Psychopathy

– the heterogeneity of the construct

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This thesis is dedicated to the memory of my mother,

Brit Bugge Sandvik (1948-2009)

Contents

Scientific environment

The studies presented in this thesis were conducted at the Department of Psychosocial Science, Faculty of Psychology, University of Bergen. The founding of the project was mainly provided by the Faculty of Psychology. Additional founding was received from the Center for Research and Education in Forensic Psychiatry, Haukeland University Hospital, Bergen, and from The Meltzers Research Fund.

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Abbreviations

AAC	Anterior Cingulate Cortex
ANS	Autonomic Nervous System
AQ	Buss-Perry Aggression Questionnaire
ASPD	Antisocial Personality Disorder
BAS	Behavioral Activation System
BPD	Borderline Personality Disorder
BIS	Behavioral Inhibition System
CA	Callous Affect
CAN	Central Autonomic Network
CAPP	Comprehensive Assessment of Psychopathic Personality
CAPP-IRS	Comprehensive Assessment of Psychopathic Personality -Institutional Rating Scale
CFA	Confirmatory Factor Analyses
CT	Criminal Tendencies
DLPFC	Dorsolateral Prefrontal Cortex
DSM-V	Diagnostic and Statistical Manual of Mental Disorders - Fifth Edition
ECG	Electrocardiogram
EFA	Exploratory Factor Analyses
EI	Emotional Intelligence
ELS	Erratic Lifestyle
FFM	Five-Factor Model
FFT	Fast Fourier Transform
fMRI	Functional Magnetic Resonance Imaging
GSI	Global Severity Index
GSR	Galvanic Skin Response
HADS	Hospital Anxiety and Depression Scale
HF	High Frequency
HR	Heart Rate
HRV	Heart Rate Variability
IBI	Inter-beat Intervals
ICC	Intra-class Correlation Coefficient
ICD-10	International Statistical Classification of Diseases and Related Health Problems 10th Revision
IPM	Interpersonal Manipulation
LF	Low Frequency
LPSP	Levenson's Primary and Secondary Psychopathy Scale
LSD	Lysergic Acid Diethylamide
NPD	Narcissistic Personality Disorder
OFC	Orbitofrontal Cortex
PCL	Psychopathy Checklist

PCL-R	Psychopathy Checklist - Revised
PNS	Parasympathetic Nervous System
PPI	Psychopathic Personality Inventory
REK-vest	Norwegian Regional Ethics Committee for Medical Research - West
RMET	Reading the Mind in the Eyes test
SCL-90-R	Symptom Check-List 90-Revised
SD	Standard Deviation
SNS	Sympathetic Nervous System
SRP	Self-Report of Psychopathy Scale
SRP-III	Self-Report of Psychopathy Scale - Third version
ToL	Tower of London
ToM	Theory of Mind

Summary

Background

Hervey Cleckley's description of psychopathic personality detailed in his book, *The Mask of Sanity (1941/1976)*, has strongly influenced the last seven decades of empirical research on psychopathy. Nevertheless, there has been a long ongoing discussion of what should be included in the conceptualization of the psychopathy construct. While Cleckley emphasized the emotional and interpersonal deficits, others also included antisocial behavior as a defining feature. While a tremendous amount of research has been conducted on psychopathy, there are considerable mixed and sometimes contradictory findings reported in the literature. The overall aims of this thesis were to explore possible discrepancies within the modern psychopathy construct, and to see if possible underlying heterogeneities and/or if the use of different psychopathy assessment instruments might explain some of the previous mixed findings.

There exist several instruments designed to assess psychopathic personality. This multitude of instruments differs in assessment methodology (i.e. self-report, clinical assessment), as well as on the theoretical focus. In the first paper, we explored the inter-correlations between three psychopathy assessment instruments (The Psychopathy Checklist – Revised [PCL-R], The Comprehensive Assessment of Psychopathic Personality – Institutional Rating Scale [CAPP-IRS], and The Self-Report Psychopathy Scale – III [SRP-III]) to evaluate if the instruments conceptually assess the same psychopathic construct.

In the second and the third paper we investigated the relationship between the psychopathy construct and cognitive, emotional and physiological external correlates. The second papers investigated the relationship between psychopathy and Theory of Mind capabilities. The inclusion of both self-report (SRP-III) and a clinical assessment (PCL-R) of psychopathy also allowed us to investigate whether

methodological differences affected the results, and hence explain some of the previous mixed findings in the field.

Several previous studies have shown associations between psychopathy and the experience of negative affectivity. We wanted to further examine this relationship, and to better understand how potential underlying mechanisms affect the relationship, we also controlled for other known biological and cognitive correlates of negative affectivity.

Methods

Ninety-two male prison inmates at Bergen prison, Norway participated in the study. Psychopathic personality was assessed with three different assessment instruments (PCL-R, CAPP-IRS, and SRP-III). Computer based experimental tasked was used to measure Theory of Mind capabilities (emotional recognition; Reading the Mind in the Eyes Test [RMET]) and executive functioning (Tower of London). Heart rate variability (HRV) was included as an index of autonomic self-regulation. The experience of negative affectivity (general psychological distress, depression, anxiety, and aggression) was assessed through self-reports.

Results

The correlational analysis in paper 1 showed a high degree of inter-correlations between the instruments, but substantial divergence was also found. CAPP-IRS and PCL-R showed high inter-correlations and, hence, seem to tap into the same underlying construct. However, CAPP-IRS seems to have a higher affective focus in all its domains. Our finding of lower correlation between the SRP-III (self-report) and the other two clinical tools may suggest a limitation in the instrument to uncover the full range of the psychopathic construct. Especially the interpersonal and affective segments seemed to be missed.

In paper 2, we found some discrepancy in the relationship between psychopathic traits and emotional recognition connected to psychopathy assessment methodology. For the self-report (SRP-III) there was an overall negative

association between mental state discrimination and psychopathy, while for the clinical instrument (PCL-R), the results were more mixed. For Factor 1 psychopathic traits (interpersonal and affective traits), we found a positive association with discrimination of neutral mental states, but not for the positive or negative mental states. Factor 2 traits (impulsive and antisocial lifestyle) were found to be negatively associated with discrimination of mental states.

In paper 3, the initial correlation analyses revealed significant associations between psychopathy and negative affectivity. However, in subsequent regression analyses, when controlling for underlying self-regulatory mechanisms, this association between psychopathy (Factor 1 and Factor 2) and negative affectivity measured through Symptom Check-List Revised (SCL-90-R) and Hospital Anxiety and Depression Scale (HADS) disappeared. PCL-R Factor 2 remained the strongest significant predictor of aggression.

Conclusion

Overall, the results from the three papers challenge a view of psychopathy as an etiologically homogenous construct. All three papers find empirical support for an inherent heterogeneity within what traditionally is called "psychopathy", and this heterogeneity seems to be especially salient in regard to affective and emotional processing.

The PCL-R as a single well-validated measure of psychopathy has over the years come to dominate the scientific field of psychopathy. Our results add to a growing body of research showing both dimensionality and heterogeneity related to the psychopathy construct, and especially related to PCL-R psychopathy. The finding that PCL-R factors relate differently to negative affectivity, aggression and Theory of Mind capabilities, might indicate that the underlying factors of psychopathy represent somewhat different underlying concepts, rather than a unitary construct.

List of publications

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Sandvik, A. M., Hansen, A. L., Johnsen, B. H., & Laberg, J. C. (2014). Psychopathy and the ability to read the "language of the eyes": Divergence in the psychopathy construct. *Scandinavian Journal of Psychology.* Advance online publication. doi: 10.1111/sjop.12138

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1. Introduction

The label *psychopath* is used in clinical and scientific settings as well as in every day language. Psychopathy is currently not recognized as a personality disorder in either the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V; American Psychiatric Association, 2013) or in the 10th revision *International Statistical Classification of Diseases and Related Health Problems 10th Revision* (ICD-10; World Health Organization, 1992), but it has a long history in both literature and practice of clinical psychology and psychiatry. In popular culture, the psychopath is often portrayed as the ultimate evil, as in the character *Hannibal Lecter* in the novels by Tomas Harris (1981, 1988, 1999, 2006), or as Patrick Bateman in the novel *American Psycho* by Bret Easton Ellis (1991). In everyday language, "psychopath" is often also used to label people deemed as un-empathetic or unjust, like a violent criminal in the news, a boss, or a coworker. With this more or less poorly defined use of the psychopathy concept in everyday language, how are the scientific representations of psychopathy portrayed?

1.1 The history of the psychopathy construct

1.1.1 "Manie sans délire"

The conceptualization of *psychopathy* can be traced back to one of the pioneers of modern psychiatry, Philipe Pinel (1754–1826), who described a condition he had encountered as: "No sensible change in functions of understanding; but perversion of the active faculties, marked by abstract and sanguinary fury, with a blind propensity to acts of violence" (Pinel, 1806/1988, p. 156). He named this condition "*manie sans délire*" ("madness without delirium/confusion") and initiated a burst of psychiatric speculations regarding this previously unexplained phenomena (Kavka, 1949; McCord & McCord, 1964). Dr. James Cowles Prichard further reformulated the condition with the phrase *moral insanity*, which he described as a:

> …madness consisting in a morbid perversion of the natural feelings, affections, inclinations, temper, habits, moral dispositions, and natural impulses, without any remarkable disorder or defect of the intellect or knowing and reasoning faculties, and particularly without any insane illusion or hallucination (Prichard, 1835, p. 6)

Both Pinel's "manie sans délire" and Prichard's moral insanity were over-inclusive compared to contemporary conceptualizations of psychopathy, and could include almost all of today's psychiatric diagnoses, maybe except mental retardation and schizophrenia (McCord & McCord, 1964; Millon, Simonsen, & Birket-Smith, 1998). The German psychiatrist Julius Ludwig August Koch was the first to use the term *psychopathic*. In 1891 he proposed to replace the term moral insanity with *psychopathic inferiority*. With psychopathic, Koch inferred that an individual's personality was physical and caused by organic states, and by inferiority, he implied an unfavorable deviation from the norm (Millon, et al., 1998). Eventually, this inclusive use of the term became more specific and related to a disorder manifested in "strong vicious or criminal propensities, and on whom punishment has little or no deterrent effect" (Gattie & Holt-Hughes, 1914, p. 202). Koch's contention of "psychopathic inferiority" as a strictly organic acquired or congenital disorder failed when a more social perspective emerged and the designation was changed to *sociopathy* (Arrigo & Shipley, 2001; Millon, et al., 1998). Also Kraepelin, in the fifth edition of his seminal work *Psychiatrie: Ein Lehrbuch* (1896, Psychiatry: A textbook) used the term *psychopathic* referring to states previously coined morally insane (Millon, et al., 1998). In the seventh edition of his work, Kraepelin used the term *psychopathic personalities* in reference to degenerative personality development (Diefendorf & Krepelin, 1923; Millon, et al., 1998).

1.1.2 Cleckley's psychopathy

The modern clinical construct of psychopathy is heavily influenced by the American psychiatrist Harvey Cleckley's classic monograph *The Mask of Sanity*

(1941/1976), which was first published in 1941. Based on his extensive experience with patients at Georgia University Hospital, he provided an insightful and thorough clinical characterization of a group of patients he saw as psychopaths. To help operationalize the disorder, Cleckley formulated 16 criteria (see table 1).

Table 1.

Cleckley's 16 criteria for psychopathy (1941/1976)

1. Superficial charm and good intelligence
2. Absence of delusions and other signs of irrational thinking
3. Absence of "nervousness" or psychoneurotic manifestations
4. Unreliability
5. Untruthfulness and insincerity
6. Lack of remorse or shame
7. Inadequately motivated antisocial behavior
8. Poor judgment and failure to learn by experience
9. Pathological egocentricity and incapacity for love
10. General poverty in major affective reactions
11. Specific loss of insight
12. Unresponsiveness in general interpersonal relations
13. Fantastic and uninviting behavior with drink and sometimes without
14. Suicide rarely carried out
15. Sex life impersonal, trivial, and poorly integrated
16. Failure to follow any life plan

Cleckley's description of the psychopath as wearing a "mask of sanity" reflects his notion of psychopaths as capable of upholding a facade of "normality" in comparison with most other psychiatric disorders (Cleckley, 1941/1976; Skeem, Polaschek, Patrick, & Lilienfeld, 2011). Cleckley, in his conceptualization, focused on the interpersonal characteristics like the incapacity for love, egocentricity, lack of anxiety and failure to follow a life plan. Criminality, although acknowledging that many individuals with these characteristics do commit crime, was not the focus of Cleckley's conceptualization. He specified that criminality could be seen as a rare

expression of psychopathy, and wrote that

> [t]he typical psychopath, as I have seen him, usually does not commit murder or other offenses that promptly lead to major prison sentence. … Many people, perhaps most, who commit violent and serious crimes fail to show the chief characteristics which so consistently appear in the cases we have considered. (Cleckley, 1941/1976, p. 262)

Cleckley's operationalization reflected a distinct psychiatric category, and further research relied heavily on his descriptions, but the modern emphasis of the connection between psychopathy and criminal behavior is probably more dependent on the work of Cleckley's contemporaries William McCord and Joan McCord (McCord & McCord, 1964; Skeem, et al., 2011). Based on their work on criminal offenders, they define a psychopath as "an asocial, aggressive, highly impulsive person, who feels little or no guilt and is unable to form lasting bonds of affection with other human beings" (McCord & McCord, 1964, p. 3). Although McCord and McCord put a higher emphasis on aggressive, impulsive and criminal behavior, they did not consider such behavior as definite. However, they regarded "guiltlessness" and "lovelessness" as two critical psychopathic traits (Hervé, 2007b; McCord & McCord, 1964; Skeem, et al., 2011).

1.1.3 Heterogeneity and "false" psychopathy

Ben Karpman (1941, 1946, 1948), another contemporary of Cleckley, agreed that a lifelong trend of antisocial behavior is characteristic of psychopathy, but that this kind of behavior is by no means exclusive for this disorder. Karpman criticized much of the research on psychopathy for the inclusion of all sorts of individuals with antisocial behavior as the only common characteristic (Karpman, 1948). He emphasized the need to differentiate the meaning and etiology of the behavior. Karpman (1941) postulated a distinction between two types of psychopathy: "idiopatic" and "symptomatic". The "idopatic", also called primary psychopathy,

reflected an affective deficit with no direct trace to psychogenic factors, whereas "symptomatic", also called secondary psychopathy, reflected affective and behavioral difficulties linked to early psychosocial and environmental causes (Karpman, 1941, 1948). Karpman suggested that secondary psychopathy might be viewed as "false positive psychopathy" (Karpman, 1946, p. 283). This distinction between primary and secondary psychopathy opened for more research on psychopathy subtypes (Poythress & Skeem, 2006a).

1.1.4 "Low fear"

David Lykken (1957, 1995) built on Karpmans's theories and proposed that primary psychopaths showed attenuated experience of emotional states – specifically of anxiety and fear. The "low fear hypothesis" was tested with the use of avoidance learning tasks and measures of galvanic skin response (GSR). The results indicated that primary psychopaths suffered from a deficit in fear conditioning in their poor ability to inhibit behavior that was punished, poor electrodermal conditioning, and more rapid electrodermal extinction (Lykken, 1957). Several studies has since replicated these findings, and the notion of poor avoidance of punishment has received considerable theoretical and empirical support (Fowles & Dindo, 2006; Lykken, 1995). Lykken's theory was later linked to Gray's (Gray, 1975) biological model of personality, where the two central components are the *behavioral activation system* (BAS), and the *behavioral inhibition system* (BIS; Fowles, 1980; Lykken, 1995). The BAS regulates approach behavior and responds to awards, while the BIS regulates passive avoidance behavior and responds to threatening situations with fear and anxiety that inhibit behavior (Lewis, 1991; Lykken, 1995). Fowles linked the clinical features of psychopathy with psychophysiological data and concluded that primary psychopaths have a deficit in the BIS (Fowles, 1980). This weak BIS hypothesis can account for Lykken's findings of poor avoidance learning and lack of fear and anxiety. Lykken further theorized that secondary psychopaths may possess a normal BIS, but an

overactive BAS that makes the individual show poor passive avoidance when faced with strong incentives (Lykken, 1995). This, also in accordance with Karpman's view, makes it possible for the secondary psychopaths to experience anxiety related to their psychopathic behavior (normal BIS) at same time as the overactive BAS pushes the individual to behave impulsively (Lykken, 1995; Poythress & Skeem, 2006a).

1.2 Measures of psychopathy

1.2.1 PCL-R

In 1980, following Cleckley's tradition, Robert D. Hare started the development of a new research scale for the assessment of psychopathy in criminal populations (Hare, 1980). In the beginning, they used case histories and interviews to rate the individual on each of Cleckley's 16 characteristics of psychopathy. However, the ratings were difficult to make as these characteristics was originally compiled as a list of clinical characteristic typical of psychopathy, not for assessment purposes (Hare, 2003). The need for a more streamlined and objective procedure led Hare and colleagues to collate a list of more than 100 traits and behaviors explicitly or implicitly used in ratings of psychopathy (Hare & Neumann, 2006). Redundant and difficult-to-score items were omitted, and preliminary scoring criteria were developed for the reminding items. Twenty-two items were, on basis of psychometric properties, retained and composed the first psychopathy checklist which was initially referred to as "*Research Scale for the Assessment of Psychopathy*" (Hare, 2003). The instrument, later referred to as the *Psychopathy Checklist* (PCL), was scored using a three-point scale (0–2). Experience and research with the origin checklist led to a revision were two items were deleted, and the wording of the other items slightly changed (Hare & Neumann, 2006). Item 22, "Drug or alcohol abuse not direct cause of antisocial behavior", was omitted because of experienced difficulty in scoring the item. Item 2, "Previous diagnosis as psychopath or similar",

was omitted because it offered little useful information, and relied on diagnosis with uncertain reliability and validity (Hare, 2003). These changes eventually led to the publication of the 1991 edition of *Psychopathy Checklist -Revised* (PCL-R; Hare, 1991). A further fine-tuning, and the most current version, of the scoring manual was released in 2003 (PCL-R: 2nd; Hare, 2003). See table 2 for a list of items in PCL-R .

Table 2.

Psychopathy Checklist-Revised (PCL-R) items

		Factor	Facet
1.	Glibness/Superficial charm	1	1
2.	Grandiose Sense of self worth	1	2
3.	Need for stimulation/Proneness to boredom	2	3
4.	Pathological lying	1	1
5.	Conning/Manipulative	1	1
6.	Lack of remorse or guilt	1	2
7.	Shallow Affect	1	2
8.	Callous/Lack of empathy	1	2
9.	Parasitic Lifestyle	2	3
10.	Poor behavioral controls	2	4
11.	Promiscuous sexual behavior	-	-
12.	Early behavioral problems	2	4
13.	Lack of realistic, long term goals	2	3
14.	Impulsivity	2	3
15.	Irresponsibility	2	3
16.	Failure to accept responsibility for own actions	1	2
17.	Many short term marital relationships	-	-
18.	Juvenile delinquency	2	4
19.	Revocation of conditional release	2	4
20.	Criminal versatility	2	4

Adapted from Hare (2003).

The first version (PCL; Hare, 1980), and later the revised version (PCL-R; Hare, 1991, 2003) of the psychopathy checklist has been used extensively in research over the last 40 years, and is now regarded as the most valid and reliable instrument for assessing psychopathic personality, and has without doubt become the dominant instrument for assessment of psychopathy (Cooke, Kosson, & Michie, 2001; Hare

& Neumann, 2008; Stoll, Heinzen, Köler, & Huchzermeier, 2011). The development and validation of PCL/PCL-R now allows psychopathy to be assessed in a standardized manner. This has facilitated the extensive and wide range of research in the field.

Structural properties of PCL-R

The structural properties of PCL-R have been subject of much research and debate. Initial factor analyses indicated the existence of two inter-correlated subordinated factors of psychopathy measured with PCL-R (Hare, 2003; Harpur, Hare, & Hakstian, 1989). Factor 1 consists of items related to affective and interpersonal traits, whereas Factor 2 consists of items related to an impulsive and antisocial lifestyle. This two-factor model has gathered much empirical support and dominates the literature (Hare, 2003; Swogger & Kosson, 2007). More recent large-sample analysis also provide evidence for a both a tree-factor model (Cooke & Michie, 2001), and a two-factor, four-facet model (Hare, 2003).

In the hierarchical three-factor model proposed by Cooke and Michie (2001), psychopathy is underpinned by three factors: "Arrogant and Deceitful Interpersonal Style", "Deficient Affective Experience", and "Impulsive and Irresponsible Behavioral Style". Based on theories of psychopathy, and a combination of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), they retain 13 items, while seven items is omitted as they are imprecise indicators of psychopathy, too antisocial in nature, and fail to load significantly to any factor (Cooke & Michie, 2001; Hare & Neumann, 2005; Skeem & Cooke, 2010). The three-factor model is criticized by Hare and colleagues for the exclusion of the overt antisocial items, and for the procedures used in the inclusion/exclusion of scale items, however, the debate is still ongoing (Hare, 2003; Hare & Neumann, 2005, 2010; Neumann, Hare, & Newman, 2007; Skeem & Cooke, 2010).

The four-facet model (also called the two-factor, four-facet model) is included in the 2nd edition of the PCL-R (Hare, 2003). This model is based on the large and diverse datasets made available over the years since the first edition, and propose a hierarchical model existing of one superordinate factor (psychopathy), two subordinate factors (Factor 1, and Factor 2) and four second order facets (Interpersonal, Affective, Lifestyle, and Antisocial). The four-facet model receives substantial empirical support (Bolt, Hare, Vitale, & Newman, 2004; Hare, 2003; Hare & Neumann, 2008; Neumann, et al., 2007). The hierarchical structure of the model is presented in figure 1.

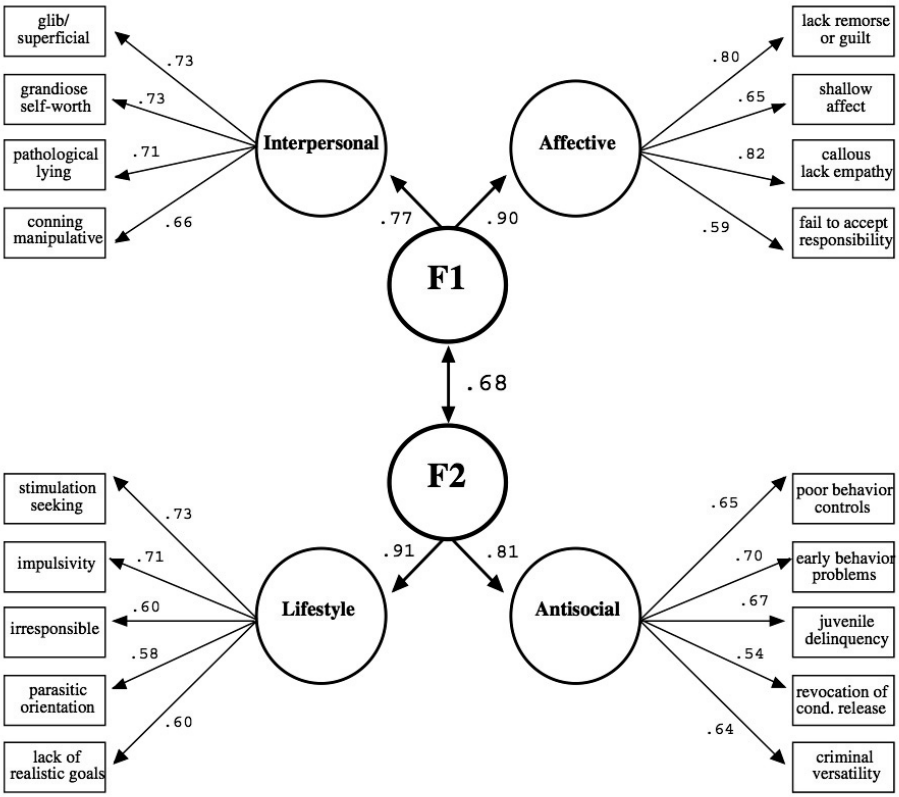

Figure 1. The hierarchical structure of the two-factor, four-facet model. (Hare & Neumann, 2008; Reprinted with permission from Annual Reviews of Clinical Psychology).

1.2.2 CAPP

One important controversy in the conceptualization of psychopathy is the significance of antisocial behavior (Andrade, 2008; Lilienfeld, 1994). Much research find support for psychopathy as a risk factor for violence and recidivism (Salekin, Rogers, & Sewell, 1996), but some researchers questions the validity of this link by claiming that such findings present a tautological argument where antisocial and criminal behavior is used in the assessment as well as in external correlates in the validation of psychopathy (Andrade, 2008; Skeem & Cooke, 2010). It is further

argued that criminal behavior is better regarded as an epiphenomenon of psychopathy, and therefore not specific or diagnostic of psychopathy (Cooke & Michie, 2001; Cooke, Michie, Hart, & Clark, 2004; Skeem & Cooke, 2010). A reliance on previous criminal and antisocial behavior in the psychopathy assessment may also hinder the instrument's ability to detect individual changes, if indeed such changes are possible (Cooke, Hart, & Logan, 2004). Comprehensive Assessment of Psychopathic Personality (CAPP) is a relatively new assessment instrument developed by Cooke, Hart, Logan, and, Michie (2004). The CAPP model tries to overcome the previously mentioned restriction by focusing less on behavioral features, and more on dynamic personality qualities. The CAPP model aims to incorporate the full domain of psychopathic personality disorder, and is developed with intent to enable detection of changes in the personality. The CAPP is a hierarchical model of psychopathic personality composed of six domains of symptoms: The attachment domain, the behavioral domain, the cognitive domain, the dominance domain, the emotional domain, and the self domain. Each domain further includes several symptoms that reflect disruptions of various personality functions and processes (Cooke, Hart, et al., 2004; see figure 2.)

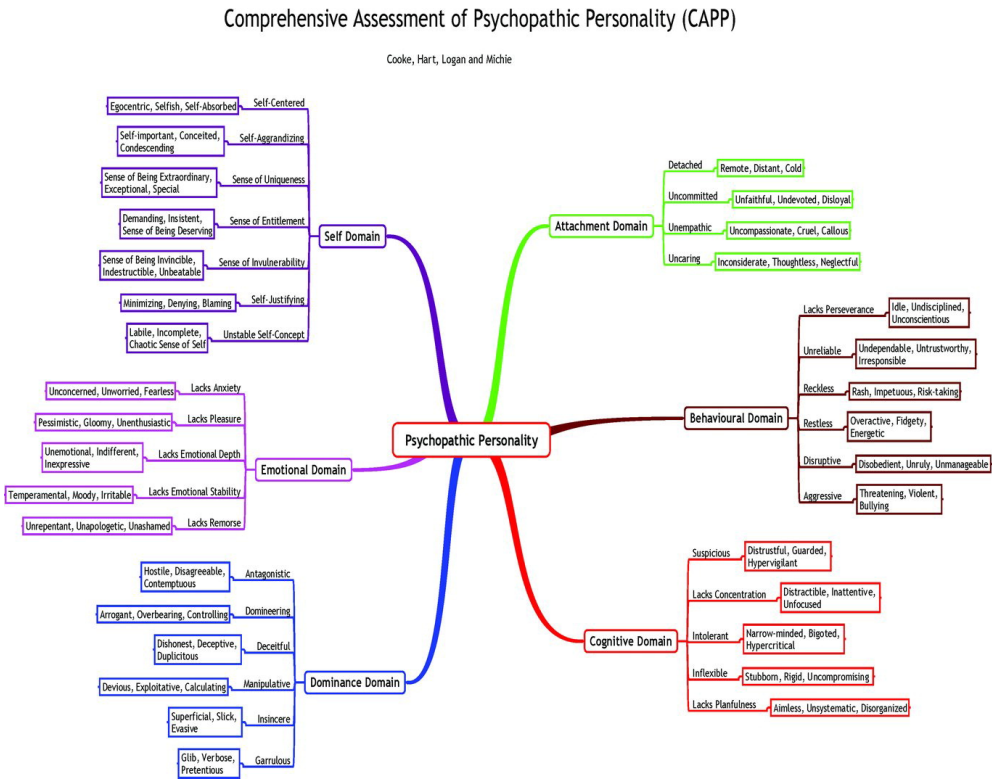

Figure 2. Psychopathic personality disorder – The CAPP model (Cooke, Hart, Logan, & Michie, 2012; Reprinted with permission from Taylor & Francis)

The CAPP – institutional rating scale (CAPP-IRS) is a clinical assessment tool, which, like the PCL-R, is scored on the basis of a clinical interview, observation, and available file information. The interview and the observation is regarded as the main source of information, while the additional material is used as supplementary and collateral information (Cooke, Hart, et al., 2004). CAPP-IRS is a relatively new instrument, and the psychometric properties of the measure are still under investigation. There are now several studies that have used the CAPP-IRS, more studies are ongoing, and the instrument has been translated into several languages (e.g. Hoff, Rypdal, Mykletun, & Cooke, 2012; Kreis, Cooke, Michie, Hoff, &

Logan, 2012; Pedersen, Kunz, Rasmussen, & Elsass, 2010; Sandvik et al., 2012; Stoll, et al., 2011).

1.2.3 Self-reports

Several self-report measures have been developed to assess psychopathic personality, however, the usability of self-reports to measure psychopathy is questioned. Why would individuals answer honestly on questions regarding manipulation and fraudulence? Yet the attempts to create valid self-report measures of psychopathy have a long history (Lilienfeld & Fowler, 2006). There are some advantages to the methodology of self-reports, cost efficiency being one of them. In contrast to the clinical assessment instruments, the demand of time, training, and other resources in the administration of self-reports are negligible. Self-reports may also make it easier to study non-institutional samples (Lynam, Whiteside, & Jones, 1999). Another advantage is the unique position one self has with respect to one's own subjective mental life, including emotional states and traits. But the self-appraisal is dependent on a certain level of insight that may lack for psychopaths (Cleckley, 1941/1976; Lilienfeld & Fowler, 2006). The possibility of dishonesty and self-flattering are other disadvantages with the self-report method (Allport, 1961; Lilienfeld & Fowler, 2006). Commonly used questionnaires for assessment of psychopathic personality include Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996), Levenson's Primary and Secondary Psychopathy Scale (LPSP; Levenson, Kiehl, & Fitzpatrick, 1995), and Self-Report of Psychopathy Scale (SRP; Hare, 1985; Paulhus, Neumann, & Hare, in press). Previous studies have shown mixed results regarding the psychometric properties of the questionnaires, and in the correlations between the different questionnaires and clinical assessments as the PCL-R (Copestake, Gray, & Snowden, 2011; Hundleby & Ross, 1977; Lilienfeld & Fowler, 2006; Lynam, et al., 1999). The mixed results may reflect different conceptions of psychopathy, but the divergence may also arise from methodological differences. These distinctions in conceptions

and methodology warrant caution in the interpretation and comparison of results of studies that use different assessment instruments.

1.3 Differential diagnosis

There exists considerable research on the relationship between psychopathy and disorders included in the DSM and ICD systems. It is beyond the scope of this thesis to go into the depth of all this literature, but some diagnoses are more relevant and I will give a brief overview of a few of the most relevant DSM-V diagnoses and their relationship to psychopathy.

1.3.1 Antisocial Personality Disorder

"The essential feature of antisocial personality disorder is a pervasive pattern of disregard for, and violation of, the rights of others that begins in childhood or early adolescence and continues into adulthood" (American Psychiatric Association, 2013, p. 659). There is considerable controversy regarding the link between psychopathy and antisocial personality disorder (ASPD), and the terms are sometimes, incorrectly, used interchangeably (Hare, 1996; Ogloff, 2006). While the psychopathy construct emphasizes interpersonal and personality based symptoms, the criteria for ASPD contain more behavioral-based symptoms. Several studies have shown that ASPD correlates highly with PCL-R Factor 2, but only negligible with PCL-R Factor 1 (PCL-R two-factor model; Hare, 2003; Hare, Hart, & Harpur, 1991), which suggests a unique variance in Factor 1 that is not totally accounted for in the ASPD (Widiger, 2006). Furthermore, the relationship between ASPD and psychopathy is asymmetrical. Studies have shown that about 50 – 80 % of male prison inmates meet the criteria for ASPD, whereas only 15 – 25 % of male inmates meet the PCL-R criteria for psychopathy (Hare, 2003). Also, one study by Hart, Forth, and Hare found uneven comorbidity between the constructs, where 79 % of the PCL-R psychopaths were diagnosed with ASPD, but only 30 % of the inmates with ASPD met the criteria for PCL-R psychopathy. In sum, ASPD seems

to be much broader and less precise diagnosis, and the interchangeable use of the terms causes diagnostic confusion (Cunningham & Reidy, 1998; Hare, 1996).

1.3.2 Narcissistic Personality Disorder

"The essential feature of narcissistic personality is a pervasive pattern of grandiosity, need for admiration, and lack of empathy that begins by early adulthood and is present in a variety of contexts"(American Psychiatric Association, 2013, p. 670). Narcissistic personality disorder (NPD) is often reported to be comorbid to psychopathy (Blackburn, Logan, Donnelly, & Renwick, 2003; Widiger, 2006) and Stone (1993) wrote that "[a]ll commentators on psychopathy, as the readers will note, allude to the attribute of (pathological) narcissism – whether under the rubric of egocentricity, self-indulgence, or some similar term. In effect, all psychopathic persons are at the same time narcissistic persons" (p. 292). In spite of the close resemblance, the theoretical and empirical literature on the two fields has evolved quiet separately (Hart & Hare, 2000; Widiger, 2006). One difference motioned in the literature is the psychopathic persons total lack of capacity for loyalty, remorse and concern for others. Also overtly aggressive behavior is more linked to psychopathy while the narcissistic individuals antisocial behavior tend to be of the more "passive-parasitic" variety (Hart & Hare, 2000; Kernberg, 2000). In contrast to ASPD, NPD tends to load more highly on PCL-R Factor 1 than on PCL-R Factor 2 (Harpur, et al., 1989; Hart, Forth, & Hare, 1991; Widiger, 2006).

1.3.3 Borderline Personality Disorder

"The essential feature of borderline personality disorder is a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity that begins by early adulthood and is present in a variety of contexts" (American Psychiatric Association, 2013, p. 663). As psychopathy, borderline personality disorder (BPD) is characterized by deficits related to emotional

processing, interpersonal relationships, self-regulation, and behavior (Hooley, Cole, & Gironde, 2012; Sprague, Javdani, Sadeh, Newman, & Verona, 2012). However, there are important differences. While psychopathy has been linked to emotional hyporesponsiveness, and attenuated fear and startle responses, this is not found in regard to individuals with BPD (Herpertz et al., 2001). Also, BPD is regarded as a major risk factor for suicide, while psychopathy traditionally has been associated with low suicide risk (Cleckley, 1941/1976; Hooley, et al., 2012) (see section 1.5.4 Suicide in this thesis for further discussion regarding psychopathy and suicide). The literature regarding the overlaps between BPD and psychopathy is sparse, but a study which did examine the relationship between the two disorders did found PCL-R Factor 2 traits to be more related to BPD that PCL-R Factor 1 (J. D. Miller et al., 2010). Some authors have suggested that BPD might be a female phenotypic expression of psychopathy, and a study found that the interaction between Factor 1 and Factor 2 psychopathic traits was associated with BPD in women (Sprague, et al., 2012).

1.4 Dimensionality of personality disorders

There is an ongoing debate whether personality disorders are best viewed as categorical or dimensional entities. The current diagnosis systems (DSM-5 and ICD-10) use a categorical system where individuals who fulfill a set of criteria or reach a pre-set cutoff point are presumed to possess the disorder, and vice-versa. The use of categories simplifies precise and unambiguous communication, and some sort of articulated conceptualization of personality disorders seems necessary (Livesley, Schroeder, Jackson, & Jang, 1994). However, there are limitations associated with a dichotomous categorization of personality disorders. The high degree of overlap/comorbidity between categories, lack of sound theoretical and empirical grounding of the categories, and challenges related to convergent, discriminative and construct validity make the use of the categories problematic (Ball, 2001; Clark, Livesley, & Morey, 1997).

In contrast, personality, and personality disorders, can be viewed as composed of dimensional traits. With this view, the traits of personality disorders are considered extreme variants of normal personality traits (Haslam, 2003). The dimensional view of personality have gained extensive empirical support over the last decades, and it is suggested that this growing burden of evidence also imply that a dimensional view may be truer to the fundamental nature of personality disorders (Haslam, 2003; Livesley, et al., 1994; McCrae & Costa, 1995; Wright, 2009). Among the advantages of a dimensional approach is that more information regarding diversity and idiosyncrasies is retained in an individual profile of personality traits, compared to a set category (Ball, 2001; Millon & Davis, 1996). This may produce valuable information regarding individuality and the experienced severity of problems. From the dimensional view, the categorical disorder systems are viewed as crudely structured and oversimplified.

The categorical and dimensional views are not inherently incompatible. They can be considered to be in a hierarchical relation to one another where the categories are formed on basis of pattern/clusters of trait dimensions (Clark, et al., 1997). With this methodological conceptualization the categorization is not absolute, but rather a matter of degree, and the boundaries between the emerging categories would be fuzzier (Lilienfeld, 1994; Livesley, et al., 1994). This could also help explain the magnitude of comorbidity and overlap seen between personality disorders. A taxonomy of disorders will also ease the communication between clinicians and researchers. Indeed, Millon and Davis note that "it is not clear that dimensional models can free themselves from ultimately embracing the categorylike entities their proponents so much eschew" (1996, p. 28).

1.4.1 Heterogeneity and dimensionality of the psychopathy construct

Are psychopaths qualitatively and etiologically different from other people? The categorical versus dimensional debate is also important regarding psychopathy. Whether psychopathy should be treated as a distinct category, or rather as

dimensional in nature, is important for clinicians as well as for researchers. Cleckley's description of psychopathy as a constellation of personality traits may point to a dimensional understanding of the construct. McCord and McCord also note that "[i]t would serve no useful purpose to insist upon an absolute dichotomy between the psychopath and other disorders" (1964, p. 19). More recent research also support the view of psychopathic personality as dimensional traits (Hare, 2003; Hare & Neumann, 2008). In addition, studies of the relationship between the domains and facets of the Five-Factor Model (FFM) and psychopathy have demonstrated that psychopathy can be understood as an extreme variant of "normal" personality traits (Widiger & Lynam, 1998).

The scoring of PCL-R provides a dimensional score (0–40), which indicates to which degree an individual is judged to be equivalent to a "prototypical psychopath" (Hare, 2003). Despite this dimensional scoring, much of the research on psychopathy has treated the construct as categorical, and used a "cut-off" score to be able to compare psychopaths with non-psychopaths. This dichotomization may be useful in some circumstances, but it is difficult decide on the appropriate cut-off score to use. Hare (1991) suggested, in the first edition of the PCL-R manual, the use of a cut-off score of 30. This cut-off score was based on larger pooled samples of male inmates, where the score of 30 was about one standard deviation above the mean (Hare, 2003). This, according to Hare, provided the best diagnostic efficiency. Since then, a cut-off score of 30 is used in much of the research on psychopathy in North America, while a cut-off score of 25 is sometimes used in European studies (Cooke & Michie, 1999; Hare, 2003; Hare & Neumann, 2009). A use of a cut-off-score can create an illusion that a discrete categorization can be made between psychopaths and non-psychopaths, but while the cut-off score(s) are statistically derived, they are still more or less arbitrary. Why one standard deviation - Why not two? Why 30 - Why not 29 or 31? Also, the specific sample used to define this cut-off (male offenders and patients), might obfuscate generalization to other samples or populations. This problem also applies

for other categorical diagnosis systems. As Hare has pointed out, "there is nothing magical about a cut-off score of 30" (Hare, 1998, p. 110), and it becomes problematic when researchers or others use the cut-off score as a sharp dividing line between psychopaths and non-psychopaths (Hare, 2003).

A highly influential factor analysis of the PCL items, conducted by Harpur and colleagues, revealed a two-factor structure in the psychopathy construct (Harpur, Hakstian, & Hare, 1988; Harpur, et al., 1989). The first factor represents the central personality traits of psychopathy, while Factor 2 is more behavior-based and represents a history of antisocial lifestyle and behavior (Lilienfeld, 1994; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003; Widiger & Lynam, 1998). Research has also indicated a distinction between the two factors in their relation to negative affectivity, and especially anxiety. Factor 1 has been found to have a negative correlation with anxiety (Harpur, et al., 1989; Verona, Patrick, & Joiner, 2001), which is in line with the classical description of low anxiety as a key characteristic of psychopathy (e.g. Cleckley, 1941/1976; Karpman, 1941; Lykken, 1957). Factor 2, however, seems to be more positively correlated with anxiety (Harpur, et al., 1989). Patrick, Bradley, and Lang (1993) proposed the terms *emotional detachment* and *anti-social behavior* as descriptive labels for, respectively, Factor 1 and Factor 2. Hicks, Markon, Patrick, Kruger, and Newman (2004) suggested that Factor 1 and Factor 2 parallel the descriptive features of primary and secondary psychopathy first suggested by Karpman (1941, 1946, 1948). We will return to the subject of emotionality and psychopathy in a later section of this thesis (section: 1.4 Emotional poverty?).

Over- and under-inclusiveness

The question of what constitutes "real" psychopathy still remains rather elusive. As Lilienfield (1994) once asked: "is an individual with very high scores on the first PCL factor (who, according to Harpur et al., possess the major personality traits of

psychopathy), but with very low scores on the second PCL factor, a psychopath?" (p. 28).

Some researchers have raised concerns regarding possible problems related to over- and under-inclusiveness, also called *false-positive* or *false-negative* in categorical terms. As antisocial behavior is by no means exclusively linked to psychopathy, several authors have argued that inclusion and focus on such behavior in the assessment may contribute to false-positives (Karpman, 1948; Lilienfeld, 1994; Skeem & Cooke, 2010). This alleged false-positives, also called secondary psychopaths, may, according to Karpman "have a particular type of neurosis that presents a psychopathic façade" (1946, p. 282). Other authors have raised concerns related to under-inclusiveness because a to high emphasis on antisocial behavior may exclude psychopaths who have not had contact with the legal system. The existence of "successful" psychopaths is discussed extensively in the literature, but has been the subject of little empirical research (Hall & Benning, 2006; Hervé, 2007a; Widom, 1977). Cleckley noted that psychopaths could be found in nearly all professions and levels of society, and he also documented individual cases with psychopathic personality features, but who did not have a history of arrests or convictions (Cleckley, 1941/1976; Hall & Benning, 2006). Indeed, some have argued that certain psychopathic traits can have an "up-side" and have linked such traits to stress immunity, propensity for heroic and altruistic acts, and also to success in certain professions, as law, politics, special forces, and business (Dutton, 2012; Hall & Benning, 2006; Janason, Norman, & Teicher, 2010; Lilienfeld, 1994; Smith, Lilienfeld, Coffey, & Dabbs, 2013).

1.5 Emotional poverty?

Psychopathy is often described as an emotional dysfunction, and Cleckley suggested that psychopaths suffer from an "emotional poverty" (Cleckley, 1941/1976, p. 349). This poverty refers to the typically attenuated emotional

responses observed, which have proposed that psychopaths have a general emotional deficit. Despite this, some psychopaths appear to be able to use some sort of emotional knowledge to, on one side, charm, and the other side, to deceive and manipulate others. This ability has made some view psychopaths as adapted social predators, who are especially proficient in exploiting other's vulnerabilities (Hare, 2001; Wheeler, Book, & Costello, 2009). Indeed, some studies have even shown that psychopathy may be related to an enhanced ability to recognize cues of emotional vulnerability (Book, Quinsey, & Langford, 2007; Wheeler, et al., 2009). A study by Pham, Ducro and Luminet (2010) found that psychopaths not only see themselves as better able to perceive emotions, but also as better at managing emotional states. These findings indicate a duality related to emotional skills, where such skills not only may be used for "good", but also may be used in self-serving and manipulative ways. Further studies pointing to this possible "dark" side of social and emotional competence have shown that manipulative and aggressive individuals seem to possess sufficient emotional and social intelligence (Austin, Farrelly, Black, & Moore, 2007; Björkqvist, Österman, & Kaukiainen, 2000; Grieve & Panebianco, 2012; Pham, et al., 2010). Indeed, one study concluded that social intelligence "is required for aggressive as well as peaceful conflict behavior" (Björkqvist, et al., 2000, p. 196). These findings seen together suggests that the general emotion poverty argument proposed by Cleckley (1941/1976) is not entirely accurate. But may empathy be what separates psychopaths from "the others"?

1.5.1 Empathy

Empathy can be defined as "the involvement of psychological processes that make a person have feelings that are more congruent with another's situation than with his own situation" (Hoffman, 2000, p. 30). There is a long and ongoing debate whether empathy should be regarded as an emotional and/or a cognitive process (Davis, 1983; Preston & de Waal, 2002). Hein & Singer (2008) define empathy as

an affective state where one "share the other person's feelings in an embodied manner" (p. 153), this was seen in contrast to the cognitive inference of other's mental states. Others have chosen to divide the empathy concept in two: one involving recognition, which is a cognitive process, and one involving an emotional response (Baron-Cohen, 2012; Baron-Cohen & Wheelwright, 2004; Batson, 2009; Davis, 1983). The cognitive side of empathy is also often called *Theory of Mind*, *mentalizing,* or *mind reading* (Blair, 2009; Hein & Singer, 2008). Further support for the distinction between recognition and the emotional response comes from neurological studies, using functional magnetic resonance imaging (fMRI), that have suggested that these processes recruit different neural pathways (Hein & Singer, 2008). Some researchers have further suggested a third type of empathy, called motor empathy, which reflect how the individual mirrors the motor response of others (Blair, 2007).

In an effort to explain antisocial and criminal behavior, it has been postulated that individuals who commit such behavior may have less empathy than those that do exhibit such behavior, and that empathy might mitigate aggression (Burke, 2001; Bush, Mullis, & Mullis, 2000; Jolliffe & Farrington, 2004; P. A. Miller & Eisenberg, 1988a). Especially psychopathy has been seen as prototypical of empathic dysfunction, which is also made evident with the inclusion of the item "Callous/Lack of empathy" in the PCL-R (Blair, 2007; Hare, 2003). Since such a dysfunction may be at the heart of the psychopathic disorder, it is important to consider the specificities of this empathic dysfunction. Kennett (2002) noted that the answer to what underlies psychopaths' amoralism could not be a lack of empathy, since such impairment is also claimed to be vital in autism, which is not in general associated with amoralism. However, this notion does not take into account the complexity of the empathic construct. As Baron-Cohen emphasizes in his theory of empathy, it may be different parts of empathy that are disrupted in the two disorders (Baron-Cohen, 2012).

Mentalizing/Theory of Mind

The terms mentalizing (Frith, Morton, & Leslie, 1991) and Theory of Mind (Premack & Woodruff, 1978) is often used synonymously to cognitive empathy. Both terms involve perspective-taking, or more specifically the ability to understand and infer the mental state and behavior of others (Ali & Chamorro-Premuzic, 2010; Blair et al., 1996; Frith, et al., 1991). In regard to Theory of Mind abilities, there has not been found any generalized impairment related to psychopathy (Blair, 2007, 2008; Blair, et al., 1996; Richell et al., 2003), however the findings are somewhat mixed (Ali & Chamorro-Premuzic, 2010; Widom, 1976).

Darwin (1872), in his book *Expressions of the emotions in man and animals*, noted that "[w]hen our minds are much affected, so are the movements of our bodies" (p. 31). Facial expressions serve an important communicatory function and are a vital part of human emotional and social behavior, and the ability to infer the mental state of others is considered necessary for emotional empathy (Blair, 2003, 2007). Numerous studies have investigated the relationship between the ability to recognize facial expressions and psychopathy. Some studies report that psychopathy is associated with a general deficit in affect recognition (Hastings, Tangney, & Stuewig, 2008; Lishner, Swim, Hong, & Vitacco, 2011), others find deficits related to specific expressions, such as sadness, disgust and fear (Blair et al., 2004; Kosson, Suchy, Mayer, & Libby, 2002; Marsh & Blair, 2008). However, there are also studies that have found no association between psychopathy and expression recognition (Glass & Newman, 2006; Richell, et al., 2003), while some even find evidence of enhanced recognition abilities related to psychopathy (Book, et al., 2007). These previous contradictory findings warrant more research into the specificity of the relationship. Some of the contradiction can possibly be accounted for by differences in sample, methodology or assessment. Divergence and heterogeneity in both the psychopathy and the empathy/Theory of Mind construct may also have contributed to some of the mixed findings. In regard to methodology, there might be a difference in the use of whole faces in contrast to

just the eye region. Studies have shown that the whole face is more informative than just the eye region in judgments regarding basic emotions, while the eye region is just as informative as the whole face in judgments regarding complex and social emotions (Adolphs, Baron-Cohen, & Tranel, 2002; Baron-Cohen, Wheelwright, & Jolliffe, 1997). In line with this, the use of just the eye region might be a more "pure" cognitive measure, as a whole face may trigger a more automatic and subcortical emotional system.

Emotional empathy

Emotional empathy can be defined as "the emotional response to another individual's visual or vocal expression of emotion" (Blair, 2007, p. 6). This kind of empathy reflects a tendency or ability to be vicariously aroused by the affective state or situation of others (P. A. Miller & Eisenberg, 1988b). Cleckley (1941/1976), in accordance with the "poverty of emotion" conception, suggested that psychopathy is related to deficits in the experience components of emotion. Johns and Quay (1962) further elaborated on this by writing that the "psychopath can thus be said to be one who knows the words but not the music; the denotative meaning of words and phrase may be intact, but the connotative emotional or motivational component is lost" (p. 217). While studies generally do not find any link between psychopathy and general deficit in cognitive empathy/Theory of Mind, there have been found impairments related to emotional or affective empathy. One study found impairments in what they called "affective Theory of Mind conditions", but not in cognitive Theory of Mind conditions (Shamay-Tsoory, Harari, Aharon-Peretz, & Levkovitz, 2010). Several neurobiological studies have found attenuated autonomic reactivity to emotional stimuli to be related to psychopathy (especially Factor 1), and this has been linked to disturbed or dysregulated emotion-related brain areas like the amygdala and other limbic structures (Casey, Rogers, Burns, & Yiend, 2013; Kiehl et al., 2001; Muller et al., 2003; Patrick, 1994; Patrick, et al., 1993). These findings are in line with Lykken's (1957) "low-fear hypothesis", where psychopaths are thought to experience

attenuated fear responses. This was shown in studies of fear conditioning, where primary psychopaths showed less electrodermal reactivity to conditioned electric shocks. Overall, these findings suggest that psychopathy may be linked to deficits in emotional experience which also may affect the ability to experience an affective response evoked by the situation or affective state of others – in other words a lack of emotional empathy.

1.5.2 Anxiety

> [T]hose called psychopaths are very sharply characterized by the lack of anxiety (remorse, uneasy anticipation, apprehensive scrupulousness, the sense of being under stress or strain) and, less than the average person, show what is widely regarded as basic neurotic (Cleckley, 1941/1976, p. 257).

Cleckley devoted much space in *The Mask of Sanity* to differentiate psychopathy from other forms of disorder exhibiting antisocial behavior, and included the exclusion criteria low intelligence, nervousness, and delusion/irrational thinking in an effort to help identify the "true" psychopaths. Despite this effort, the psychopathic construct remains rather heterogeneous, and the mentioned exclusion criteria are not included in the items of the PCL-R. Most of the empirical findings for the PCL/PCR-R run contrary to Cleckley's notion of lack of anxiety. Hart and Hare (1989) found no difference in anxiety for men scoring high or low on the PCL. Similarly, Wise, Davis, Hedlund, and Cho (1983) found no difference in prevalence of anxiety for psychopaths compared to matched controls. These findings suggest that an overall high score on the PCL/PCL-R may indicate a somewhat different psychopathy construct than Cleckley's. Several researchers have suggested a distinction between primary and secondary psychopathy, where anxiety is used to subdivide, and there exists good theoretical and empirical support for this subdivision (Blackburn, Logan, Donnelly, & Renwick, 2008; Brinkley, Newman, Widiger, & Lynam, 2004; Karpman, 1941, 1948; Lykken, 1957, 1995; Newman, MacCoon, Vaughn, & Sadeh, 2005). Experimental evidence from

laboratory settings, including passive avoidance learning, has also provided evidence suggesting that anxiety differentiate within the psychopathic construct (Arnett, Howland, Smith, & Newman, 1993; Newman, Patterson, Howland, & Nichols, 1990). These findings also correspond to Lykken's, earlier mentioned "low-fear hypothesis" (Lykken, 1957).

1.5.3 Depression

In line with Cleckley's (1941/1976) third criterion: "Absence of 'nervousness' or psychoneurotic manifestations", it has been suggested that depression and psychopathy are mutually exclusive. There are only a few studies that have looked specifically at psychopathy and depression. Some of them do find depression and psychopathy to be inversely related (Lovelace & Gannon, 1999; Willemsen, Vanheule, & Verhaeghe, 2011), but most studies find no significant associations at all (Assadi et al., 2006; Rasmussen, Storsaeter, & Levander, 1999; Rutherford, Alterman, Cacciola, & McKay, 1997; J. M. A. Weiss, D. Davis, J. L. Hedlund, & D. W. Cho, 1983). These results seem to indicate that psychopathy and depression are best viewed as independent constructs, rather than mutually exclusive. However, one potential drawback with most of these studies is the use of a categorical diagnosis for both depression and psychopathy. As both constructs indeed seem to be dimensional, rather than categorical, a dichotomizing may lead to loss of information and lower statistical power to detect a "true" relation between the variables (Altman & Royston, 2006). While most studies have treated psychopathy as a unitary construct, Willemsen, Vanheule, and Verhaeghe (Willemsen, et al., 2011) used the four-facet model of the PCL-R. They found the interpersonal, affective, and lifestyle facets to be inversely related to the experience of depressive episodes, but not the antisocial facet. These findings point to a potential heterogeneity in the psychopathy-depression relationship that might have eluded previous studies, but further studies are necessary to confirm this.

1.5.4 Suicide

"Suicide rarely carried out" (Cleckley, 1941/1976, p. 358). In spite of noticing frequent threats, promises and well-formulated plans of suicide for psychopaths, Cleckley maintained that these were nearly always empty threats – with no intention of follow-up. In contrast, there is considerable evidence for a positive relationship between antisocial and criminal deviance and suicidal behavior. Frances, Fryer, and Clarkin (1986) estimated a suicide completion rate of 5 % for individuals with Antisocial Personality Disorder (ASPD). Black, Baumgard, and Bell (1995) found in their longitudinal study a suicide attempt rate of 22.5 %. These numbers are substantially higher than the population base rate, that has been estimated to around 1.5 % (whole world; Varnik, 2012)) for suicide completion. There have been few studies that have specifically looked at psychopathy and suicide risk, but one of the few studies conducted is the study by Vernona, Patrick, and Joiner (Verona, et al., 2001). They found a significant, but small ($r=.11$, $p= <.05$) correlation between PCL-R scores and suicidal behavior. However, history of suicidal behavior was mainly related to Factor 2, and not at all to Factor 1. In parallel to the mentioned relationship between APD and suicide, this study confirmed a relationship between antisocial and criminal behavior and suicidality, but the core affective and interpersonal features of psychopathy (Factor 1) seem to be unrelated to suicide. It is important to have in mind that this study did not differentiate between suicide attempts of different types. It is likely, in accordance with Cleckley's view, that psychopaths may also use suicidal behavior in order to manipulate and deceive others.

1.5.5 Aggression

Aggression can be defined as " any form of behavior directed toward the goal of harming or injuring another living being who is motivated to avoid such treatment" (Baron & Richardson, 1994, p. 7).

Psychopathy has long been seen as a significant risk factor for violent and aggressive behavior, but the emphasis placed on such behavior has differed (Cleckley, 1941/1976; Hare & Neumann, 2010; McCord & McCord, 1964; Skeem & Cooke, 2010). Several studies have shown that psychopathy is associated with a higher propensity for aggressive behavior and violence in childhood, adolescent and adulthood (Blackburn & Coid, 1998; Porter, Birt, & Boer, 2001; Porter & Woodworth, 2006). Psychopathy, and especially a high score on PCL-R, has also been found to be predictive of criminal recidvism and futher violence (Hemphill, Hare, & Wong, 1998; Salekin, et al., 1996). However, the study of aggression is multifaceted and complex. Aggression constitutes more than criminal violence, it covers a more general intentional infliction of harm or dominance on others (Anderson & Bushman, 2002; Baron & Richardson, 1994; Berkowits, 1993). Violence is aggression with the intention of harm (e.g. physical injury or death), and all violence is aggression, but not all aggression needs to involve violence (Anderson & Bushman, 2002). The terms aggression and violence are used rather interchangeably in this thesis because most studies of aggression assess violence as analogue to aggression and vice-versa. There is a rather large consensus in the literature for the distinction between two types/forms of motives for aggression: reactive (also referred to as hostile, impulsive, thoughtless or affective aggression) and instrumental (also referred to as proactive or goal-directed aggression) (Anderson & Bushman, 2002; Porter & Woodworth, 2006; Reidy, Shelley-Tremblay, & Lilienfeld, 2011). While the link between psychopathy and aggression appears to be robust, there appear to be variances related to types of aggression.

Instrumental and reactive aggression

Reactive or hostile aggression is regarded as being impulsive, thoughtless and is performed in response to some form of provocation. On the other hand, instrumental aggression is premeditated and goal-directed behavior. The distinction between the two types of aggression is not always straightforward, and most aggressive acts may reflect mixed motives, but the ultimate goal of the aggressive

act is seen as the key factor. Robberies, typically with an ultimate monetary goal, is classified as instrumental aggression, while physical assault, or a murder in affect, would be classified as reactive.

Williamson, Hare, and Wong (1987) found in their forensic sample that psychopaths rarely committed their violent crime during heightened emotional arousal. This corresponded to other studies that find psychopathy to be associated with higher proportion of instrumental rather than reactive aggression for both adults and youths (Cornell et al., 1996; Flight & Forth, 2007; Kimonis, Skeem, Cauffman, & Dmitrieva, 2011; Porter & Woodworth, 2006). Similarly, Woodworth and Porter found in two studies (Porter & Woodworth, 2007; Woodworth & Porter, 2002) that psychopaths were far more likely to have committed instrumentally motivated homicides compared to non-psychopathic murderers. In fact, over 90 % of the homicides committed by psychopaths were categorized as "purely" or "primarily" instrumental compared to about 50 % for the non-psychopaths. They also found PCL-R Factor 1 to be a better predictor for the instrumentality of the homicide than PCL-R Factor 2. Walsh, Swogger, and Kosson (2009) provided further evidence for the relationship between instrumentality and interpersonal traits of psychopathy in their study of psychopathy and instrumental violence. However, they did not find any connection between affective traits of psychopathy and instrumentality.

Sadism

Sadism, associated with individuals deriving pleasure from inflicting physical or emotional pain on others, has often been theoretically coupled with psychopathy (Holt, Meloy, & Strack, 1999; Porter & Woodworth, 2006). While sadism is often used for both sexual and non-sexual behavior, most of the research has been restricted to sexual sadism. Sexual homicide is the "intentional killing of a person during which there is sexual behavior by the perpetrator" (Meloy, 2000, p. 2), and research has found a significant association between this kind of homicide and

psychopathy. According to Meloy (2000), this kind of homicide accounts for less then 1 % of homicides in the United States, and virtually all of the perpetrators show narcissistic or psychopathic traits, whether or not they reach the threshold for psychopathy. In accordance with this, Holt and colleagues (1999) found psychopaths to be significantly more sadistic than non-psychopaths. Similarly, Porter, Woodworth, Earle, Drugge, and Boer (2003) found in their analyses of the official file description of 38 Canadian sexual homicides that psychopathic perpetrators (PCL-R <30) had used more excessive and sadistic violence compared to the non-psychopathic perpetrators. In light of these and other findings, Porter and Woodworth concluded that "psychopaths might be more likely than other offenders to derive pleasure from the suffering of others" (Porter & Woodworth, 2006, p. 487). However, as the lack of conscience and empathy in psychopathy may partly emerge from an inability to grasp and take on the pain of others, it has also been suggested that psychopaths may be the opposite of sadists – but with the same end result for the victim (Tse, 2008).

1.5.6 Self-regulation

Self-regulation and autonomic nervous system irregularities have repeatedly been related to the development of antisocial, criminal and violent behavior (Lorber, 2004; Raine, 2002). The nervous system, via bi-directional communications with vital organs, regulates the internal milieu to match an ever-changing external environment. Maintaining physiological homeostasis is vital for survival, and is achieved through a series of negative, or discrepancy-reducing, feedback loops. This is not a passive process, but an active neural-controlled process to ensure self-sustainability (Carver & Scheier, 2011; Porges, 2011). One proposed definition of self-regulation is that it "encompasses any efforts by the human self to alter any of its own inner states and responses" (Vohs & Baumeister, 2004, p. 2). There is now large agreement that self-regulation should not be restricted to only conscious processes, but also include automatic and non-conscious processes (Papies &

Aarts, 2011; Vohs & Baumeister, 2004). In the self-regulation literature, there is a focus on inhibitory mechanisms (Baumeister & Vohs, 2007), and such inhibitory mechanisms are crucial in the individual's adaption to societal norms and expectations. A broad range of personal and societal problems have been linked to self-regulatory factors, including obesity, alcoholism, financial problems, emotional problems, and also criminal behavior and violence (Vohs & Baumeister, 2004).

Emotion regulation

Self-regulation and *emotion regulation* are interweaved processes, and it is difficult to disentangle one from the other. Emotional regulation may be automatic or controlled, and include both conscious and unconscious processes that are used to influence the individual's emotional experience or response (Gross, 1999a, 2001). Emotions serve important social functions, and emotion regulatory processes are hence vital for social functioning. Such regulatory capabilities also represent important individual differences (Gross, 2001). Emotion regulation can be achieved through situation selection, situation modification, attentional deployment, cognitive change, or response modulation (Gross, 1999b). The high emphasis on emotional dysregulation in many of the diagnoses in both DSM-5 and ICD-10 highlights the importance of the mechanisms involved in such regulation.

Cognitive and executive functions

Selective attention, and the ability to sustain and shift attention, is a important component of self-regulation and adaptability. Information that is particularly meaningful to a given individual will attract that person's attention and resources. Stimulus selection is influenced by stimulus-driven bottom-up mechanisms as well as top-down mechanisms (Thayer & Lane, 2000).

Self-regulation also includes effortful control of behavior through cognitive and executive systems. An impulsive act involves both an urge, motivation or desire to act, and a lack of inhibition or control to restrain the impulse to act (DeYoung,

2011). Self-regulation becomes needed when motivation and impulses to act clash with the better good of the individual or the society.

Executive function(s) is an often deployed concept in psychological literature and generally refers to some higher level of cognitive functions involved in the regulation and control of cognitive processes and behavior (Alvarez & Emory, 2006). Many definitions have been offered, but it still lacks a formal definition (De Brito & Hodgins, 2009). There are, however, some agreement in the literature that the executive abilities involve planning of goal-oriented behaviors, impulse control, reasoning, abstract thinking, problem-solving, and inhibition of inappropriate behaviors (De Brito & Hodgins, 2009; Hansen, Johnsen, Thornton, Waage, & Thayer, 2007). Executive functions are considered necessary for socially appropriate adult functioning, involving empathy, social sensitivity, social awareness and affective self-regulation (Herba et al., 2007; Morgan & Lilienfeld, 2000). Moral and ethic behavior is also associated with executive functions (De Brito & Hodgins, 2009). There is an ongoing debate regarding to what extent "executive functions" is a unitary concept. Earlier cognitive models assumed a unitary executive concept, but these models have been criticized for not being able to account for the complexity and divergence of the clinical data that exist (De Brito & Hodgins, 2009; Ward, 2006).

Executive functions have traditionally been linked to the frontal cortex, and especially the prefrontal regions, although other brain sections have also been shown to be involved (Ward, 2006). Contributions from lesion and brain imaging studies have shed some light on the issue of the localization of executive functions within the frontal lobes. Orbitofrontal cortex (OFC) has been linked to response inhibition, and lesions in this area are known to cause disinhibition, impulsivity, and antisocial behavior (Alvarez & Emory, 2006; De Brito & Hodgins, 2009). Anterior cingulate cortex (AAC) has been associated with attentional control and coordination of multiple tasks (multi-tasking) (De Brito & Hodgins, 2009; Ward,

2006). The dorsolateral prefrontal cortex (DLPFC) has been linked to a range of executive functions, including working memory, rule discovery, planning, reasoning, verbal and design fluency, and abstract thinking (Alvarez & Emory, 2006; De Brito & Hodgins, 2009).

Reports of "psychopathic-like behaviors" after frontal lobe injuries, this including the famous case of Pineas Gage, have led the search for a biological basis for psychopathy to the frontal part of the brain. The term "acquired psychopathy/sociopathy" has been used on patients with "psychopathic-like" aggressive and inappropriate behavior following frontal brain damage. This link between damage in the prefrontal cortex and these "psychopathic-like" behaviors led researchers to hypothesize about the involvement of prefrontal structures and functions in developmental psychopathy as well (Muller et al., 2008). Imaging studies have reported frontal brain abnormalities including reduction in prefrontal gray matter volume associated with psychopathy (Raine, Lencz, Bihrle, LaCasse, & Colletti, 2000; Weber, Habel, Amunts, & Schneider, 2008). But not all studies have supported these findings, and studies controlling for education and alcohol use have not found such anatomical differences (Muller, et al., 2008).

In addition to these biological links between psychopathy and the frontal brain, the relationship between executive functions and psychopathy has also been explored. A study by Lapierre, Braun, and Hodgins (1995) found evidence of impaired executive functions in psychopaths when tested with neuropsychological tests (go/no-go discrimination test, Porteus Maze test and the Modular Smell Identification Test) sensitive for orbitofrontal or frontal ventromedial functioning. However, the literature regarding the relationship between executive functioning and psychopathy as a whole is somewhat mixed (Hansen, et al., 2007; Ishikawa, Raine, Lencz, Bihrle, & Lacasse, 2001; Maes & Brazil, 2013; Mol, Van den Bos, Derks, & Egger, 2009; Pham, Vanderstukken, Philippot, & Vanderlinden, 2003; R. D. Rogers, 2006). A study using a dichotic listening task showed abnormal

processing asymmetries for psychopaths (Hiatt, Lorenz, & Newman, 2002), this was primarily found on complex tasks involving emotional targets. This result may be related to poor interhemispheric integration and unusual lateralization for emotional processing. This finding of abnormal emotional processing is in line with other studies pointing toward poor emotional and affective experience and integration (Blair, Jones, Clark, & Smith, 1997; Christianson et al., 1996; Lykken, 1957; Patrick, et al., 1993; Williamson, Harpur, & Hare, 1991).

Psychopysiology

Psychophysiological correlates to psychopathy also relate the disorder to the cognitive and emotional domain. Indications of lower than normal autonomic arousal/tonus associated with psychopathy have been found in studies measuring heart rate and skin conductance (Arnett, 1997; Lorber, 2004; Patrick & Bernat, 2009), although there also seems to be some differences related to the different factors/facts of psychopathy, which could be related to different levels of anxiety (Hansen, et al., 2007). This reduced autonomic tonus may represent a marker for reduced self-regulation (attentional and emotional), and low autonomic arousal has also repeatedly been related to antisocial, criminal and violent behavior (Raine, 2002; Thayer & Lane, 2000). One robust finding is a frontal EEG slowing related to psychopathy suggested to reflect frontal cortical immaturity, under-arousal and a need for stimulus seeking (Muller, 2010).

Cardiovascular regulation

> The heart, which goes on uninterruptedly beating night and day in so wonderful a manner is extremely sensitive to external stimulants… Hence when the mind is strongly excited, we might expect that it would instantly affect in a direct manner the heart; … Claude Bernard also repeatedly insists, and this deserves especial notice, that when the heart is affected it reacts on the brain; and the state of the brain again reacts through the pneumo-gastric (vagus) nerve on the heart; so that under any excitement there will be much

> mutual action and reaction between these, the two most important organs of the body (Darwin, 1872, pp. 68-69)

Studies have consistently shown that adults with antisocial personality disorder and youth with conduct disorders have autonomic disturbances characterized by lower resting heart rate (HR) compared to controls (Lorber, 2004; Ortiz & Raine, 2004; Raine, 1997). The findings regarding HR reactivity is more mixed, but overall the findings points to an enhanced HR reactivity for antisocial individuals in response to stressful stimuli (Patrick & Bernat, 2009). In regard to psychopathic traits there seems to be somewhat different findings, with more normal HR reactivity coupled with reduced electrodermal responses to aversive and stressful stimuli (Arnett, 1997; Lorber, 2004; Patrick & Bernat, 2009).

One emerging methodology for the study of individual difference in autonomic activity pattern is *heart rate variability* (HRV; Porges, 1992). HR is determined by the interaction between sympathetic and parasympathetic (vagus) nerves at the sino-atrial node of the heart. HRV is the time interval sequence between heart beats (beat-to-beat) (Thayer, Hansen, & Johnsen, 2010). The beat-to-beat interval is used to calculate the variability in the timing of the heartbeat. Patterns of organized variability are observed as a response to changing environmental demands and have been associated with individual difference in regulation of behavior and emotion (Appelhans & Luecken, 2006). HRV has been used in studies of psychiatric disorders including anxiety, depression, and schizophrenia. Low HRV (as an indicator of low parasympathetic activity) is one of the physiological characteristics of depression, general anxiety disorders, and panic disorder (Kemp et al., 2010; Thayer, Friedman, & Borcovec, 1996).

The heart rate is under tonic inhibitory control through parasympathetic influence (Ahern et al., 2001; Thayer & Lane, 2007; Thayer et al., 2009), and studies on both animals and humans suggest that cardiovascular regulation is modulated through cortical activity. The neurovisceral integration model, developed by Thayer and

Lane (2000, 2009), incorporates psychological dynamic processes with underlying physiological structures. The model highlights HRV as an index of self-regulation and its ability to reflect neural feedback mechanisms of the central nervous system. The model also emphasizes the central autonomic network (CAN), which is a functional unit within this system, that anatomically includes both prefrontal and limbic structures (i.e. hypothalamus, amygdala, anterior cingulate, orbitofrontal cortex, medial prefrontal cortex). Several pharmacological and neuroimaging technique studies associates vagally mediated HRV with these cortical structures (Ahern, et al., 2001; Lane et al., 2009; Thayer & Lane, 2009). Research based on Thayer and Lane's model has revealed that there is an association between HRV and executive functions (Hansen, Johnsen, Sollers, Stenvik, & Thayer, 2004; Hansen, Johnsen, & Thayer, 2003; Hansen, et al., 2007). Hansen et al.'s studies measured better performance in participants with high HRV, which is associated with high parasympathetic activity, on tasks that taxed executive function compared to subjects with low HRV. It has also been found associations between HRV and emotional and self-regulation (Appelhans & Luecken, 2006; Lane, et al., 2009).

There are some studies that have investigated the relationship between antisocial behavior and HRV. An example is Calkins, Graziano and and Kean (2007) who in their study of cardiac vagal regulation found a trend among children at risk for externalizing problems to display less vagal withdrawal (lower HRV) in response to situations where cognitive or emotional regulation was required. In contrast, a study by Hansen and colleagues (2007) found a positive relation between the interpersonal traits of psychopathy and HRV, which they linked to lower levels of anxiety. These somewhat mixed findings heightens the need for further studies of the interplay between personality, affectivity, and self-regulatory mechanisms and its relation to antisocial behavior.

1.6 Treatment

"These savages in society must be kept in asylums for their own and safety of society" (Krafft-Ebing, 1903, p. 626)

The literature has historically been quite pessimistic in regard to the treatability of psychopathy. Cleckley remained discouraged about the possibility of a treatment for psychopathy, and stated that he was "profoundly impressed by two difficulties that stood in the way of dealing effectively with the psychopath. One of these was his apparent immunity, or relative immunity, from control by law. The other was his lack of response to psychiatric treatment of any kind" (Cleckley, 1941/1976). Karpman (1946) were rather optimistic about the treatability of secondary psychopathy, but negative about the possible treatment outcome for primary psychopathy. Continued pessimism is seen in work of many later authors who has asserted that psychopathy is difficult, or impossible, to treat (Hare, 1970, 1991; G. T. Harris & Rice, 2006; McCord & McCord, 1964). The authors of a classical book chapter on approaches to treatment remarked that a "review of the literature suggests that a chapter on effective treatment should be the shortest in any book concerned with psychopathy. In fact, it has been suggested that one sentence would suffice: 'No demonstrably effective treatment has been found'" (Suedfeld & Landon, 1978, p. 347). Psychopathic traits are seen as challenging to treat for mainly three reasons: The first possible obstacle is lack of motivation to change. Secondly, the deceptive and manipulative nature of the psychopaths might cause them to just play along with the therapist, which makes them unlikely to truly take benefit from therapy. Thirdly, the lack of deep or lasting emotions or attachments makes it unlikely for psychopathic individuals to form the strong personal attachment to the therapist required for effective treatment. Among the negative studies of treatment came the retrospective evaluation of a 1960s treatment program at the Oak Ridge Social Therapy Unit in Penetanguishene, Ontario. This study (Rice, Harris, & Cormier, 1992) concluded that not only was the therapy

ineffective, it even made the treated psychopaths worse (i.e. more likely to recidivate). More specifically, they found recidivism rates to be significantly lower for treated non-psychopaths compared to untreated non-psychopaths (22 % vs. 45 %), but higher for treated psychopaths compared to untreated psychopaths (77 % vs. 55 %). The authors have speculated that the treatment might have helped to increase self-esteem and to develop skills in the ability to take others' perspective, to understand what others feel, use emotional language, and to delay gratification. Such skills might have helped the non-psychopaths to avoid further violent acts, but at the same time made the psychopaths even bolder, more competent and dangerous criminals (G. T. Harris & Rice, 2007; Rice, et al., 1992). This study made an already negative outlook on treatment even more negative, and is often cited to support the notion that therapy may only make psychopaths "better" psychopaths. However, this study has also received substantial criticism. The therapeutic techniques used in the treatment would be considered inappropriate, unethical, and harmful by today's treatment standards, including non-voluntary participation, nude encounter groups, use of punishment for non-compliance, and occasional administration of Lysergic acid diethylamide (LSD), alcohol, and other drugs (Polaschek & Daly, 2013; Reidy, Kearns, & DeGue, 2013; Skeem, Monahan, & Mulvey, 2002; Skeem, et al., 2011). With this highly experimental and unusual nature of the treatment program in mind, it becomes difficult to establish what exactly harmed the psychopaths – was it the increase in emotional skills, and/or the coercive, intrusive and punitive nature of the program? According to Polaschek and Daly (2013), disciplinary actions during the treatment were predictive of recidivism regardless of psychopathy status.

Some of the more recent research conducted in the field give a more optimistic outlook on treatment outcome. A review of 42 treatment studies on psychopathy (Salekin, 2002) concluded that the prevailing perception of psychopathy as an untreatable disorder is scientifically unfounded. Although the review has been criticized for including poorly controlled studies, and relying too much on

therapists' own outcome ratings (G. T. Harris & Rice, 2006), several other later studies have supported its conclusion (Caldwell, Skeem, Salekin, & Van Rybroek, 2006; Caldwell & Van Rybroek, 2013; Reidy, et al., 2013; Salekin, Worley, & Grimes, 2010; Skeem, et al., 2002).

Preventing criminal behavior is an important objective of treatment, but what about reducing the core personality traits of psychopathy? Are inherent psychopathic traits indeed changeable? There is, as far as we know, no direct empirical evidence of such changes. One challenge is the lack of validated tools for the measure of potential changes. PCL-R, with its reliance on previous behavior, is not well suited for change measurement, although PCL-R Factor 1 (interpersonal and affective traits) may be more suited than Factor 2 (antisocial behavior). The CAPP was partly developed with the intention of measuring changes in the traits of psychopathy, but further research and validation is necessary before any conclusion is drawn about the instrument's applicability.

In sum, it can easily be concluded that psychopathy is difficult to treat. While some recent authors seem tentatively optimistic, there is limited empirical data to underpin this optimism. However, it is possible that certain variants of treatments may, as first suggested by Karpman (Karpman, 1946), have effect on certain subtypes of psychopathy, while have less to none effect on other subtypes.

1.7 Research aims

1.7.1 Overall aim of the thesis

The overall aim of the thesis is to explore the possible heterogeneity of the psychopathy construct, especially regarding the relationship between psychopathy and affectivity, empathy, cognition and self-regulation. We were also interested in exploring different assessment methods and instruments for evaluating

psychopathy, and see if methodological differences could help explain some of the previous mixed findings in the field.

1.7.2 Aims of paper 1

The aim of paper 1 was to explore the inter-correlations between three psychopathy assessment instruments (PCL-R, CAPP-IRS, and SRP-III) that differ on both assessment methodology and theoretical basis. Because all three instruments claim to assess the same underlying psychopathy construct, we expected high inter-correlations. However, on basis of the theoretical differences, we also expected to find divergence in the interrelations between the facets/domains of the individual measures.

1.7.3 Aims of paper 2

Paper 1 revealed strong inter-correlations between the included psychopathy assessment instruments, but it also revealed substantial divergence both between and within the measures. Further investigation of external correlates are warranted and the aim of paper 2 was to investigate the relationship between psychopathy and Theory of Mind abilities. As studies have signified the importance of the eye region in the interpretation of complex mental state of others (Adolphs, et al., 2002), we used The Reading the Mind in the Eyes test – revised version (RMET; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001) to assess the individual's ability to read the emotional "language of the eyes". Previous studies regarding psychopathy and RMET have presented mixed findings. Different psychopathy assessment methodology (total score vs. factor scores, clinical assessment vs. self-report) and different study samples (students vs. forensic) may have contributed to the discrepancies in the literature regarding psychopathy and emotional processing. The inclusion of both self-report and clinical assessment of psychopathy in paper 2 allowed us to directly investigate if methodological differences affected the results.

1.7.4 Aims of paper 3

Several previous studies have shown associations between psychopathy and the experience of negative affectively, and studies have also shown divergence in these associations within the psychopathy construct. However, few studies have controlled for other known biological and cognitive associates to negative affectively. The aim of paper 3 was to therefore to further examine this relationship, while controlling for HRV and cognitive functions as measures of underlying mechanisms of self-regulation. Negative affects included in this study were general psychological distress, state anxiety, state depression, and aggression. By using a dimensional approach to the two-factor model of the PCL-R, we were also able to explore possible heterogeneities in the relationship between psychopathy and negative affectivity.

2. Methods

2.1 Participants

Ninety-two male prison inmates at Bergen prison, Norway, participated in the three studies. The age of the participants ranged from 19 to 71 years of age (mean 33.47, SD 10.77). The participants served sentences ranging from 6 weeks to 20 years (21 years is the longest possible sentence in Norway), with a mean of 6.3 years (SD 4.93), and were convicted for a variety of crimes, including simple theft, drug dealing, armed robbery, rape, child molesting and murder. Fifty-two percent of the participants had drug-related sentences, 42 % had violence-related sentences, and 14 % were sentenced for sexual offenses. The number of prior convictions ranged from 0 to 51, with a mean of 6.3 (SD 7.37). Thirty-nine percent of the participants had only completed compulsorily schooling (nine years). Forty-six percent had no higher education beyond high school (many had finished high school in prison). Only 11 of the participants were non-Norwegian citizens, and all spoke Norwegian.

2.2 Clinical assesment

2.2.1 PCL-R: 2nd

The Psychopathy Checklist – Revised: 2nd edition (PCL-R; Hare, 2003), is a 20-item instrument designed to measure the construct of psychopathy in research, prison, clinical and forensic psychiatric settings. Based on a semi-structured interview and an extensive file review (sentences, psychiatric evaluations, prison journals etc.) the items are scored on a three-point scale (0= not present, 1= somewhat present, and 2= definitely present). The PCL-R has shown good reliability and validity and is often considered the "gold standard" for the assessment of psychopathic personality (Cooke, et al., 2001; Hare, 1999).

Paper 1

The PCL-R items were divided in four facets according to the 2nd edition of the PCL-R manual (Hare, 2003). Facet 1 = interpersonal; facet 2 = affective; facet 3 = lifestyle; facet 4 = antisocial. The Cronbach's alpha for the present sample was .807 for the total score, .780 for facet one, .722 for facet two, .743 for facet three, and .713 for facet four. The inter-rater reliability for PCL-R (*N*=8) ranged from good to excellent (McDowell, 2006): PCL-R total score, ICC_1 = .943; facet 1, ICC_1 = .695; facet 2, ICC_1 = .917; facet 3, ICC_1 = .653; facet 4, ICC_1 = .878.

Paper 2 and 3

On the basis of the results from the correlation analysis in paper one, we decided to only use the two superordinate factors (Factor 1 and Factor 2; (Hare, 2003)) in paper 2 and 3. The Cronbach's alpha for the present sample was .807 for the total score, .841 for Factor 1, and .806 for Factor 2. The inter-rater reliability for PCL-R (*N*=12) ranged from good to excellent (McDowell, 2006): PCL-R total score, ICC_1 = .921; Factor 1, ICC_1 = .720; Factor 2, ICC_1 = .880.

2.2.2 CAPP-IRS

The Comprehensive Assessment of Psychopathic Personality – Institutional Rating scale (CAPP-IRS; Cooke, Hart, et al., 2004) is a new instrument created to assess psychopathic personality symptoms. As a new instrument, the psychometric properties of the scale are still under investigation, but several studies have shown promising results (Hoff, et al., 2012; Kreis, et al., 2012; Pedersen, et al., 2010). More international studies on the CAPP-IRS are ongoing (for more information, see www.gcu.ac.uk/capp/). The CAPP-IRS consists of six domains: Attachment, behavioral, cognitive, dominance, emotional, and self. The domains cover 33 symptoms of psychopathy. Each symptom is scored on a seven-point scale (0-6). Minimum score is 0 and maximum score is 198. The CAPP-IRS was scored using

the Norwegian research-version (Hoff, Olsen, Gullbrå, & Nome, 2008), and it was rated in a lifetime perspective.

The Cronbach's alpha for the present sample was .951 for the total score, .861 for the attachment domain, .777 for the behavioral domain, .716 for the cognitive domain, .866 for the dominance domain, .754 for the emotional domain, and .901 for the self domain. The inter-rater reliability for CAPP-IRS (*N*=8) ranged for good to excellent (McDowell, 2006): CAPP-IRS total score, ICC_1 = .970; attachment domain, ICC_1 = .890; behavioral domain, ICC_1 = .762; cognitive domain, ICC_1 = .747; dominance domain, ICC_1 = .929; emotional domain, ICC_1 = .882; self domain, ICC_1 = .879.

2.3 Self-reports

2.3.1 SRP-III

The Self-Report Psychopathy Scale (SRP) was constructed by Hare and colleagues as a self-report version of the PCL. However, the original version correlated only moderately with the PCL (Hare, 1985). The SRP-III (Paulhus, et al., in press) is the third, and latest, version of the scale, and have showed promising psychometric properties (Lilienfeld & Fowler, 2006; Paulhus & Williams, 2002). As the SRP-III is modeled on PCL-R, they are considered to be theoretically and conceptually close, and their factor structure seems to be consistent (Lishner, et al., 2011; Paulhus & Williams, 2002; Wheeler, et al., 2009). SRP has also been found to correlate highly with other self-reports on psychopathy (e.g. Psychopathic Personality Inventory [PPI]; Benning, Patrick, Salekin, & Leistico, 2005; Salekin, 2008). The SRP-III (Jones & Paulhus, 2010; Paulhus, et al., in press), consists of 64 items, with responses made on a five-point Likert-scale (1–5).

Paper 1

In Paper 1, we divided the items in the four facets corresponding to the four-facet model of the PCL-R (Williams, Paulhus, & Hare, 2007): 1 = Callous Affect (CA); 2 = Interpersonal Manipulation (IPM); 3 = Erratic lifestyle (ELS); 4 = Criminal Tendencies (CT). The Cronbach's alpha for the present sample was .938 for the total score, .817 for the IPM facet, .740 for the CA facet, .863 for the ELS facet, and .800 for the CT facet.

Paper 2

The SRP-III originally uses a four-factor structure, but on the background of the results of the correlational analysis in paper 1, and in accordance with previous use of the SRP-III, a two-factor structure was used in paper 2. We collapsed the callous affect facet and the interpersonal manipulation facet into Factor 1, while the erratic lifestyle facet and the criminal tendency facet was collapsed into Factor 2 (Lishner, et al., 2011; Wheeler, et al., 2009). The Cronbach's alpha for the present sample was .938 for the total score, .871 for Factor 1, and .907 for Factor 2.

2.3.2 SCL-90-R

Symptom Check-List 90-Revised (SCL-90-R; Derogatis, 2009) is a 90-item self-report questionnaire developed to measure a wide variety of psychological symptoms. Each item describes a symptom, and the test subjects are instructed to indicate on a five-point Likert scale (0 = "not at all", 4 = "extremely") how severely they were bothered by this symptom in the last seven days. The symptoms can be classified into nine dimensions and three global indices. For the present study, we only analyzed scores for the global severity index (GSI), which is considered the best summary measure of overall psychological distress. Cronbach's alpha on the GSI for the present sample was .975.

2.3.3 HADS

Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) is a self-report scale developed as a brief measure of generalized symptoms of state anxiety and state depression in non-psychiatric hospital clinics. It consists of two subscales, anxiety and depression, each containing seven items scored on a four-point Likert scale (0–3). The Cronbach's alpha for the present sample was .797 for HADS anxiety and .796 for HADS depression.

2.3.4 Aggression questionnaire (AQ)

Buss-Perry Aggression Questionnaire (AQ; Buss & Perry, 1992) is a 29-item self-report questionnaire developed to assess dispositional aggression. Each item is rated on a five-point Likert scale. In the present study, we only used the total score as a measure of global aggression, but in addition there exist four subscales (Physical Aggression, Verbal Aggression, Anger, and Hostility). Cronbach's alpha on the total score for the present sample was .904.

2.4 Computer-based experimental tasks

2.4.1 Reading the Mind in the Eyes Test

A computerized version of the "Reading the Mind in the Eyes" Test–revised (RMET; Baron-Cohen, et al., 2001) was used to assess ToM capabilities. The test consists of 36 black-and-white images of the eye region. The images are presented one by one, together with four adjectives (one target word and three foil words, see figure 3). The participants are requested to select which of the four adjectives that best describes what the person in the image is feeling (mental state). The test is self-paced, and a glossary, presenting a brief definition of each word, is available if needed. The test is scored by summarizing the number of correctly identified mental states. We also classified the stimuli used in the test into three separate

emotional valence categories (positive, neutral, and negative). Using similar methodology as in previous studies (Ali & Chamorro-Premuzic, 2010; Harkness, Sabbagh, Jacobson, Chowdrey, & Chen, 2005), five independent raters cataloged the 36 images (with the correct answer, and no foil words) in the three valence categories. All the raters agreed on all but five images, and these five images were excluded. To allow comparable scores, all the scores were divided on the number of stimuli in each category (total=36; positive=7; neutral=7; negative=17).

Figure 3. Three examples of stimuli from the RMET. The correct answer for the examples are: Top: playful, middle: upset, and bottom: desire (Retrieved from http://www.romankrznaric.com/outrospection /2010/01/30/359).

2.4.2 Tower of London

Tower of London (ToL; Shallice, 1982) is a neuropsychological instrument designed to assess executive planning abilities. We used a computerized version of the test where the subject was presented a starting configuration and a target configuration. Each configuration consisted of three colored balls (red, yellow, and blue; see Figure 4) positioned in three pockets, where the left pocket could contain a maximum of three balls, the middle pocket could contain maximum two balls, and the last pocket could contain only one ball. The subjects were then asked how many (1–5) moves, according to set rules, were necessary to make the starting configuration like the target configuration. The test included a total of 50 configurations.

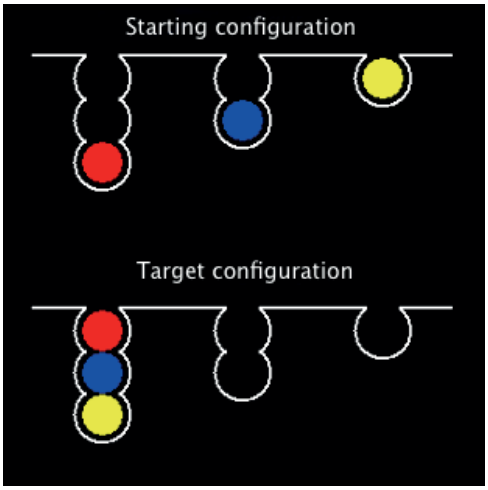

Figure 4. Tower of London (ToL). Five moves are necessary in this sample configuration

2.5 Psychophysiology

2.5.1 Heart rate variability (HRV)

Physiological activity was measured by registering HR and HRV using the Actiheart System (Cambridge Neurotechnology Ltd; (Brage, Brage, Franks, Ekelund, & Wareham, 2005), a compact lightweight device that records HR and variability of R-R interbeat intervals (IBI). The Actiheart clips onto a single electrocardiogram (ECG) electrode (M-00-S/50 Blue Sensor) with a short ECG lead to another electrode that detects the ECG signal. The Actiheart was placed on the upper chest. The interval between heartbeats is used to calculate the variability in the timing of the heartbeat.

2.6 Procedures

The data for all the papers were collected during a one-year period in 2011–2012. The data was collected as a part of a larger study in Bergen Prison, studying dynamic risk factors for criminal behavior. The study was approved by the Norwegian Regional Ethics Committee for Medical Research (REK-vest) before data collection started in 2011. All participation in the study was voluntary. As a requirement from the Ethics Committee, the initial information about the project, and the first request for participation, had to be conducted by a prison official. No information is therefore available regarding the non-participants. All participants who agreed to participate signed an informed consent statement and were informed about their right to withdraw from the study at any time. Five participants withdrew from the study, and seven were released/transferred before the PCL-R interviews.

The assessment interviews for both PCL-R and the CAPP-IRS were performed by either a clinical psychologist or advanced psychology students (a total of four

interviewers) trained in the use of both the PCL-R and the CAPP-IRS. The individual interviews lasted from 2 to 6 hours, and the majority of the interviews were tape recorded to enable assessment of inter-rater reliability. All available case history information (sentences, psychiatric evaluations, prison journals etc.) was also used in the scoring of these instruments.

The SRP-III, SCL-90, HADS and the AQ were handed out along other self-reports measures (assessing general health, attitude, and drug use) and filled out in the presence of a researcher.

The participants were tested on computerized versions of the ToL and RMET in groups of 2–5 inmates. Each participant was seated in front of a laptop PC and instructed to focus on the computer and respond to target stimuli according to the instructions. The stimuli were presented using the E-prime 2.0 software (Psychology Software tools, Pittsburgh, PA; Schneider, Eschman, & Zuccolotto, 2001). The tests were presented in random sequence. The rooms used for testing were relatively spacious (class-room style), and the participants were seated with enough distance to each other to avoid disturbance from the others in the testing group. HRV were registered five minutes before test start (baseline), during the testing, and five minutes after the testing had ended (recovery). Frequency domain parameters were derived by the Fast Fourier Transform (FFT) spectrum (Malik, 1996). The high-frequency (HF; .15 - .40 Hz) component is primary parasympathetically (PNS) mediated through respiratory sinus arrhythmia. The meaning of the low-frequency (LF; .04 – .15) component is surrounded with more controversy with some seeing LF as a direct marker of sympathetic activity (SNS), while other see it as a product of both SNS and PNS activity (Appelhans & Luecken, 2006; Malliani, Pagani, Lombardi, & Cerutti, 1991; Xhyheri, Manfrini, Mazzolini, Pizzi, & Bugiardini, 2012). HF and LF were in the present study transformed to their natural logarithms prior to analysis.

2.7 Statistical analyses

All statistical analyses were performed using SPSS version 20.0 for Macintosh. Cronbach's alpha was used to assess the reliability of all the measures used (PCL-R, CAPP-IRS, SRP-III, SCL-90-R, HADS, and AQ). Inter-rater reliability of the PCL-R and the CAPP-IRS was assessed with the use of one-way intraclass correlation coefficients (ICC_1).

2.7.1 Paper 1

Pearson's product moment correlations were used to investigate the relationship between the psychopathy measures PCL-R, CAPP-IRS, SRP-III and their facets/domains. Missing data were deleted pairwise.

2.7.2 Paper 2

Pearson's product moment correlations were used to explore the relationship between PCL-R, SRP-III and performance on RMET. Multiple regression analysis using the enter method was used to investigate the possible predictive power of psychopathic traits (Factor 1 and Factor 2) on performance on RMET.

Missing data in the self-report (SRP-III) were handled through the use of multiple imputation with pooled data (Graham, 2009). Pair-wise deletion was used in the correlation and regression analysis.

2.7.3 Paper 3

Pearson's product moment correlations were used to investigate the relationship between psychological symptoms, psychopathy (PCL-R), HRV, and performance on RMET. Hierarchical multiple regression analysis using the enter method was conducted to investigate possible predictors related to psychological symptoms/distress and aggression: The GSI of the SCL-90-R, HADS anxiety,

HADS depression, and Buss & Perry aggression scale was used as outcome variable in four separate regression analyses. High frequency HRV data at baseline, during testing, and during recovery were entered as step one, while the low frequency HRV data were entered as step two. Performance on the ToL and RMET was entered in step three. In the final step (four), Factor 1 and Factor 2 of PCL-R was entered. Missing data in the self-reports (SCL-90-R, HADS, and AQ) were handled through the use of multiple imputations with pooled data (Graham, 2009). Pair-wise deletion was used in the correlation and regression analysis.

3. Results

3.1 Paper 1

Assessment of psychopathy: Inter-correlations between Psychopathy Checklist Revised, Comprehensive Assessment of Psychopathic Personality – Institutional Rating Scale, and Self-Report of Psychopathy Scale-III

The correlation analysis showed a high degree of inter-correlation between the instruments, especially on the total scores. However, the analysis also revealed substantial discrepancies when the correlations between the instruments' underlying facets/domains were assessed.

3.1.1 PCL-R and CAPP

The total score of the PCL-R correlated significantly with the total score of CAPP-IRS (r=.832, p<.001). Overall, the affective facet (facet 2) of PCL-R had the strongest association to CAPP-IRS. The total score of the CAPP-IRS (r=.740, p<.001), as well as the attachment domain (r=.736, p<.001), the emotional domain (r=.701, p<.001), and the self domain (r=.705, p<.001) correlated most strongly with the affective facet. This may point to a high affective emphasis in the CAPP-IRS. The interpersonal facet (facet 1) of the PCL-R was most strongly correlated to the dominance domain of the CAPP-IRS (r=.793, p<.001). The antisocial facet (facet 4) of the PCL-R had the weakest correlation to the CAPP-IRS, which corresponds to the intention of the developers of CAPP-IRS to have less focus on antisocial behavior. The strongest correlations found for the antisocial facet was, perhaps not unexpectedly, to the behavioral domain of CAPP-IRS (r=.624, p<.001). There was also strong correlations between the behavioral domain of the CAPP and the lifestyle facet of the PCL-R (facet 3; r=.749, p<.001).

3.1.2 PCL-R and SRP-III

The total score of the PCL-R and SRP-III correlated significantly (r=.441, p<.001), but more discrepancy became evident in the correlations for the facets. Neither the interpersonal facet (facet 1) nor the affective facet (facet 2) of the PCL-R correlated significantly (p >.05) with any facet of the SRP-III. However, both the lifestyle facet (facet 3) and the antisocial facet (facet 4) of the PCL-R correlated significantly (p<.05) with all the facets of the SRP-III. This finding may point to a deficit in the self-report to capture the full scope of the psychopathic construct. Especially the interpersonal and affective part of the construct seem to be missed.

3.1.3 CAPP-IRS and SRP-III

Overall, we found the weakest correlations between CAPP-IRS and SRP-III. The correlation between the total scores was significant, but weak (r=.298, p=.022). The strongest correlation for SRP-III was found with the behavioral domain of the CAPP-IRS. These findings further emphasize the behavioral focus of the SRP-III.

3.2 Paper 2

Psychopathy and the ability to read the "language of the eyes": Divergence in the psychopathy construct

The two psychopathy assessment instruments used in the study (PCL-R and SRP-III) produced somewhat divergent results. The correlational analysis revealed an overall negative trend in the association between psychopathy, assessed through self-report (SRP-III), and performance on the RMET. This negative association was especially evident for negative and neutral valenced mental states. The multiple regression analyses revealed that Factor 1 scores of the SRP-III did not significantly predict performance on the RMET. However, Factor 2 scores significantly predicted variability in performance on the neutral and negative (β=-.348, p=.010; β=-.268, p=.047), but not the positive valenced mental states.

For the clinical assessment instrument (PCL-R), there were no significant correlation between the total score and performance on RMET. However, more diverges in the results emerged when we subdivided both the PCL-R scores and the RMET scores. Factor 1 was significantly and positively correlated with the recognition of the neutral valenced mental states (r=.292, p=.011), while Factor 2 was negatively correlated with the total score of the RMET (r=-.247, p=.033). More specifically, Factor 2 was related to deficits in recognition of neutral and negative valenced mental states (r=-.272, p=.018; r=-.278, p=.016), but not related to the ability to detect positive valenced mental states. The subsequent regression analyses revealed that the scores on Factor 2 were negatively associated to performance on the total score (β=-.259, p=.029) and to recognition of neutral and negative valenced mental states (β=-.307, p=.006; β=-.290, p=.012). No significant predictive relationship was found to recognition of positive valenced mental states. In contrast, Factor 1 of the PCL-R was found to be positively associated with accuracy in identifying neutral valenced mental states (β=.324, p=.003).

3.3 Paper 3

Negative affectivity, self-regulation, and psychopathic traits in a prison setting

The correlational analyses revealed a significant relationship between psychopathy, assessed through PCL-R, and negative affectivity. The analysis of total score, as well as scores on the two underlying factors, disclosed heterogeneity in the psychopathic construct.

PCL-R Factor 1 was negatively correlated (anxiety; r=-.232, p=.046), or not significantly correlated (SCL-90-R GSI, depression, and aggression) with negative affectivity. Opposite tendencies were found for Factor 2, with positive significant correlation with aggression (r=.485, p<.000), and borderline positive correlation with SCL-90-R GSI (r=.224, p=.054).

In the subsequent hierarchical regression analyses, when controlling for HRV and performance on RMET and ToL, there was no association between PCL-R (Factor 1 and Factor 2) and negative affectivity measured through SCL-90-R and HADS. However, for aggression, PCL-R Factor 2 was the strongest predictor in the full regression model (β=.459, p<.001).

Both parasympathetic (HRV HF) and sympathetic (HRV LF) activation at the recovery phase were significant predictors of SCL-90-R GSI, HADS anxiety, and HADS depression, but only when both measures were included in step two. On the first hand, executive function abilities, measured with ToL, significantly predicted aggression, but not GSI, anxiety and depression. On the other hand, ToM capabilities, measured with the RMET, did predict GSI and anxiety, but not depression and aggression.

4. Discussion

The overall aims of this thesis were to explore possible heterogeneities in the psychopathy construct and see if the use of different assessment methods and instruments could account for some of the mixed theoretical and empirical literature on the field. These aims were addressed in three papers were paper 1 looked at the inter-correlation between three psychopathy assessment instruments (PCL-R, CAPP-IRS, and SRP-III), paper 2 explored the relationship between two of the psychopathy assessment instruments (SRP-III, and PCL-R) and Theory of Mind (ToM) abilities, and paper 3 further explored the relationship between psychopathy and possible external correlates by investigate the relationships between negative affectivity, self-regulation, and psychopathic traits.

4.1 Main findings

4.1.1 Paper 1

The correlational analyses in paper 1 indicate a strong association between the different psychopathy assessment instruments, but also substantial divergence, especially in regard to the underlying facets and domains. One intention of the developers of the CAPP was to reduce the weight of specific criminal and antisocial behavior in the definition and conceptualization of psychopathy. Our finding of only weak correlations between the antisocial facet of the PCL-R and the CAPP are in line with this intention. However, the high correlation found between PCL-R and CAPP-IRS indicates convergent validity as both instruments seem to assess the same underlying psychopathy construct, regardless of how they emphasize criminal and antisocial behavior. That the affective facet of the PCL-R was found to have the strongest association to the CAPP-IRS speaks to a highly affective focus in almost all of the CAPP domains.

Due to methodological differences, one might expect some lower correlations between the self-report (SRP-III) and the two clinical measures (PCL-R and CAPP-IRS). Our findings support this expectation. But with only low-to-moderate (Cohen, 1988) correlations, one can question whether the self-report indeed measures the same construct as the clinical measures. More detailed inspection of the correlations between the facets/domains exposes an interesting pattern, where the self-report seems to capture the antisocial and behavioral aspects of psychopathy, but seems to be limited in regard to the interpersonal and affective segments of the construct. This is also in line with previous findings regarding psychopathy and self-reports of psychopathy (Copestake, et al., 2011; Lilienfeld & Fowler, 2006).

As the PCL-R is often regarded as the "gold-standard" of psychopathy assessment, it warranted a closer look at the inter-correlations within this measure. In this paper we used the four-factor model described in the 2nd edition of the PCL-R manual (Hare, 2003) and looking at the correlations we see that while facet 1 and facet 2 are strongly inter-correlated (r=.651), they are not significantly correlated to facet 3 and 4. Similarly, facet 3 and facet 4 are strongly inter-correlated (r=.666). These results are a strong indication, at least in this sample, of the two separate factors within the overall PCL-R psychopathy construct, but it gives little support for the further splitting into the 4 facets.

4.1.2 Paper 2

The "emotional poverty" hypothesis put forth by Cleckley (1941/1976) seems to imply a general deficit in emotional competence for individuals scoring high on psychopathic traits. However, several studies have indicated that some psychopathic individuals may have retained, at lest some part, of such emotional skills, which they may use to exploit and manipulate others (Book, et al., 2007; Pham, et al., 2010; Wheeler, et al., 2009). As a part of the mentalization concept, the ability to interpret and discriminate others' mental states has been suggested as

a link between childhood attachment and development of later antisocial and aggressive behavior (Fertuck et al., 2009; Fonagy & Target, 1997; Sabbagh, 2004; Taubner, White, Zimmermann, Fonagy, & Nolte, 2013). In paper 2 of this thesis, we investigated how psychopathy was related to performance on the RMET. The two methodologically distinct psychopathy assessment instruments used (SRP-III and PCL-R) produced somewhat divergent results. While the analyses for the self-report (SRP-III) revealed either no significant or significantly negative associations between psychopathy and performance on RMET, the results for the PCL-R were more differentiated. No significant correlations were found between the PCL-R total score and RMET performance. This corresponds to several previous studies that did not detect any general ToM impairments related to total scores of psychopathy (Blair, et al., 1996; Dolan & Fullam, 2004; Shamay-Tsoory, et al., 2010). However, divergence was discovered when both psychopathy and the RMET scores were subdivided into PCL-R factors and emotionally valenced mental states. While PCL-R Factor 2, as for the self-reported psychopathy, was largely negatively related to RMET performance, PCL-R Factor 1 was positively related to discrimination of neutral valenced mental states.

That we find antisocial and behavioral psychopathic traits (Factor 2) to be negatively related to mentalization corresponds to previous suggestions of a connection between mentalization and aggressive and antisocial behavior (Fonagy & Target, 1997; Taubner, et al., 2013). In contrast, our finding of a positive relationship between interpersonal and affective psychopathic traits (Factor 1) and ability to discriminate neutral mental states is more in line with the view of psychopaths as adapt social predators that are able to recognize and use others emotional states to deceive and manipulate (Book, et al., 2007; Hare, 2001; Wheeler, et al., 2009). The discrimination of mental states from pictures of just the eye region is considered a more "pure" cognitive task, compared to the use of whole faces (Adolphs, 2002; Baron-Cohen, et al., 1997). This cognitive nature of

the RMET corresponds to our finding of better cognitive functioning related to interpersonal traits of psychopathy.

The results from paper 2 also highlight the possible implications for the various psychopathy assessment methodologies used in a study. While self-reports have its advantages, it remains questionable whether self-reports of psychopathy is able to capture the full scope of the construct. Especially problematic is the apparent limitations in capturing the interpersonal and affective traits of psychopathy (Hare & Neumann, 2009; Harpur, et al., 1989; Sandvik, et al., 2012).

4.1.3 Paper 3

To explore the "emotional poverty" hypothesis more elaborately, paper 3 investigated the relationship between psychopathy and negative affectivity. Only the PCL-R was included in this study, and the results from this study also revealed heterogeneity in the psychopathy construct.

The correlation analyses revealed significant associations between both total score and the two factors on the PCL-R and negative affectivity. In the regression analyses, when controlling for HRV and performance on RMET and ToL, this association between psychopathy (Factor 1 and Factor 2) and negative affectivity measured through SCL-90-R and HADS disappeared. However, PCL-R Factor 2 remained the strongest significant predictor of aggression.

Although the relationship between negative affectivity and psychopathic traits has received much attention, the question of how different underlying mechanisms of self-regulation might affect this relationship is less well understood. One physiological mechanism that has been associated with the regulation of emotion and behavior is HRV. Indexes of both parasympathetic (HRV HF) and sympathetic (HRV LF; Xhyheri, et al., 2012)) activation were entered in the regression analyses. Whereas HF, when entered alone, did not significantly contribute to the prediction of negative affective, both LF and HF during the

recovery phase became significant predictors of GSI, anxiety and depression when included in the prediction model. The view of HF as a marker for parasympathetic activity is uncontroversial (Moak et al., 2007; Thayer, et al., 2010), but the interpretation of LF as a marker of sympathetic activity is regarded as more problematic. Our results gave opposite directed contributions of HF and LF in the prediction of GSI, anxiety, and depression, and we interpreted this as a confirmation that HF and LF, at least under these test conditions, are markers of different processes. The increased predictive power of HF when LF was also included in the model indicates that it is the interplay between the two branches of the nervous system that is important in the relation to negative affectivity.

It is now generally accepted that affects and emotion are products of cognitive processes, and there has been found an association between negative affectivity (i.e. depression, anxiety) and poorer performance on executive tasks (Eysenck, Payne, & Derakshan, 2005; Fossati, Amar, Raoux, Ergis, & Allilaire, 1999; Lazarus, 1982; Morgan & Lilienfeld, 2000). Only RMET performance and not ToL performance significantly predicted levels of GSI and state anxiety in our experiments. Performance on the executive task (ToL) was significantly negatively related to aggression. The divergences discovered in the associations between the cognitive tests and negative affectivity might indicate different cognitive mechanisms related to anxiety, depression and aggression.

The results from paper 3 suggest that the proposed relationship between psychopathic traits and negative affectivity seems to be partly explained through self-regulatory and cognitive mechanisms. The results also show heterogeneity in both the negative affectivity and the psychopathic construct.

4.2 General discussion

In sum, the results from the three papers presented challenge the view of psychopathy as an etiologically homogenous construct. All three papers find

empirical support for an inherent heterogeneity within what "normally" is called "psychopathy", and this heterogeneity seems to be especially salient in regard to affective and emotion processing. While the notion of heterogeneity is neither new, nor even especially controversial, psychopathy is in the literature continuously used in a homogenous manner.

4.2.1 Structural properties

"One of the major challenges in trying to elucidate the structure of psychopathy is that, as a latent construct, it is not directly observable" (Hare & Neumann, 2008, p. 231)

Hare and others have emphasized the PCL-R as a measure of a coherent construct, and maintain that while several factor structures have been proposed (two, three, and four), they all indicate an overall superordinate factor of "total" psychopathy (Cooke & Michie, 2001; Hare, 1991, 2003; Hare & Neumann, 2008). However, an item response theory analysis by Cooke and Michie (1997) clearly showed that the items related to the two factors in the two-factor model are not of equal importance. Factor 1 items, compared to Factor 2 items, were shown to be more discriminating and correlated more highly to prototypically rating of psychopathy. This corresponds to the more general view of Factor 1 items as core features of the disorder. This existence of two factors made Lilienfeld (1994) question: "what is psychopathy?" (p.105). Especially did he find it unclear whether individuals with high scores on Factor 1, who then hold core psychopathic personality traits, but still score low on Factor 2, really are psychopaths. In accordance to Cleckley's original personality-based description, the answer clearly would state that they are. However, the use of a cut-off score (30 or 25) on the PCL-R would not allow such an inference, as a full score on all Factor 1 items would only give a score of 18 (8 items x 2).

Our studies also question the validity of PCL-R psychopathy as a coherent construct. The finding that the two PCL-R factors are differentially related to ToM capabilities and negative affectivity challenges the view of coherence in the measured construct. This corresponds with many other researchers and studies questioning the homogeneity of the psychopathy construct, and especially the psychopathy construct of the PCL-R. Our findings of lower levels of anxiety and better emotion recognition capabilities related to Factor 1, and higher levels of aggression and psychological distress related to Factor 2, seem to indicate that some of the positive adjustment features of Cleckley's psychopathy might be captured by PCL-R Factor 1, and at the same time are at odds with PCL-R Factor 2.

4.2.2 "Construct drift"

The PCL-R is, without a doubt, the dominant instrument in the assessment of psychopathy. Although Hare partly built the PCL on Cleckley's descriptions, several authors have noted that the PCL/PCL-R significantly deviates from Cleckley's original foundations (Haapasalo & Pulkkinen, 1992; Patrick, 2006; R. Rogers, 1995; Salekin, 2002; Salekin, et al., 1996). This issue of *construct drift* is heavily debated, particularly in regard to antisocial behavior, aggression, and anxiety (e.g. Cooke, Michie, Hart, & Clark, 2005; Hare & Neumann, 2008, 2010; Lilienfeld, 1994; Poythress & Petrila, 2010; Skeem & Cooke, 2010). Hare and colleagues reject the validity of the "construct drift" critique (Hare, 2003; Hare & Neumann, 2008), partly by pointing out that Cleckley's descriptions was not the only inspiration for the PCL/PCL-R, and that other influential researchers and clinicians also contributed to what Hare labels the "traditional concept of psychopathy" (Hare & Neumann, 2008, p. 222). They further emphasize that Cleckley's 16 features was not a formal rank-ordered list of all psychopathic characteristics, and reject the notion that Cleckley excluded antisocial behavior from the description and diagnosis of psychopathy. In contrary, they point out that the clinical descriptions

in Cleckley's *The Mask of Sanity* clearly express the important role of antisocial behavior for the clinical profile of psychopathy (Hare & Neumann, 2008).

Although it is evident that many of the clinical profiles in Cleckley's descriptions exhibit antisocial behavior, it remains reasonably clear this was not regarded as an essential component. As mentioned in the introduction of this thesis (section: 1.1.2: Cleckley's psychopathy), Cleckley's psychopathy construct was marked by appearance of positive adjustment ("the mask" in *The Mask of Sanity*), lack of anxiety and neurosis. The PCL-R largely omits the positive adjustment features described by Cleckley (Patrick, 2006). This absence of positive adjustment indicators represent a view of such features as not essential to the psychopathy construct, they are rather seen as concomitants. In regard to Cleckley's item "Good intelligence", Hare and Neumann (2008) states " a substantial litterateur indicates that the association between the PCL-R total score and standard measures of intelligence is weak at best" (p.227). However, the justification seems rather circular and only show that the PCL-R total score is not related to good intelligence. Overall is the available literature regarding psychopathy and executive functioning somewhat mixed (Maes & Brazil, 2013; Mol, et al., 2009; Pham, et al., 2003; R. D. Rogers, 2006), and one problem is that few studies have examined the separate contribution of the two PCL-R factors. Some studies have indeed found that psychopathic traits related to PCL-R Factor 1 is positively related to executive functioning (Hansen, et al., 2007; Ishikawa, et al., 2001). In contrast to the mixed findings regarding psychopathy, several meta-analyses have found a robust and statistically significant negative association between antisocial behavior and executive functioning (Morgan & Lilienfeld, 2000; Ogilvie, Stewart, Chan, & Shum, 2011). Our finding in paper 3 of performance on ToL as a significant predictor (negative) of aggression coincides with this. While we do not find any significant relationships between performance on ToL and either PCL-R Factor 1 or PCL-R Factor 2, we do, in paper 2, find a positive association between Factor 1 and performance on RMET (neutral valenced emotions), which is regarded a test of the

cognitive side of empathy (ToM). The divergence found between PCL-R Factor 1 and PCL-R Factor 2, in both our and other studies, with a wide-range of possible criterion variables (i.e. anxiety, suicide, ToM, aggression, emotional regulation, executive functioning; Hansen, et al., 2007; Harpur, et al., 1989; Ishikawa, et al., 2001; Patrick, 1994; Patrick & Zempolich, 1998; Porter & Woodworth, 2007; Verona, et al., 2001; Walsh, et al., 2009) might indicate that these two factors represent different underlying constructs. Henceforth, the results of opposing directions between the factors and association to external variables (i.e. anxiety) are especially interesting.

4.2.3 The two "faces" of psychopathy

Karpman's (Karpman, 1941, 1946, 1948) classical distinction between primary and secondary psychopathy really opened the debate on the different kinds of psychopathy, and on what constituted "real" psychopathy. Cleckley's description of psychopathy draws it as a single unitary disorder. However, Cleckley's description corresponds seemingly to Karpman's primary psychopathy, and primary psychopathy has also been called *Cleckleyan psychopathy* (Skeem, et al., 2011). Karpman, along with others, has also proposed different etiology for the two psychopathy variants (Karpman, 1941; Porter, 1996; Skeem, et al., 2003). It has been suggested that primary psychopaths are born with an emotional deficit, while the development of secondary psychopathy are attributed to adverse environmental experiences (Karpman, 1941, 1946, 1948; Porter, 1996).

Subsequent researchers have built on Karpman's ideas and there is (now) considerable theoretical and empirical evidence for different variants or subtypes of psychopathy (Poythress & Skeem, 2006b; Skeem, et al., 2003). The papers presented in this thesis do not address the issue of etiology, but the results coincide with the proposed distinctions within the psychopathy construct. While some writers have suggested that PCL-R Factor 1 and 2 parallel primary and secondary psychopathy (Hicks, et al., 2004), others find little support for this equalization

(Blackburn, 2007; Skeem, et al., 2011). Nevertheless, the descriptive features and external correlates of primary psychopathy do overlap substantially with PCL-R Factor 1. We consider both primary psychopathy and PCL-R Factor 1 to represent the core features of psychopathy described by Clekcley (Blackburn, 2007), and both has been linked to lower levels of anxiety, fearfulness, and to some degree aggression and hostility (Harpur, et al., 1989; Lykken, 1957; Skeem, et al., 2011). Our results also parallel this by showing a negative relationship between PCL-R Factor 1 and anxiety, and some positive associations between PCL-R Factor 1 and ToM capabilities. Research has also suggested that secondary psychopathy, with its relation to anxiety and fearfulness, indicate a general propensity towards emotional unstableness, aggression, and negative affectivity (Benning, Patrick, Blonigen, Hicks, & Iacono, 2005; Poythress et al., 2010; Skeem, et al., 2011; Vassileva, Kosson, Abramowitz, & Conrod, 2005). This is also what we find related to PCL-R Factor 2.

4.3 Implications

4.3.1 Implications for assessment

PCL-R and antisocial behavior

It seems reasonably clear that both primary psychopathy and PCL-R Factor 1 also can be associated with antisocial and criminal behavior, but the question is if this association is crucial to the definition of psychopathy. Some choose to put "secondary psychopathy" in quotes to express skepticism in their regard of this as a manifestation of "true psychopathy" (Skeem, et al., 2011). The associated excessive emotionality (i.e. anxiety, nervousness, suicide, fearfulness) is deeply at odds with classic psychopathy descriptions (e.g. Cleckley, 1941/1976; Lykken, 1957; McCord & McCord, 1964). As such, it seems unreasonable to use traits associated with secondary psychopathy to "diagnose" psychopathy. As Karpman (1948) noted:

> There is little doubt that many people become entangled by the law and equally as many people, who while not directly involved with law, showed marked antisocial traits, but I see no justification for calling them psychopathic since a closer study of these cases would reveal them as belonging to other cardinal groups" (p. 525).

He also wrote: "Certainly, true psychopaths do not genuinely attempt suicide, nor are they burdened with guilt feelings" (Karpman, 1948, p. 523). The antisocial and behavioral aspects of PCL-R Factor 2, and the associations found, both in our and others studies, between PCL-R Factor 2 and negative affectivity, suggest that PCL-R Factor 2, as for secondary psychopathy, might not be appropriate in the diagnosis of "classical" psychopathy. As such, it seems inappropriate to continue to use a total score of the PCL-R as a diagnostics feature. The reliability and validity related to the PCL-R advocate a continued use of the instrument. Rather, we suggest using PCL-R Factor 1 as the psychopathy "diagnostics" tool, with PCL-R Factor 2 as a supplementary assessment of antisocial behavior, which may or may not coincide with psychopathy.

Self-reports

The results from paper 1 indicate a possible limitation of the SRP-III in regard to the assessment of the interpersonal and affective aspects of the psychopathic construct. The lack of significant correlations between SRP-III and facet 1 and 2 of the PCL-R (Factor 1) seen together with the previous discussion regarding the core features of psychopathy, questions whether the SRP-III is able to capture traits related to the classical psychopathy construct (Cleckleyan). Our findings are in line with previous research showing self-reported psychopathy to be only weakly correlated to PCL-R Factor 1 (Lilienfeld & Fowler, 2006), which suggest a general deficit related to the self-report method for capturing these interpersonal and affective traits of psychopathy.

Changes in personality

The question of personality change has a long history in the psychological literature. The traditional perspective of personality as relatively stable and enduring goes back to William James' (1890) proposal that "by the age of thirty, the character has set like plaster, and will never soften again" (p.121), and this was also repeated by Costa and McCrae (1988). However, more recent research has indicated that personality may not be as fixed as earlier suggested (Costa & McCrae, 2006; Roberts, Walton, & Viechtbauer, 2006). If changes in personality are indeed possible, how able are the psychopathy assessment instruments to detect such alterations? The PCL-R's, and many of the self-reports' substantial reliance on the person's behavioral history might render these instruments too static to pick up on potential personality changes. The CAPP model was partly developed to overcome this claimed restriction. By focusing on personality traits, rather than behavioral features, the creators seek to avoid the confounding of personality traits and behavioral acts (Kreis, et al., 2012). Since this instrument is relatively new, its validity and psychometric properties are still under investigation. The theoretical claim that CAPP-IRS is able to detect changes in personality also needs to be investigated.

4.3.2 Implications for treatment

The view of psychopathy as untreatable has not adequately taken into account the heterogeneity of the construct, and current findings of divergence related to affectivity raise some important questions regarding treatability. The use of total PCL/PCL-R score constitutes one potential problem with the earlier research. This homogenous use of the psychopathy construct conceals important individual differences that might affect the question of treatability. Indeed, some newer reviews are more optimistic to treatability, especially if the treatment takes the individual differences in psychopathic traits into consideration (Polaschek & Daly, 2013; Reidy, et al., 2013; Salekin, 2002). Some authors have seen anxiety as a prognostic sign for positive therapeutic outcome (Garfield, 1994; Salekin, 2002).

On the first hand, this has led to the suggestion, in accordance with Karpman's view, that it might be mainly primary psychopathy that is related to the negative propensity of treatment outcome. On the other hand, individuals with secondary psychopathic traits might be more responsive to treatment (Karpman, 1948; Vassileva, et al., 2005). Our findings of divergences related to negative affectivity, aggression, emotional competence, and to potential underlying mechanisms associated to these factors, indicate that a consideration of these factors might be important in the development and use of more individually targeted treatment programs. In the evaluation of treatment, it is important to be able to measure changes. In addition to the more traditional outcome measures, like recidivism and antisocial behavior, it is important to develop tools capable to detect subtle changes in the psychopathic personality traits. Whether CAPP-IRS is such a measure remains questionable until more research is conducted.

4.4 Ethical considerations in prison research

Conducting research on inmates in prisons is not without its challenges. Prisoners are in a very special and possibly vulnerable position, and this poses higher demands on the ethical aspects of conducting research on human subjects. The history of prison research is filled with examples of exploitation and misconduct.

There are many reasons for conducting research in a prison setting, and the use of prison inmates in research was once very common (Gostin, 2007; Moser et al., 2004). The degree of control and the "easy" availability of research candidates made prisons an attractive research setting for all kinds of human research. As an example, a U.S. sponsored human experiment was conducted in Guatemala from 1946–1948 on soldiers, prisoners and mental patients. Without informed consent, hundreds of research subjects were infected with syphilis and other sexually transmitted diseases, and then later treated with penicillin (antibiotics) (McGreal, 2010).

Why are prison inmates considered a vulnerable group? An ethical challenge related to research in prison lies in the possibility of obtaining free and informed consent for participation (Gostin, Vanchieri, & Pope, 2006). Prison inmates, deprived of their liberty, have limited autonomy and are at the beneficiary mercy of the institution and its staff. It is therefore necessary to facilitate for voluntary participation, as far as possible. The prison setting has been described by some as "inherently coercive" (Dubler, 1982, p. 9) and that it therefore is impossible to ensure voluntary participation. The boredom and lack of control in a prison could possibly make an opportunity to experience something new, and interact with other people outside the prison cell, an undue incentive to participate in a research project. The ethical debates regarding prison research have led some to propose a total ban on all research on prisoners.

There are, however, some ethical issues related to a systematical exclusion of a certain group for research. The strong regulation of prison research has led to very little research on prison inmates, which in turn may lead to a lack of knowledge concerning crime and imprisonment. This deficiency of knowledge leaves opinion leaders, policy makers and clinicians to unqualified assumptions and opinions when making decisions regarding prisoners and prison policies.

Prison inmates should hence neither be excluded from the benefits of research, nor should they bear an unfair burden of research participation (US Department of Health and Human Services, 1993). Epidemiological, sociological, psychological, and medical research can also be used to improve the health, living condition, and treatment of prisoners, and it is therefore ethically important that prisoners are allowed to participate in such research.

With regard to the judicial capacity to give informed consent, The European Prison Rules (Council of Europe, 2006) established that persons deprived of their liberty (prison inmates) retain all other rights which have not been taken from them by the court. This means that inmates are not (judicially) deprived of the ability to give

consent. A ban on all research on prisoners will in principle deny these persons the opportunity to contribute and participate in an important social process that may not only benefit the participants themselves, but society as a whole.

Confidentiality is important in all psychological research, and it is essential when conducting research in prisons. Confidentiality can be difficult to maintain in a prison environment where there are strong limitations on privacy. The staff and other inmates will most often know who is participating and not, and this may limit the participants' anonymity.

The lack of privacy in a prison setting may also make the prisoners suspicious that the data collected may be leaked and/or used against them. This suspicion may lead inmates to refuse participation, or motivate them to be dishonest and to portray themselves in a more favorable light. These biases can cause skewedness in the data, which can distort the conclusions. It is therefore crucial to make every possible precaution to ensure confidentiality and to make sure that the participants understand that all gained information about them is used only for the research purposes portrayed.

4.5 Limitations

The results for the three papers presented in this thesis must be interpreted in light of some limitations. The limited samples size (N=92), the all-male prison sample, and the specificities of a Norwegian cultural context may reduce the result's generalizability. There is a need for more research on females and psychopathy, although the available research is increasing rapidly (Hare, 2003). The low number of female inmates (6–7 % in Norway; regjeringen.no [government.no], 2008) makes it difficult to obtain a large enough research sample. In Bergen prison, where these studies were conducted, there are only 12 places designated for women (bergenfengsel.no, 2013), and for practical purposes, these were excluded from participating in the studies.

For ethical reasons, as described and discussed earlier (2.2 Procedures, and 4.4 Ethical Considerations in Prison Research), participation in the studies was completely voluntary. The use of a convenience sample, and the lack of information regarding the non-participants, may also limit the generalizability of the findings.

The use of the same raters for both PCL-R and CAPP-IRS in paper 1 may have increased the possibility for same rater bias. However, the good to excellent (McDowell, 2006) inter-rater reliability attained on both measures suggests good reliability for both measures.

One possible limiting factor to the thesis' conclusions is that in our studies we find only low correlation between the two PCL-R factors (r=.105). This is substantially lower than .50, which is reported by Hare in the PCL-R manual (Hare, 2003). This number seems to be, at least partly, based on Harpur, Hakstian, and Hare's (Harpur, et al., 1988) original paper on the PCL-R factor structure. However, a search for other studies including inter-correlations between the two factors revealed more mixed findings ranging from r=.24 to r=.64 (Haapasalo & Pulkkinen, 1992; Serin, 1992, 1996). It is plausible that characteristics of the participant sample used could affect the inter-factor correlation. Most studies using the PCL-R are conducted on forensic samples, and as a consequence, high prevalence of antisocial behaviors is expected, but the level might also vary with the institutions security level. Bergen prison, where our studies were conducted, is a *low* to *high* security prison, so the inmates are detained there for a wide variety of criminal behavior.

Another possible limitation is the use of self-reports to measure negative affectivity. Self-reports are always susceptible to impression management, but through the use of well-established and validated questionnaires, and the thorough information given to the participants about the confidential care of all the collected data, we believe this risk of impression management was reduced. Also, the use of several

self-reports may increase the risk of effects fatigue and low diligence, but by allowing participants to take breaks, and use as much time as needed, we also believe this risk was reduced.

4.6 Conclusive remarks and futher directions

The concept of psychopathy, often portrayed as the ultimate human evil, has consequently received considerable attention. Individuals marked as psychopaths are often conceived as fundamentally different from the rest of humanity, and as such untreatable. Although broadly used, the conceptualizations of the term is somewhat varied.

The PCL-R as a single well-validated measure of psychopathy has over the years come to dominate the scientific study of psychopathy. The results for the papers included in this thesis add to a growing body of research showing both dimensionality and heterogeneity related to the psychopathy construct, and especially related to PCL-R psychopathy. With the dimensional and heterogenic nature of the psychopathic construct in mind, the use of cut-off scores to definitely indicate that an individual is or is not a psychopath is both theoretical and empirically problematic (Skeem, et al., 2011). It is more reasonable to speak of an individual's degree of psychopathic traits.

The finding that PCL-R Factor 1 and 2 relate differently to negative affectivity, aggression and ToM capabilities are more consistent with the view of the two factors representing somewhat different underlying concepts, than a unitary perspective.

Despite the vast amount of research on psychopathy and PCL-R, some issues remains and need to be elucidated. While there are theories of the etiology of psychopathic traits, many questions regarding both genetic and developmental pathways are still unanswered. Further, how potential underlying cognitive or

biological mechanisms are related to psychopathy needs further investigation. Especially interesting are questions regarding how different mechanisms might be diversely related to different psychopathy subtypes.

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