, but such a design could give some indication of direction for a relationship between the variables of interest (Bryman, 2012). In line with suggestions from previous studies (Lee & Salekin, 2010) research on subgroups of individuals with
psychopathic personality need to broaden and deepen the scope of research in a wider variety of populations to be able to conclude what is prototypical of the different subgroups, if they belong to an institutionalized population or a general community population, if they are males or females, if they are children, adolescents or adults, or if they have different ethnical origins. For example, very little research on subgroups of individuals with psychopathic personality has been undertaken in female populations. To our knowledge, the only study that has tried to distinguish between primary or secondary subgroups of individuals with psychopathic personality using a female only sample was restricted to a female offender sample (Hicks et al., 2010). The findings from the present study need to be replicated using other forms of assessments as well as using other informants and official records, to validate the results. These suggestions in turn would help correctly to identify the subgroup belonging, and thus offer appropriate treatment. Successfully identifying primary and secondary subgroups of individuals with psychopathic personality could generate great gains for the individual and for society as a whole, since as a group, psychopathic individuals, is thought to make up as much as 15-30% of prison populations.

**Practical implications**

Due to the findings in the present study that individuals with psychopathic traits are in fact a heterogeneous population, we conclude that it is possible to identify subgroups of individuals with psychopathic personalities in a general community sample, therefore, the practical implications may seem straightforward: A heterogeneous group should not be given the same treatment, nor do they need the same form of management. Although the results for treatment involvement were not significant, both the male and the female secondary subgroups, reported having sought more professional help than the primary subgroups, which could possibly be interpreted as an indication of an overall treatment motivation. The task is thus to identify individuals belonging to the respective subgroups and tailor treatment efforts according to the
subgroup’s needs. On the other hand, although we are able in the future to successfully identify to which subgroup with psychopathic personality an individual belongs to, and thus tailor the necessary treatment, how do we reach the individuals in the respective subgroup? An institutionalized sample makes it possible, maybe not simple, but possible, to actually pinpoint individuals with psychopathic personality traits and consequently offer appropriate treatment. It is after all the most important objective for the Swedish Prison and Probation Service, to decrease the risk for recidivism in crime (Kriminalvården, 2014). But how does one create effective prevention and intervention strategies for a general community sample? We know now that there are individuals high on psychopathic traits who can be differentiated from each other based on constellation and levels of psychopathic traits and levels of anxiety, as well as being characterized by distinct traits and behaviors. Early prevention and intervention are the answers that most research suggests. The suggestions include parental education and more resources and training to those professionals who are most likely to come in contact with families that are at risk. At risk at creating environments that are so to speak breeding grounds for future antisocial personalities. In regards to this context, it foremost concerns the psychopathic individuals high on anxiety. Another option which is always available is a sort of ‘one-size-fits-all-solution’. Usually when these antisocial individuals are identified as problematic what caused the problem has is already passed; what is left is to focus on protective factors and put all resources and efforts in to increasing them.
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American Psychiatric Association (2000). *Diagnostic and Statistical Manual-Text Revision*


HIGH AND LOW ANXIETY SUBGROUPS


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