ABSTRACT THINKING IN CRIMINAL PSYCHOPATHS

By

BRENDA JEAN GILLSTROM

B.A.(Hon), University of British Columbia, 1984
M.A., University of British Columbia, 1988

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES
(Department of Psychology)

We accept this thesis as conforming
to the required standard.

UNIVERSITY OF BRITISH COLUMBIA

November, 1994

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Department of Psychology

The University of British Columbia
Vancouver, Canada

Date January 23, 1995
Abstract

This thesis tests the hypothesis that psychopaths have problems with abstract thinking. 45 male inmates, who were divided into psychopaths and nonpsychopaths based on their score on the Psychopathy Checklist-Revised (Hare, 1991), completed a battery of abstraction tasks. Psychopaths did significantly poorer than did nonpsychopaths on one of the abstraction measures, the Proverbs Test (Gorham, 1956). The results are discussed in relation to thought disorder, symbolic thinking, the "abstract attitude", schizophrenia, and frontal lobe dysfunction.
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Acknowledgements

First, I would like to thank my supervisor, Dr. Robert Hare for his guidance and support during my graduate years. His numerous contributions and continual interest and devotion to the area of psychopathy are both admirable and remarkable.

I would also like to thank my other committee members, Ray Corteen and Dimitri Papageorgis who not only contributed thoughtfully to my project but to the Psychology Department in general.

Thanks to my fellow graduate students in Dr. Hare's lab for their various contributions and support, and to my family and friends for their support. I especially want to thank Katherine and Greg for their contributions to the research and my best friend Liss Hayden who always made the time to listen to me and give me support through my graduate years.

Finally, I wish to thank the inmates of Matsqui Medium Security Institution who volunteered for this study.
INTRODUCTION

'Psychopath' is a diagnostic label given to a person who is self-centered, callous, ... remorseless (and) profoundly lacking in empathy and the ability to form warm emotional relationships with others... A person who functions without the restraint of conscience. (Hare, 1993 p. 2)

Psychopathy is a prevalent personality disorder that costs our society in both monetary and human terms. Hare (1993) points out that conservative estimates suggest that this disorder is at least as prevalent as schizophrenia, which translates into more than two million psychopaths in North America. It is estimated that between 15-25 percent of the prison population consists of psychopaths (Hare, 1991) and among criminals, psychopaths commit a disproportionate number of crimes (Hare & Mcpherson, 1984). In addition, psychopaths are responsible for some of the most heinous crimes ever committed (see case examples in Hare, 1993).

Cleckley (1976) states that psychopaths "probably cause more unhappiness and more perplexity to the public than all other mentally disordered patients combined" (p. 11). This is because psychopaths can be found in all walks of life and are difficult for the untrained -- and often times the trained -- observer to detect. Given their personality traits, it is almost inevitable that they will negatively affect the lives
of others in some way. For almost two hundred years writers and researchers have been searching for clues to explain the etiology of this disorder. Valuable information has been collected in the areas of assessment and biological and behavioral correlates, but the etiology of psychopathy remains elusive.

The origin of the psychiatric concept of psychopathy is thought to have begun with Phillipe Pinel (1806); he described individuals whose acts of rage suggested insanity, despite the fact that they showed no impairment in their reasoning ability. He used the phrase "manie sans delire" (mania without delirium) to characterize this disorder.

Benjamin Rush (1812) pointed out the social aspects of these individuals. He noted that despite lucid thinking certain individuals engaged in deranged social behavior. In addition to adding a social judgment to the clinical syndrome, Rush introduced the notion that this derangement is likely due to "an original defect in those parts of the body, which are occupied by the moral faculties of the mind" (p. 360).

J.C. Prichard also focused on the social or more specifically moral aspects of the disorder when he used the term "moral insanity" to describe these individuals. Prichard (1835) wrote that:

There is a form of mental derangement in which the intellectual functions appear to have sustained
little or no injury, while the disorder is manifested principally or alone in the state of the feelings, temper or habits. In cases of this nature the moral or active principles of mind are strangely perverted or depraved; the power of self-government is lost or greatly impaired and the individual is found to be incapable, not of talking or reasoning upon any subject proposed to him, but of conducting himself with decency and propriety in the business of life. (p. 85)

In the latter part of the 19th century, Daniel Hack Tuke (1885) returned to Pinel's original, less judgmental, concept by calling the syndrome "inhibitory insanity", focusing more on the psychopath's impulsivity and disinhibition than on lack of morality. However, the tradition of focusing on morality continued in Britain. Like Benjamin Rush, Henry Maudsley (1874), the well known British psychiatrist, mixed the idea of morality with a constitutional and biogenic view of the disorder. He felt that the cerebral center controlling morality was not afforded to psychopaths, much as the basis for seeing colors was not available to the color blind.

The term psychopath originated in Germany toward the end of the 19th century with J.L. Koch who classified character disorders of all types into a diagnostic category he called "psychopathic inferiorities" (Koch, 1891). He believed that there was an organic basis for these disorders. This category was introduced to the United States by Adolf Meyer. Meyer (1908) used the term "constitutional psychopathic inferior"
to label those character disorders that were antisocial. Meyer saw these individuals as different from psychoneurotics whose difficulties, he believed, were psychogenic rather than constitutional. Over time the term was shortened by psychiatrists to "psychopath". The actual derivation of the term is 'disease of the mind' (ie. psyche = mind; pathos = disease). Although there have been those, such as Birnbaum (1914) who coined the term sociopath, who have espoused a more sociological position, the original biogenic view of the etiology of this disorder remained a popular one throughout the first quarter of the twentieth century (Meloy, 1988).

The modern conceptualization of the disorder began with the writings of Hervey Cleckley in his book The Mask of Sanity which was first published in 1941. In his book, Cleckley brings the concept to life by presenting intriguing clinical cases and a description of the 16 traits he believed best characterized the disorder. These traits are listed in Table I.

The title of Cleckley’s book, The Mask of Sanity, captures his view of the psychopath. He believed that under the superficial sane exterior of these individuals lies a
Table I
Cleckley's (1976) 16 Psychopathy Traits

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<table>
<thead>
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<tbody>
<tr>
<td>1.</td>
<td>Superficial charm and good intelligence.</td>
</tr>
<tr>
<td>2.</td>
<td>Absence of delusions and other signs of irrational thinking.</td>
</tr>
<tr>
<td>3.</td>
<td>Absence of 'nervousness' or psychoneurotic manifestations.</td>
</tr>
<tr>
<td>4.</td>
<td>Unreliability.</td>
</tr>
<tr>
<td>5.</td>
<td>Lack of truthfulness and sincerity.</td>
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<tr>
<td>6.</td>
<td>Lack of remorse or shame.</td>
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<tr>
<td>7.</td>
<td>Inadequately motivated antisocial behavior.</td>
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<tr>
<td>8.</td>
<td>Poor judgment and failure to learn by experience.</td>
</tr>
<tr>
<td>9.</td>
<td>Pathological egocentricity and incapacity for love.</td>
</tr>
<tr>
<td>10.</td>
<td>General poverty in major affective reactions.</td>
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<tr>
<td>11.</td>
<td>Specific loss of insight.</td>
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<tr>
<td>12.</td>
<td>Unresponsiveness in general interpersonal relations.</td>
</tr>
<tr>
<td>13.</td>
<td>Fantastic and uninviting behavior with drink and sometimes without.</td>
</tr>
<tr>
<td>14.</td>
<td>Suicide rarely carried out.</td>
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<tr>
<td>15.</td>
<td>Sex life impersonal, trivial and poorly integrated.</td>
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<tr>
<td>16.</td>
<td>Failure to follow any life plan.</td>
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profound disturbance of some kind. Cleckley preferred the term "semantic dementia" over psychopath but the term did not catch on. The basic concept of psychopathy outlined by Cleckley is the one that continues to be used in current research (see Note 1).

Hare (1991) has spent many years developing a reliable and valid instrument to measure psychopathy in forensic populations, the Psychopathy Checklist-Revised (PCL-R). Although the basic Cleckley concept of psychopathy is encapsulated in the PCL-R, some of the individual items are different than those used by Cleckley (see Table II). The PCL-R was used to define psychopathy in the present study and is discussed in more detail in the Method section.

In summary, there seem to be four key notions that run through the history of the conceptualization of psychopathy: 1) a focus on the lack of morality exhibited by the psychopath, 2) the psychopath is mentally ill despite his sane exterior, 3) a cerebral deficit underlies this disorder, and, 4) there is a paradoxical quality to the disorder. Likely the first, more descriptive feature, the lack of morality, fuels the two etiological notions of mental illness and brain defect. The disorder dramatically affects the social and ethical nature of these individuals. Their apparent immunity
Table II

Items Comprising the Psychopathy Checklist-Revised (Hare, 1991)

<table>
<thead>
<tr>
<th>Item</th>
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<tr>
<td>1. Glibness/Superficial Charm</td>
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<tr>
<td>2. Grandiose Sense of Self-Worth</td>
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<tr>
<td>3. Need for Stimulation/Proneness to Boredom</td>
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<tr>
<td>4. Pathological Lying</td>
</tr>
<tr>
<td>5. Conning/Manipulative</td>
</tr>
<tr>
<td>6. Lack of Remorse or Guilt</td>
</tr>
<tr>
<td>7. Shallow Affect</td>
</tr>
<tr>
<td>8. Callous/Lack of Empathy</td>
</tr>
<tr>
<td>9. Parasitic Lifestyle</td>
</tr>
<tr>
<td>10. Poor Behavioral Controls</td>
</tr>
<tr>
<td>11. Promiscuous Sexual Behavior</td>
</tr>
<tr>
<td>12. Early Behavior Problems</td>
</tr>
<tr>
<td>13. Lack of Realistic, Long Term Goals</td>
</tr>
<tr>
<td>14. Impulsivity</td>
</tr>
<tr>
<td>15. Irresponsibility</td>
</tr>
<tr>
<td>16. Failure to Accept Responsibility for Own Actions</td>
</tr>
<tr>
<td>17. Many Short-Term Marital Relationships</td>
</tr>
<tr>
<td>18. Juvenile Delinquency</td>
</tr>
<tr>
<td>19. Revocation of Conditional Release</td>
</tr>
<tr>
<td>20. Criminal Versatility</td>
</tr>
</tbody>
</table>
to the power of socialization gives them an alien quality that has suggested to some that there must be a substantial defect or deficiency (i.e., mental illness of some kind or a missing component of brain function). This leads to the fourth notion, the paradoxical quality of the psychopath. Despite the belief in a substantial biogenic defect, no such defect could be detected by the early writers.

The etiological themes of mental illness and cerebral dysfunction have continued to run through the literature on psychopathy to the present. Numerous studies have been conducted looking at cognitive and physiological functions of these individuals (See Newman & Wallace, 1993, for a review of many of these studies). Although the research findings have not solved the paradox, many of the results have provided clues that psychopaths are indeed fundamentally different from nonpsychopaths. In addition, some of the findings suggest that the psychopath's cognitive functioning may not be as intact as once believed, making the disorder less paradoxical than it first appeared.

This thesis follows up the two original hypotheses of mental illness and brain defect brought forth by the early writers and reports on a study designed to investigate cognitive functioning in psychopaths. More specifically, the
study looks for evidence of defective cognitive functioning in psychopaths by examining their ability to think abstractly. In addition to providing more information about the thought processes of psychopaths, the results may provide further clues about the relationship between psychopathy and mental illness, and between psychopathy and brain dysfunction.
PSYCHOPATHY AND MENTAL ILLNESS

Phrases from the past used to describe psychopathy include: "moral insanity", "deranged", "inhibitory insanity", "dementia"; but, is there any evidence that the psychopath is actually mentally ill? Psychosis is the label given to more serious mental disorders of mind such as schizophrenia. Is there any evidence that psychopathy is associated with psychosis or, specifically, with schizophrenia?

Although Cleckley (1976) changed his position from initially seeing psychopathy as a type of psychosis in his 1941 book to seeing it as a separate entity in the 1976 version of the book, he expressed continued problems in classifying the disorder. He wrote:

A man who is sane by the standards of psychiatry, aware of all the facts that we ourselves recognize, and free from delusions but who conducts himself in a way as absurd as many of the psychotic becomes another problem altogether. The observer is confronted with a paradox within the already baffling domain of mental disorder. (p. 226)

He did however, view psychopathy as more similar to psychosis than neurosis. He wrote:

It is offered as an opinion that a less obvious but none the less real pathology is general, and that in this respect the psychopath is more closely aligned with the psychotic than with the psychoneurotic...
patient. The pathology may be regarded not as gross fragmentation of the personality but as a more subtle aberration. Instead of macroscopic disintegration, the change could be conceived as one that seriously curtails functioning without obliterating form. (p. 396).

It seems that although Cleckley could not determine the exact nature of the relationship, he recognized a commonality between psychosis and psychopathy. The following discussion will examine the literature for evidence of this alignment with psychosis.

Some studies have demonstrated that psychopathy, as measured by the PCL-R (Hare, 1991), does not overlap with the psychotic disorders. Hart and Hare (1989) examined 80 male admissions in a forensic psychiatric hospital for intra-individual overlap between psychopathy and DSM-III-R Axis I disorders. They found no relationship between psychopathy and psychotic disorders. In fact, psychopaths were nine times less likely to receive any Axis I diagnosis than were non-psychopaths. This was replicated by Hart, Hare and Heilbrun (1992) who found the correlation between the PCL-R scores and psychotic diagnosis to be $r = .04$ in a sample of 175 males admitted to a state forensic psychiatric hospital.

There are, however, clinical descriptions in the literature of individuals who do satisfy the criteria for both disorders. The term pseudopsychopathic schizophrenic has been
applied to some schizophrenics who also present with symptoms of psychopathy (Bender, 1959; Hoch, 1972). Hoch argues that although persons with this type of schizophrenia can exhibit many psychopathic traits, their antisocial behavior tends to be more bizarre than that of the true psychopathic personality. Conversely, Kallman (1938) described individuals he termed "schizoid psychopaths" who were psychopathic individuals with some evidence of schizophrenic traits or tendencies. Meloy (1988) noted the existence of individuals that satisfy the criteria for both psychosis and psychopathy in his forensic clinical work (see Meloy, 1988 for case descriptions of such individuals). He stated,

> the convention of ruling out antisocial personality disorder when a severe and chronic psychotic disorder is present appears to have little basis in clinical reality, despite a dearth of empirical literature addressing the differential diagnosis of psychosis, whether state or trait, and psychopathy in the same individual. (p. 247)

Meloy (1986) has developed a scheme for classifying psychotic individuals in custody that includes a category for those with an Axis I psychotic disorder and an Axis II personality disorder (namely, Type II Mentally Disordered Offender).

There is a growing number of recent studies that have found evidence for a subtype of offender who satisfies the criteria for both schizophrenia and psychopathy, as measured
by the PCL-R. For example, Rasmussen and Levander (1994) looked at 94 consecutive admissions to a maximum security psychiatric unit. They noted that schizophrenia was the most common Axis I diagnosis and Antisocial Personality Disorder (APD) was the most common Axis II disorder, and that comorbidity was common. These authors found a subgroup (n=22) within this population that scored high (30 and above) on the PCL-R, and within this group 12 (55%) also had an Axis I diagnosis of schizophrenia. There was no relationship found, however, between the number of psychopathy symptoms and the number of schizophrenic symptoms; they interpret this to suggest that the PCL-R has good discriminant validity and that "schizophrenia may well be superimposed on an underlying syndrome of psychopathy" (p. 13). They also raise the possibility of psychopathy as a high risk factor for schizophrenia.

Of importance here are the findings by Gacona, Meloy, Sheppard, Speth, and Roske (1994) in a study of individuals who were found 'not guilty by reason of insanity'. They found that those who were later determined to be malingering scored significantly higher on the PCL-R than those not determined to be malingering. It is not clear if the inmates in the studies by Rasmussen and his colleagues had any reason to mangle.
but, it is very important to look at motivational factors when examining such populations.

In summary, it seems that clinicians have observed these "dual diagnosis" patients for years, and new research suggests that they can be found in considerable numbers (assuming that malingering is not involved) in maximum security psychiatric institutions. The existence of these subgroups suggests that the disorders can co-exist but the question remains as to whether psychopathy is related to psychosis. The existence of these subgroups suggests that a more general link between psychopathy and psychosis is possible.

There are some authors who believe that a genetic relationship exists between the two disorders (e.g., Eysenck & Eysenck, 1978; Kety, Rosenthal, Wender, & Schulsinger, 1968; Planansky, 1972). This belief is backed by findings such as those by Kety et. al (1968); they found that psychopathy occurred more frequently in the biological relatives of index cases of schizophrenia than in a control group. They argued that psychopathy is contained within a spectrum of schizophrenic disorders. Planansky (1972) writes:

The most consistently reported psychopathic personality (psychopathic here is used as a general term for all personality disorders) to be found in the schizophrenic family has been the coarse, unfeeling type, usually troublesome, occasionally outright antisocial.
Eysenck and Eysenck (1978) stated that psychopathy is linked to a genetically determined personality dimension called "psychoticism (P)" (or psychotic proneness). Lewis (1974) felt that psychopathy "falls mid-way between normality and psychosis" (p. 133). Similarly, Eysenck (1977) notes that P is "a dimension of personality which leads from outright psychosis through psychopathy to normality" (p. 57). The P factor is presumed to be polygenic in origin with different numbers of genes reaching criterion leading to different disorders.

In an attempt to test Eysenck's theory, Hare (1982) administered the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1972), which includes the P scale, to 173 prison inmates who also received PCL ratings of psychopathy. He found that the P scale was somewhat related to PCL scores ($r=.16$). However, P correlated best with PCL items measuring impulsivity, proneness to boredom/low frustration tolerance, short-tempered/poor behavioral controls, early behavior problems, and lack of realistic long-term plans. Hare interpreted the findings as evidence for a link between P and antisocial tendencies rather than P and psychopathy. He stated:
High scores on the P scale may be more of a reflection of criminal and antisocial tendencies and behavior than of the inferred psychological constructs (e.g. lack of empathy, guilt, remorse, concern for others etc.) that are essential for the diagnosis of psychopathy. (p. 41)

There have been numerous criticisms regarding the validity of the P scale that relate to Hare's observation regarding the relationship between P and psychopathy. For example, Chapman, Chapman, and Miller (1982) believed that the Eysencks' claims for the scale were too broad. They examined the intercorrelations between the P scale and other scales believed to measure "psychosis proneness" and concluded that the P scale "identifies a kind of anti-social individual that presages psychosis, although most psychosis has other precursors" (p. 194). After reviewing the literature regarding central nervous system (CNS) function for high scorers of the P scale, schizophrenics and psychopaths, Robinson and Zahn (1985) concluded that "psychoticism (as measured by P) may be more akin to psychopathy than to schizophrenia" (p. 47). High scorers on the P scale more often performed like psychopaths than schizophrenics on measures of CNS function. Putting the results together with those of Hare (1982), it would seem that the P scale is linked to some aspects of psychopathy. However, data such as those presented by Chapman et. al (1982) suggest that the P scale may not be highly associated with psychosis,
and, therefore, not much can be said about the relationship between psychopathy and psychosis from studies linking P and psychopathy.

Another approach to examining the relationship between psychopathy and psychosis (or schizophrenia specifically) is to look for common features between the two disorders. If a genetic link exists between the two disorders, there may be common phenotypic markers. Davison and Neale (1986) summarize psychotic symptoms into five subtypes: disturbances of thought form and content, perception and attention, motor behavior, affect, and life functioning. Each will be described below and discussed in terms of its applicability to psychopathy.

**Thought Disturbance**

Disturbances can be found in either thought form or thought content in psychotic disorders. One type of disturbance of thought content is delusion. Delusions are beliefs held by individuals that are not in keeping with reality. For example, a person may believe he is being unfairly persecuted by another or a group, he may claim to be another person, he may believe that thoughts are being put into his head by outsiders or, conversely, that his thoughts are literally being stolen out of his head by others.
There is no evidence that psychopaths experience delusions; in fact, one of Cleckley's psychopathy traits is "absence of delusions and other signs of irrational thinking". However, although psychopaths are not known to suffer from delusions, an argument can be made that they may at times have an altered or limited view of reality. One of the PCL-R items "grandiose sense of self-worth" is an example of possible distortion of reality. As the PCL-R scoring criteria state, "his inflated ego and exaggerated regard for his own abilities are remarkable, given the facts of his life". Another area that has not been studied is the psychopath's "pathological lying" (PCL-R item 4). The psychopath often tells lies and spins yarns for no apparent reason even when it is obvious to the listener that the stories are not true. For example, Hare (1991) described one research subject who scored very high on the PCL-R who stated that he had begun flying an airplane at age 8, had lived in nine different countries, managed an apartment complex, worked in the coast guard for a few years, was the captain of a charter boat for some time, fought forest fires and worked as deep sea diver. The reality was that he had spent the majority of his twenty four years in prison, currently for murder. He told his stories with amazing sincerity and a seeming lack of awareness of how preposterous his stories would seem to the listener, whom he knew had
access to his file. We often assume that the psychopath does not believe his own lies and that he purposely lies to protect himself or for enjoyment, but this assumption has not been empirically investigated. It is possible that the psychopath could at times simply lose track of the truth.

Davison and Neale (1986) list "lack of insight" as another form of disturbance of thought content. They note that schizophrenics, upon hospitalization, can seem "to have no appreciation of their condition and little realization that their behavior is unusual" (p. 338). Cleckley included "lack of insight" in his 16 psychopathy traits. The psychopath has a profound lack of insight into his own personality problems and generally does not seek treatment unless to do so would serve some other function for him (e.g. early parole for attending an anger group).

Disturbances of thought form found in schizophrenics include such problems as loosening of associations, incoherence, and poverty of speech or content of speech. Researchers in our lab, who have viewed hundreds of hours of videotaped interviews with psychopaths, have noted many problems with their ability to communicate. There are now some empirical findings to support these observations. Gillstrom and Hare (1988) studied the hand gestures associated with speech and found that psychopaths make more of one type of
gesture (namely, beats) than do nonpsychopaths. Beats are quick movements that are not related to the narrative. Beats have been found to increase when there are assumed difficulties in the processing of speech (e.g. the use of beats increases in individuals speaking in a nondominant language). We note that one interpretation of this finding is that there may be numerous breaks or breakdowns in the thought processes underlying the speech of psychopaths. Williamson (1991) followed up this idea by using the Scale for the Assessment of Thought, Language and Communication (TLC) (Andreasen, 1979, 1986) to study the speech of psychopathic criminals (excluding any individuals that met the criteria for a psychotic disorder). She obtained a correlation between psychopathy and clinically significant levels of communication disorder, as measured by the TLC \( r = .35, p < .03 \). As psychopathy scores increased, the tendency to produce disordered communications increased. She found that 20 of 21 psychopaths met the criteria for thought disorder (see Note 2). She also found that when psychopaths tell a story they use,

few cohesive links between sentences...fail to provide the appropriate referent for what they are talking about ...and...set up expectations in the listener about what he might hear next and then failed to provide that piece of information. (p. 69)
Thought disorder was originally seen as specifically pathognomonic of schizophrenia. However, research has found that thought disorder also occurs in individuals suffering from other disorders (e.g. Andreasen, 1979, 1986; Harrow & Quinlan, 1977) such as mania. Harrow and Quinlan suggest that thought disorder may exist on a continuum of severity. Holzman, Shenton, and Solovay (1986) found evidence that thought disorder is qualitatively different across such disorders as mania, schizophrenia, and schizoaffective disorders. The findings of Williamson (1991) suggest that psychopathy can be added to the growing list of disorders associated with thought disorder. It was not possible to easily compare the types of thought disorder found for psychopaths (Williamson, 1991) with that of the other disorders in the Holzman et al (1986) study because different measures were used in each study. The TLC (Andreasen, 1986) primarily looks at thought form and not thought content, while Holzman’s scale (the Thought Disorder Index; TDI) also includes measures of thought content. Based on the work of Andreason alone, at least in regards to disturbances of thought form, the psychopath shows similar patterns of disordered thought to persons diagnosed with schizophrenia.

There is also evidence that psychopaths and schizophrenics perform similarly on some cognitive tasks.
Using a procedure developed by Brownell, Potter, and Michelow (1984), Cutting and Murphy (1990) found that schizophrenics tend to group words according to their denotative rather than connotative meanings. The identical findings were reported by Williamson, Harpur, and Hare (1990) for psychopaths. They discussed their findings in terms of the psychopath's apparent lack of sensitivity to the emotional valence of words. Cutting and Murphy (1990) interpreted their findings as possible evidence of right hemisphere impairment in schizophrenics. The findings of the two studies suggest that there are some similarities in the way psychopaths and schizophrenics process information.

Another noteworthy similarity is that both schizophrenics and psychopaths employ idiosyncratic constructs on the Repertory Grid test (Kelly, 1955). They do differ, however, on the dimension of consistency. Schizophrenics tended to create idiosyncratic constructs that changed across time (Bannister & Frazella, 1966). Psychopaths created more idiosyncratic, but also more consistent, constructs across time than did nonpsychopaths (Widom, 1976).

**Disturbance of Perception and Attention**

Auditory hallucinations are a common psychotic symptom. These sometimes take the form of voices arguing or commenting
on the person's activities. This author is not aware of any
evidence that psychopaths suffer with hallucinations or any
other type of perceptual disturbance. When psychopaths do
admit to hallucinations, they are usually in connection with
the use/abuse of hallucinogenic drugs.

Psychotic patients may also complain of problems with
attention and concentration. Although psychopaths do not
complain about problems with attention, research has suggested
that they display anomalies in their allocation of attention
(eg. Harpur & Hare, 1990; Jutai & Hare, 1983; Jutai, Hare, &
be good at screening out a competing task and allocating most
of their attention to the primary task at hand. However, they
did not show better performance on this primary task,
suggesting that they may have limited attentional resources.
Kosson and Newman (1986) found some evidence of this. When
psychopaths were asked to divide their attention between two
tasks they began to make more errors and took more time to
respond than did nonpsychopaths. These authors state that
"the results suggest that psychopaths may incur relatively
large capacity costs in attempting to shift their attentional
resources" (p.257).
Disturbance of Motor Behavior

Some psychotic patients (notably catatonic schizophrenics) manifest symptoms of disturbed motor behavior. This behavior is usually noticeable and often bizarre (Davison & Neale, 1986). For example, the person may repeatedly engage in a peculiar gesture or perhaps maintain a posture for hours on end. Psychopaths are not known to demonstrate any of the outward motor symptoms associated with some forms of schizophrenia.

Disturbance of Affect

Schizophrenics present with two varieties of affective disturbance. They might have blunted or flat affect (show little or no affect) or inappropriate affect (eg. laughing at the death of a relative).

Affective disturbance is one of the most striking features about the psychopath. The psychopath's affect is not usually flat but superficial. His displays of emotion are usually shallow and short-lived. Cleckley (1976) states that the psychopath's "subjective experience is so bleached of deep emotion that he is invincibly ignorant of what life means to others" (p. 238-39). Psychopaths also demonstrate inappropriate affect at times (eg. laughing at the suffering of another), but because they are intact in other respects
this is viewed as simply another aberrant part of their morality (or 'badness') rather than as a sign of mental illness (or 'madness').

Disturbance of Life Functioning

Many schizophrenics have poor premorbid functioning starting early in childhood. They continue to have poor social skills and often have few friends when growing up. They continue to have problems with relationships, employment, and general life functioning as adults.

Psychopaths also show poor premorbid functioning and exhibit ongoing problems with life functioning. They often describe themselves as loners, "blacksheep", and trouble makers in childhood. They have few if any close friends and have trouble holding jobs, maintaining relationships, and following through on plans in adulthood.

In conclusion, like schizophrenics, psychopaths exhibit disturbances in thought form (and possibly content), affect (albeit in a different form), attention, and life functioning. One could say that there is a schizophrenic "flavor" to psychopathy. However, there are also many differences between schizophrenia and psychopathy that must be kept in mind. The more bizarre symptoms of schizophrenia such as delusions,
hallucinations, and catatonia appear to be absent in psychopaths (see Note 3). They also lack the subjective distress felt by many chronically ill schizophrenics. The psychopath is content with himself and only seeks treatment if it in some way helps him to achieve some other end; he is, in general, pleased about himself and his ability to function. As Hart (1987) points out,

several prominent symptoms of psychopathy (eg. glibness, superficial charm, inflated self-esteem, etc.) seem to be inconsistent with the characteristics typical of those suffering from other psychiatric disorders, such as social anxiety, poor interpersonal skills, and poor self-image (p.3).

One could interpret the similarities and differences as evidence for the notion that "psychopathy is a half-way house to psychosis" (Eysenck & Eysenck, 1977) or at least that the common elements are the phenotypic expression of a common underlying diathesis or genetic link. However, there is still no clear evidence at the present time to support either of these notions.

In conclusion, the relationship between psychopathy and psychotic illness needs further investigation. An area that deserves further attention is the study of the thought processes of psychopaths. Psychopathy has always been viewed as a somewhat puzzling and paradoxical disorder because the
psychopath's affective deficits and poorly managed behavior are usually in sharp contrast to his intact mental faculties. This led the early writers to use a qualifier when they used the term insanity (e.g., moral insanity) and Cleckley to use the metaphor of a "mask" of sanity. Williamson's (1991) findings regarding a significant degree of thought disorder in psychopaths suggest that the mental faculties of psychopaths may not be as intact as once believed and may in fact be similar to those of schizophrenics. Further investigation into the thought processes of psychopaths is clearly needed.
There is a growing number of studies looking at cerebral functioning in psychopaths. Many of these studies have looked at language and suggest that psychopaths differ from nonpsychopaths in cerebral organization and information processing (see Hare, Williamson, & Harpur, 1988, for a review of these studies). Some researchers suspect, as some of the early writers did (e.g., Rush and Maudsley), that psychopaths actually suffer from a cerebral deficit or dysfunction (e.g., Elliott 1978, Flor-Henry, 1972; Gorenstein, 1984; Yeudall, 1972). A popular theory is that psychopathy is associated with frontal lobe dysfunction. The frontal lobe theory is based on perceived similarities between the symptoms of psychopathy and those exhibited by individuals who have suffered damage to their frontal lobes. One of the classic case histories of frontal lobe damage is that of Phineas Gage (Harlow, 1868). According to Elliott (1978), Harlow wrote:

Phineas Gage was an efficient and capable foreman until an accidental explosion forced an iron bar nearly 4 feet long and 1 1/4 inches through his head, damaging the left temporal and both frontal lobes. He was stunned for a short period of time and then walked, with help, to see a doctor. Thereafter he became unreliable, irreverent, profane, lacking in consideration for his fellows, impatient of discipline or advice, and capricious. He devised many plans for the future but they were
no sooner arranged than he abandoned them for others. He completely lacked control over his own behavior. (p. 149)

Lezak (1983) describes a similar case that demonstrates the impact that these personality changes can have on those close to the patient.

A young Vietnam veteran lost the entire right frontal portion of his brain in a land mine explosion. His mother and wife described him as having been a quietly pleasant, conscientious, and diligent saw mill worker before entering the service. When he returned home, all of his speech functions and most of his thinking abilities were intact. He was completely free of anxiety and thus without a worry in the world. He also became very easy going, self-indulgent, and lacking in general drive and sensitivity to others. His wife was unable to get him to share her concerns when the baby had a fever or the rent was due. Not only did she have to handle all the finances, carry all the family and home responsibilities, and do all the planning, but she also had to see that her husband went to work on time and that he did not drink up his paycheck or spend it foolishly on a shopping spree before he got home on Friday night. (P.37)

There are numerous other case descriptions in the literature that are very similar to the above two examples (see Blumer & Benson, 1975, for more examples). Blumer and Benson (1975) have noted two types of personality change that occur in association with frontal lobe damage, the pseudo depressive and the pseudopsychopathic. The first is characterized by apathy and loss of initiative, with the
symptoms resembling the vegetative state seen in persons suffering a severe Major Depressive Episode. These authors link this type of personality change to damage to the links between the dorsolateral region of the prefrontal cortex and subcortical structures, particularly the basal ganglia and the thalamus.

Blumer and Benson state that the pseudopsychopathic personality is "best characterized by the lack of adult tact and restraints" (p.75). They believe that these changes most often result from damage to the orbital area of the prefrontal cortex or to pathways crossing this region. The above two case histories best fit the pseudopsychopathic type of frontal lobe personality. Although no autopsy was performed on Phineas Gage, 5 years after his death Harlow asked his family if his body could be exhumed and his skull kept as a medical record; they agreed, and the skull and the iron rod causing the injury are part of the medical museum at Harvard University. Using this skull, a group of researchers recently used neuroimaging techniques to "reconstruct the accident and determine the probable location of the lesions" (Damasio, Grabowski, Frank, Galaburda, & Damasio, 1994). As would be expected based on the writings of Blumer and Benson and others relating the pseudopsychopathic personality to damage to the orbital areas of the frontal lobes, Gage’s lesion was determined to be in...
this area. Damasio et al also believe that there was more
damage to the left frontal lobe and no damage outside of the
frontal lobes. Of particular relevance to psychopathy, these
authors point out that the orbitofrontal area of the brain

is reciprocally connected with subcortical nuclei
that control basic biological regulation, emotional
processing, and social cognition and behavior, for
instance, the amygdala and hypothalamus. (p. 1104)

In addition to similarities in personality features
between some frontal lobe patients and psychopaths, there seem
to be some similarities in other symptom areas as well. Lezak
(1983; p.81-82) describes five general groups of symptoms
evidenced by frontal lobe patients. Each will be looked at
briefly in terms of its applicability to psychopathy.

Problems in Starting

Frontal lobe patients lack overall initiative and
ambition which makes them appear to be lazy to others. "Many
can 'talk a good game' about plans and projects, but are
actually unable to transform their words into deeds" (Lezak,
1983, p.81). One of the PCL-R items is a 'lack of realistic
long term goals'. The psychopath often drifts through life
and, like the frontal-lobe patient, can talk of big plans
which, however, rarely ever reach fruition.
**Difficulty Making Mental or Behavioral Shifts**

Frontal lobe patients have problems making shifts in attention, movement, and attitude which can make them rigid and often prone to perseveration. As previously discussed, there is some evidence that psychopaths have difficulty shifting attention between tasks (Kosson & Newman, 1986).

**Problems Stopping**

Frontal lobe patients have problems controlling their behavior. This leads them to be impulsive, overreactive and disinhibited at times. A parallel can be drawn here with the psychopath’s impulsivity, poor behavioral controls, and general social disinhibition (Newman & Wallace, 1993).

**Deficient Self-Awareness**

Lezak (1983) states that frontal lobe patients have an inability to perceive performance errors, to appreciate the impact one makes on others, or to size up a social situation appropriately. Defective self-criticism is associated with tendencies of some frontal lobe patients to be euphoric and self-satisfied, to experience little or no anxiety, and to be impulsive and unconcerned about social conventions. (p.81-2)

Many of these symptoms match directly with the Cleckley and/or Hare psychopathy traits of 'loss of insight',

"impulsivity", and "absence of nervousness". As discussed earlier, the psychopath's personality and life events are usually egosyntonic.

A Concrete Attitude

Many frontal patients have difficulty divorcing themselves from their immediate surroundings. They often interpret things literally and have lost the ability for an abstract perspective on things (Goldstein, 1939).

There is little information about the concrete/abstract dimension of thought in psychopaths and this is the focus of the present study.

In addition to the similarity of symptoms in psychopathy and frontal lobe damage, an appealing aspect of the frontal lobe model is that it addresses the paradoxical nature of psychopathy noted since the early writings. Frontal lobe patients can often continue to do well on intellectual tasks, such as general intelligence tests, after suffering frontal lobe damage. The first person to study this empirically was Hebb (1939) who found that some frontal lobe patients do well on measures of general intelligence, despite the loss of large portions of the frontal lobes. Lezak (1983) writes:
Patients with frontal lobe lesions often do not do poorly on those formal intelligence tests in which another person directs the examinations...cognitive deficits associated with frontal lobe damage tend to show up most clearly in the course of daily living and are more often observed by relatives and co-workers than by a medical or psychological examiner in a standard interview. (p. 82)

Frontal lobe damage seems to affect motivation, regulation of behavior, affect, and the social nature of the individual without always showing up in general intellectual functions. Therefore, like the psychopath, the frontal lobe patient can demonstrate very disturbing behavior with no obvious loss of mental functioning.

The interesting theoretical links based on clinical findings have prompted empirical research on the frontal lobe function of psychopaths. This research has lead to conflicting results. Yeudall (1972) reported that 91% of psychopaths performed on tasks in a way suggestive of frontal lobe dysfunction. Gorenstein (1984) found that a group of psychopaths being treated for alcohol and drug problems did poorly on three tasks believed to measure frontal lobe function, the Wisconsin Card Sorting Test, The Necker Cube, and The Sequential Matching Memory Task (SMMT). Attempts to replicate his findings have not met with success (eg. Hare, 1984; Hoffman, Hall, & Bartsch, 1987) and his study was criticized for methodological errors (see Hare, 1984). In a
review of the literature linking psychopathy and frontal lobe dysfunction, Kandel and Freed (1989) state that "the existing evidence seems to indicate that frontal-lobe dysfunction is not related to psychopathy" (p.411).

However, more recent research suggests that it would be premature to dismiss the frontal lobe theory. Many of the discrepant findings can be explained by new information regarding the tasks traditionally used to measure frontal lobe functioning. For example, a study using single photon emission computed tomography (SPECT) demonstrated that the types of tasks that are believed to assess frontal lobe functioning (eg. the Wisconsin Card Sorting task) are associated with activity in the dorsolateral region of the frontal lobes as opposed to the orbital region (see Rezai, Andreasen, Alliger, Cohen, Swayze, & Leary, 1993). As already mentioned, Blumer and Benson (1975) suggest that the pseudopsychopathic personality changes are associated with the orbital area. This would mean that psychopaths could have frontal lobe dysfunction involving the orbital area and still perform normally on many of the tasks that have traditionally been used to detect frontal lobe dysfunction. This combination of personality disturbance and normal functioning on frontal lobe measures was demonstrated in a case study by Meyers, Berman, Scheibel, and Hayman (1992). These authors described
what they feel is an acquired antisocial personality disorder following unilateral circumscribed damage to the left orbital frontal lobe in a man they call JZ. JZ demonstrated a pseudopsychopathic personality similar to Phineas Gage and the Vietnam veteran described above. What was interesting is that JZ retained an IQ of 101 and scored in the high average to superior range on tasks felt to tap frontal lobe function (e.g. Wisconsin Card Sorting Test and the Category Test). These authors did note cognitive deficits but these were described as deficits in 'metacognition' (e.g. poor insight, inability to plan ahead, and disinhibition). This case example demonstrates that one can have well-documented orbito-frontal lobe damage and subsequent personality changes but exhibit no performance deficits on tasks traditionally used to assess frontal lobe function.

There are recent findings that support the notion that psychopathy may indeed be associated with anomalies or dysfunction in the frontal lobes. Intrator, Hare, Stritzke, Brichtswein, Dorfman, Harpur, Bernstein, Handelsman, Schaefer, Keilp, Rosen, and Machac (1994) "used single photon emission computed tomography (SPECT) to investigate relative cerebral blood flow (rCBF) in psychopaths and nonpsychopaths while they performed a lexical decision task" (p. 5). Psychopaths showed less frontal lobe and more occipital lobe activation than did
nonpsychopaths on this task. The authors suggested that psychopaths seem to devote "considerable resources to the identification and processing of the stimuli but relatively few resources to their cognitive elaboration" (p. 11).

Lapierre, Braun, and Hodgins (in press) have found evidence to support the hypothesized association between psychopathy and orbitofrontal dysfunction. They used measures related to orbitofrontal functioning, namely tests of impulsivity and smell identification. They also included control measures for other areas of the brain including the dorsolateral frontal areas. Psychopathic criminals were impaired on all the tasks measuring orbitofrontal-ventromedial function but not on the control tasks. Of particular interest, psychopaths were deficient in the ability to discriminate between various smells (olfactory agnosia). This finding has recently been replicated (see Note 4). Lapierre et al (1994) note that this finding "cannot readily be explained socioculturally, thus presenting a new convincing argument for brain-based etiology of this disorder" (p. 2).

Based on these recent findings, the frontal lobe theory is certainly still tenable and the most likely area to be considered is the orbital area of the prefrontal cortex. However, what complicates any search for a connection between psychopathy and frontal lobe function is the complexity of
this area of the brain. The prefrontal cortex is the largest
cortical area in the brain and it is rich in connections from
other areas of the cortex, limbic, and subcortical regions.
Dysfunctions and anomalies that seem to be stemming from the
frontal lobes may have their root in one of the many areas
with which they connect.
FRONTAL LOBE FUNCTION, SCHIZOPHRENIA, AND PSYCHOPATHY

It should be noted that the two literatures discussed so far relating psychopathy to mental disorder and to frontal lobe dysfunction are not mutually exclusive. The picture is further complicated (or perhaps simplified) by an hypothesized association between schizophrenia and frontal lobe dysfunction.

In his review of studies of frontal lobe functioning in schizophrenics, Williamson (1987) notes that as early as the turn of the century, well known writers such as Kraepelin (1919) were speculating that the symptoms of schizophrenia might be linked to frontal lobe pathology. Numerous studies, using such procedures as CAT scans, MRI techniques, SPECT, and PET scans have offered support for this hypothesis (see Williamson, 1987 for a review of these techniques and of some of the findings). What is generally found is that chronic schizophrenics demonstrate hypofrontality, that is, less activity in the frontal lobes when compared to other groups. These findings are similar to the new neurological findings that psychopaths show hypofrontal involvement during a lexical decision task (Intrator et al, 1994). In addition, Kopala and Clark (1990) found evidence that some schizophrenics are suffering from olfactory agnosia, that is, they have problems
discriminating smells. Similar findings have been found for orbitofrontal patients and psychopaths (Lapierre et al. in press). This provides yet another line of research suggesting possible links between the three disorders.

These similar research findings among psychopaths, schizophrenics, and frontal lobe patients are beginning to give credence to notions, such as that of Flor-Henry (1972), who proposed that both psychosis and psychopathy are linked to similar brain pathologies. He contended that both psychosis and criminal psychopathy are linked to dysfunction of the temporo-frontal cortical-limbic systems in the left hemisphere (the dominant hemisphere). Certainly the common research findings between these disorders suggests similar cerebral anomalies and/or dysfunction that involve the frontal lobes directly or indirectly. The overall picture is complex and any findings regarding the thought processes or neuropsychological functioning of psychopaths should probably be considered in the context of these many interconnected findings.
THE ABSTRACT ATTITUDE

Recent studies suggest that psychopaths may be "thought disordered" (Williamson, 1991) and that there are anomalies or deficits in frontal lobe function (Intrator et al, 1994; Lapierre et al, 1994). This study attempts to further investigate the cognitive functioning of psychopaths by examining abstract thinking. Impairment in abstract thinking is associated with both psychiatric disturbance and frontal lobe dysfunction, and may provide more clues into the cognitive/neuropsychological functioning of psychopaths.

Investigation of abstract thinking generally comes from two different areas of psychology, the developmental and the neuropsychological/psychiatric. The work in the developmental area stems from the ideas of Piaget (1926). In the developmental psychology literature, abstract thought is studied in the context of developmental stages of cognition. Adult forms of abstract thought begin to occur only when an individual reaches a stage called formal operations which usually occurs around puberty. The neuropsychological and psychiatric literature focuses on abstract thinking in terms of the work of Kurt Goldstein (1939). Although conceptually linked to the Piagetian model, the concept of abstract thinking, or the ability to think in concepts, is encompassed
in what Goldstein (1939, 1946) called the "abstract attitude". In this literature, abstract thought is not a developmental stage but an ability that is surmised to be lost in some pathological conditions. The condition following this type of loss may or may not be similar to more concrete developmental stages. This study will focus on the concept of abstract thinking as it is used in the neuropsychology/psychiatry literature, the literature most applicable to the present inquiry.

As already noted, a concrete attitude is one of the five basic symptoms of the frontal lobe syndrome listed by Kolb and Wishaw (1980). Goldstein (1939) felt they could identify not just a problem in thinking in frontal lobe patients but a more general deficit in "the capacity levels of the total personality" (p. 1); this is why they used the term "attitude" rather than "thought". They believed that the "abstract attitude" is not only utilized in thought but also in the feelings and behaviors of the individual. They list the following abilities as comprising the abstract attitude:

1. To detach our ego from the outer world or from inner experiences.
2. To assume a mental set.
3. To account for acts to oneself; to verbalize the account.
4. To shift reflectively from one aspect of the situation to another.

5. To hold in mind simultaneously various aspects.

6. To grasp the essential of a given whole; to break up a given whole into parts, to isolate and to synthesize them.

7. To abstract common properties reflectively; to form hierarchic concepts.

8. To plan ahead ideationally; to assume an attitude towards the "mere possible" and to think or perform symbolically. (pg. 4.)

Although Goldstein saw this ability as part of the whole personality, it was tested by the use of cognitive tasks of abstraction (Goldstein and Sheerer, 1941).

Goldstein (1946) believed that both frontal patients and schizophrenics had a deficit in the "abstract attitude" and that they therefore tended to ignore the abstract dimension of experience. He also believed that schizophrenics suffered from frontal lobe dysfunction. He proposed that,

the clinical picture of schizophrenia contains many symptoms which may suggest an origin in a disturbed function of some apparatus of the brain, particularly of the frontal lobes and the subcortical ganglia... (p.37).

Goldstein's abstraction hypothesis sparked a great deal of interest and research in the area of schizophrenia.
However, studies looking at the abstract-concrete dimension of thinking in schizophrenics led to conflicting results (for reviews see Chapman & Chapman, 1973; Shiminkus, 1972). Although some studies showed evidence for the abstraction deficit, as evidenced by concrete thinking, many studies found that schizophrenic thought was not concrete but idiosyncratic, bizarre, and at times overinclusive (eg. Cameron, 1939). The confusion likely resulted from the heterogeneity of the disorder itself, the use of numerous paradigms to measure abstract thinking, and methodological problems such as not including other tasks to control for general deficits rather than specific deficits in abstract thinking.

Despite findings not supportive of Goldstein's notion of an abstraction deficit, his ideas have a great deal of intuitive appeal, and some researchers have attempted to reformulate them to fit the research findings. For example, Shiminkus (1972) argued that just because schizophrenics often give idiosyncratic responses and not concrete responses does not mean they do not have an abstraction deficit. He stated that "increased concrete thinking need not be the only result of a loss of abstracting ability...idiosyncratic thought processes can also be associated with an abstracting deficit" (p. 151). Shiminkus (1972) found a correlation between low abstraction scores and high idiosyncratic thinking scores in a
group of schizophrenic patients, thus providing support for his position. Pishkin and Bourne (1981) found that schizophrenia had problems with more complex abstraction tasks. They wrote:

When the task requires the formation of a pure abstraction, that is, knowledge that has no concrete realization in the stimulus materials and requires purely symbolic processes, the schizophrenic subjects are at a clear and substantial disadvantage. (p. 202)

In summary, it is now generally accepted that frontal lobe patients have problems assuming the "abstract attitude". Regarding schizophrenia, the evidence is less clear; however, researchers continue to find support for the hypothesis that schizophrenics have difficulty with at least some types of abstract thinking.
PSYCHOPATHY AND THE ABSTRACT ATTITUDE

Goldstein noted that the "abstract attitude", or lack of ability to assume this attitude, affects the person's overall personality and approach to life; it is relevant to his thoughts, feelings and behaviors. If we examine the psychopath's personality and characteristic mode of "being" in the world, it becomes apparent that there is a shallowness to many aspects of his existence. For example, his charm, if present, is superficial, his affect and relationships with others are shallow, he seems to have no overall structure or plan to his life, and he tends to live in the concrete or the "here and now".

Various authors have commented on this lack of overall depth in the psychopath often in terms of metaphor. Maudsley (1874) used the metaphor of color blindness. Johns and Quay (1962) stated that the psychopath "knows the words but not the music". Cleckley (1976) describes the psychopath's reality as thin or superficial. He wrote:

Let us, then, assume as a hypothesis, that the psychopath's disorder, or defect, or his difference from the whole or normal or integrated personality consists of an unawareness and a persistent lack of ability to become aware of what the most important experiences of life mean to others. By this is not meant an acceptance of the arbitrarily postulated values of any particular
theology, ethics, esthetics, or philosophical
system, or any special set of mores or ideologies,
but rather the common substance of emotion or
purpose, or whatever else one chooses to call it,
from which the various loyalties, goals,
fidelities, commitments, and concepts of honor and
responsibility of various groups and people are
formed. Let us assume that this dimension of
experience which gives to all experience its
substance or reality is one into which the
psychopath does not enter. Or, to be more
accurate, let us say that he enters, but only so
superficially that his reality is thin or
unsubstantial to the point of being insignificant.
Let us say, that, despite his otherwise perfect
functioning, the major emotional accompaniments
are absent or so attenuated as to count for
little. Of course he is unaware of this, just as
everyone is bound, except theoretically, to be
unaware of that which is out of his scale or order
or mode of existence. (p.229)

There is some empirical support for the notion that
psychopaths may experience stimuli at a more superficial level
than do nonpsychopaths. In a lexical decision study
Williamson, Harpur and Hare (1991) found that psychopaths
showed smaller event-related brain potentials (ERPs) to words
than did nonpsychopaths. Hare et al (1988) argued that
because these ERPs were:

related to the amount of information extracted, one
interpretation....is that words convey less
information to psychopaths than they do to other
individuals...that language may not have the same
richness of meaning that it has for normal persons
(P. 79).
A lexical decision task also was used in a SPECT study by Intrator et al. (1994); they found that performance on the task was associated with less frontal lobe activity in psychopaths than in nonpsychopaths. They suggested that the psychopath identified the word but failed to engage in additional cognitive elaboration. In other words, the psychopaths processed the words in a relatively superficial manner. The finding by Williamson et al. (1990) that psychopaths tended to group words more on the basis of their denotative than connotative meaning may be another example of superficial processing.

Lack of "color" in the psychopath's experience and evidence for superficial processing could be interpreted as being similar to the difficulty assuming the "abstract attitude" that Goldstein identified in frontal lobe patients and schizophrenics. I observed in my clinical work with older adolescent offenders that psychopathic offenders often had difficulty interpreting the two proverbs on the Comprehension subtest of the WAIS-R relative to their performance on other items on that subtest and to their performance in general. This led me to hypothesize that psychopathy may be associated with a deficit in abstract thinking. I am not aware of any studies testing this hypothesis, but other writers have suggested that psychopaths may have limited abilities for
abstract thinking (e.g., Gorenstein, 1991; Kegan, 1986; Weschler, 1958). The area of abstract thought in the context of the "abstract attitude" may be able to provide valuable information about the psychopath’s cognitive processes and their relation to the cognitive processing associated with schizophrenia and frontal lobe dysfunction.

Before describing the present study, some comment is needed on how a deficit in the ability to assume the "abstract attitude" could go undetected.

A cognitive deficit may go undetected because it is hidden behind years of adaptation. Psychopathy appears to manifest itself at a very early age, suggesting that some key etiological factors may be in place at birth or at least early in the individual’s life. Therefore, the psychopath has had years of learning and adaptation that could help to mask limitations of abstract thinking. A great deal of information can be obtained through concrete experience and concrete associational thought, resulting in a facade of normal functioning. This is much different from a person who loses an area of cerebral functioning later in life and whose processing deficiencies are more obvious.

This adaptive functioning could be further facilitated by assumptions made by the observer. A person can be seen as functioning at a much higher level than is actually the case.
Vigotsky (1962) stated that a person with an abstraction deficit or a child who has not yet begun thinking abstractly can employ language suggesting an understanding of abstract concepts. The person is actually functioning at the level of what Vigotsky calls "complexes" which are tied to concrete experience. We can mistakenly project onto others a level of depth that may not be there. We might build part of the psychopath's "mask" for him.

Thirdly, much of the historical writing on psychopathy comes from the psychiatric literature. Next to some disordered individuals, for example, the disorganized schizophrenic, any defect in the thought processes of the psychopath would not stand out.
PURPOSE OF THE STUDY

The rationale for the present study was as follows:

1) Early conceptualizations of psychopathy implied that the psychopath is mentally ill and/or has an organic deficit.

2) There would appear to be some features of psychosis and frontal lobe dysfunction in psychopathy, but not enough evidence to make firm claims about the relationship among these disorders. There is also a literature linking frontal lobe dysfunction and schizophrenia, suggesting that all three disorders may be linked in some way.

3) The literature suggests that further investigation is needed into the thought processes of psychopaths. The area of abstract thinking was chosen because it is i) an area that has not received much empirical investigation, ii) theoretically interesting given the many superficial aspects to the character and lifestyle of psychopaths, iii) an area where deficits have been found in both schizophrenics and frontal lobe patients, and, iv) I was interested in empirically investigating my clinical observation that psychopathic
offenders had particular difficulty with proverbs relative to other cognitive tasks.

The primary purpose of this study was to test the hypothesis that psychopaths have a deficit in their ability to think abstractly (or in more general terms a deficit in the ability to assume the "abstract attitude"). The result may also provide further clues about the potential links between psychopathy and schizophrenia and between psychopathy and frontal lobe dysfunction.
METHOD

Subjects

The subjects were 45 male inmates incarcerated at a medium security federal penitentiary who had volunteered to participate in ongoing research projects and who met the inclusion criteria for the study. The inclusion criteria were: English as a first language, a reading level of at least grade 7, a minimum IQ of 80, and no history of psychotic illness or documented brain damage. The average age of the sample was 31.62 (SD = 8.61) years, and the average years of public and upgraded education were 9.09 (SD = 1.82) and 11.38 (SD = 1.79), respectively.

Psychopathy was assessed with the PCL-R (Hare, 1991). There are substantial empirical data to suggest that the PCL-R is a valid and reliable measure of psychopathy (see Hare, 1991 for a review of these studies). Each of the 20 items (see Table 2) is scored on a 3-point scale. The item scores are summed to yield a "dimensional score that represents the extent to which a given individual is judged to match the 'prototypical psychopath'" (Hare, 1991, p. 17). Ratings for each item are based on knowledge about the personality and behavioral functioning of the subject obtained from an interview with him and a review of his institutional file.
Scores can range from 0 to 40. The average PCL-R rating for the group was 27.42 (S.D. = 6.16). This mean is approximately 3 points higher than that obtained with other samples of offenders (Hare, 1991). The standard deviation is similar to that found with other samples (Hare, 1991).

Previous research with forensic samples has used a cutoff score of 30 and above on the PCL-R to categorize subjects as psychopaths. This cut-off has been shown to produce significant differences between psychopaths and nonpsychopaths in a variety of experiments (Hare, 1991). Using this cutoff, the 45 inmates were divided into 17 psychopaths and 28 nonpsychopaths. The mean PCL-R ratings were 32.94 (S.D. = 2.54) for the psychopath group and 24.07 (S.D. = 5.2) for the nonpsychopath group.

Control Variables

To control for possible experimental confounds, information was obtained about variables previously found or suspected to affect cognitive functioning. Each of these variables is discussed below.

Age and Education

Both age and education have been found to be linked to one’s ability to perform on tests of cognitive function (see review by Leckliter and Matarazzo, 1989).
The inmate's age and education were obtained from the inmate and verified with file information. Many inmates have upgraded their education in the prison system; therefore, information was collected on both the amount of formal school education and the grade level the inmate had been assigned through the upgrading system.

**Intelligence (IQ)**

Intelligence and the ability to think abstractly correlate highly and therefore IQ must be controlled for in any study looking at abstract thought. In this study, IQ was estimated from the Vocabulary and Block Design subtests of the Wechsler Adult Intelligence Scale-Revised (WAIS-R) using the method outlined by Silverstein (1982).

**Alcohol Abuse**

Some researchers have found an association between alcohol abuse and ability for abstract thinking (eg. Turner & Parsons 1988; Yohman & Parsons, 1987). High scores on the PCL-R have been found to be associated with alcohol abuse (Smith & Newman, 1990). Given its possible confounding effect, it is important to control for alcohol use in any investigation of cognitive functioning in psychopaths.
Subjects filled out the Michigan Alcohol Screening Test (MAST: Selzer, 1971). The MAST is a 25 question self-report measure designed to provide a quantitative measure of the degree of alcoholism in the subject’s life history.

**Drug Abuse**

Like alcohol use, drug abuse has been found to be associated with high scores on the PCL-R (e.g. Hemphill, Hart, & Hare, 1994; Smith & Newman, 1990) and to influence cognitive/neuropsychological functioning. To control for the effects of drug abuse, subjects were given the Drug Abuse Screening Test (DAST: Skinner, 1982). This is a self-report measure consisting of 28 items that yields a quantitative index of problems related to drug misuse.

**Total Months in Prison**

There is no study of which I am aware that links length of incarceration to deficits in cognitive functioning. It is conceivable, however, that years of limited stimulation and variety in one’s environment could affect the ability to think abstractly. To control for this possible confound, the total number of months spent in prison in the subject’s lifetime was obtained from his criminal record. As inmates usually serve a maximum of two thirds of any given sentence, this fact was
used to calculate the time spent in prison for a sentence when no parole date was listed.

**Socioeconomic Status (SES) in Childhood**

The socioeconomic level of childhood is believed to affect the development of an individual’s cognitive abilities (Lezak, 1983).

To control for possible group differences in SES in childhood, the Hollingshead Two Factor Index of Social Position (Hollingshead & Redlich, 1958) was used.

**Undocumented Possible Brain Damage**

Although inmates with documented brain damage were excluded from the study, many inmates described incidents that could suggest that the brain may have been injured and/or damaged (e.g., being knocked unconscious in a fight). Because of the psychopath’s poor behavioral controls and tendency for sensation seeking, it was conceivable that these types of incidents may have happened more often to the psychopaths than to the other inmates. During Session 2 (see Procedure), the inmate was asked if he recalled any serious injury to his head or periods of time when he was unconscious. Each inmate’s response was recorded and the percentage of inmates in each group who had possible head injury/damage was tabulated.
Anxiety Level at Testing

Increased levels of anxiety can negatively affect performance on tasks requiring concentration (see King, Hannav, Masek & Burns, 1978; Mueller, 1979).

The Spielberger Stait-Trait Anxiety Inventory-STAI-Form Y2 (Spielberger, 1970) was completed by the subject prior to the administration of the battery of abstraction tasks.

Control Task

A task not associated with abstract thinking was included to control for the effects of a general cognitive deficit. Information about each group's performance on this task would become important if there were significant differences found on all the measures of abstraction.

The Picture Completion subtest of the WAIS-R was chosen as the control task because it is not considered a measure of abstract thinking, it is a standardized measure, and it can easily be compared with at least one of the dependent measures (similarities). This task requires the individual to look at a picture and determine what important thing is missing (e.g. doorknob missing from a door).
Dependent Measures

Although the "abstract attitude" was conceptualized by Goldstein (1939) as involving the entire personality, it has been operationalized in most research studies in terms of cognitive processes. This was the strategy used in the present study. Five measures of abstract thinking were taken from a list provided by Lezak (1983); they yielded six different dependent measures. In choosing the number and type of tasks, consideration was given to establishing a balance between an adequate survey of abstract thought and the statistical power for the data analysis. Tasks were chosen that: 1) have evidence of reliability and validity, 2) have a literature (related to psychiatry and/or neuropsychology) from which to draw inferences, and 3) appear to cover a range of types of abstract thought (both verbal and nonverbal). The following measures were chosen:

Similarities (Wechsler, 1981)

The Similarities subtest of the WAIS-R is widely used as a test of verbal abstraction. The test requires the subject to describe how a series of 14 paired items are alike (eg. How are an orange and a banana alike?). Responses are scored 0, 1 or 2 based on the level of abstraction of the response, yielding a total raw score between 0 and 28. This score is
transformed to a standard score based on normative data for the subject's age group. Administration and scoring of the test conformed to the directions in the WAIS-R manual.

**Shipley Institute of Living Scale (Shipley, 1967)**

Shipley (1940) developed this scale as a quick and objective measure of mental deterioration in schizophrenics. The test consists of a vocabulary test and a test of analogical reasoning, the latter being a dependent measure in this study. The subject is required to figure out the underlying pattern to a sequence and to provide the next item in the series. Here are a few examples:

(3) A B B C C D D _ (Answer = E)

(13) knit in spud up both to stay _ _ (Answer = at)

There are 20 such questions with 1 point given for each correct answer. The total is multiplied by 2 yielding a possible score from 0 to 40. This score is transformed to a T score based on the subject's age and education level. The administration and scoring of this subtest followed the procedure in the test manual.
The Proverbs Test: Form III and Best Answer Form (Gorham, 1956)

Many researchers have used proverb interpretation as a measure of abstract thought (e.g., Becker, 1956; Benjamin, 1944; Gorham, 1956). In addition, I had a particular interest in proverbs because of my clinical observation that psychopathic offenders did less well on proverbs relative to other tasks. Gorham (1956) developed a standardized measure of proverbs called the Proverbs Test. He developed three equivalent forms: I, II, and III. Form III was chosen for this study because it does not contain any proverbs that are culturally outdated. This test consists of 12 proverbs, and the subject, after being shown an example proverb, is asked to provide a meaning for each one. Gorham provides scoring guidelines for assigning a 0, 1, or 2 to each of the proverbs, resulting in a possible score of 0 to 24, termed the Abstraction Score. Examples of some of the proverbs on Form III are:

1. The sun shines on all alike.
   Answer: All are created equal.

2. There is many a slip twixt (between) the cup and the lip.
   Answer: A lot can happen between plan and completion.
The multiple choice version ('Best Answer Form') of the test was also included as a dependent measure. The rationale for including both the free answer and the forced choice versions was to examine for group differences when the correct answer is provided. As was discussed above, psychopaths may be able to hide certain deficits because they have learned to navigate by the use of commonly available cues.

This version of the test contains 40 multiple choice questions containing a proverb and four possible responses. The test yields an Abstraction Score based on the number of correct responses out of 40. The test also yields a Concrete Score based on picking the concrete choice in 20 of the questions. The 20 questions that make up the concrete scale were empirically derived by Gorham based on their ability to differentiate between normals and brain damaged patients. The following examples reveal how one might receive a score on either one of these scales.

LET SLEEPING DOGS LIE
a. Don’t stir up old troubles. (abstract response)
b. Be kind to dumb animals.
c. Let those who don’t wish to learn alone.
d. Because he might bite. (concrete response)
HE WHO STUMBLES TWICE OVER ONE STONE DESERVES TO BREAK HIS SHINS.

a. If you're careless, you deserve it.
b. Once should teach a lesson.
c. A person should learn by experience. (abstract response)
d. You should watch where you are walking. (concrete response)

Short Category Test (SCT) (Wetzel and Boll, 1987)

The Short Category Test is a shortened booklet version of the Halstead-Reitan Category Test. The Category Test is thought by some to be the most sensitive indicator of brain damage because of its ability to pick up subtle deficits. One of the SCT's functions is to confirm suspected deficits in abstract concept formation. The test demands that the subject discern the principle underlying a series of cards. The cards show various geometric shapes, lines, colors, and figures. The subject is shown a series of five booklets and each booklet has a principle to be discovered. Cards are turned over one at a time and the subject uses hypothesis testing in attempts to uncover what the principle is. Only one try is given on each card and there are 20 cards in each booklet. The number of overall errors yields an error score of 0 (in the
case of no errors) to 100. This test is a nonverbal measure of abstraction, as the subject is only required to state or point to the numbers 1 to 4.
Procedure

The subjects were seen over three sessions. In the first session a research assistant did a PCL-R assessment of the inmate. In the second session, the subject completed the control tasks and information necessary for determining if he met the inclusion criteria was also gathered. Each inmate was paid $6 for Session 1 and $4 for Session 2.

Subjects who met the inclusion criteria were contacted and asked if they would like to volunteer to be in the present study. Subjects were tested individually by the author who was blind to their PCL-R scores. The inmate was informed that he would be completing a battery of tasks designed to measure abstract thought and that a $20.00 prize would be offered for the best performance on all tasks combined. Each inmate was paid $8 for completing the battery of abstraction measures. The testing session lasted approximately 90 minutes. The responses to the Proverbs Test were audiotaped to ensure accuracy of recording, and transcribed verbatim after the session. The subject was given Form III (free response) prior to the Best Answer Form (multiple choice version) of the Proverbs Test. Because it was thought that practice effects may occur if the prison psychologist had administered any of these tests previously, each inmate was asked if he had seen any of the tasks before. All subjects denied that they had
seen the tasks before with the exception of the Shipley Institute of Living Scale which apparently is used regularly by the psychologist as an IQ estimate.

As a rough motivation check, the experimenter noted on any given test form or after transcribing the proverbs if it appeared that the inmate was not motivated to do well.

All the dependent measures except Form III of The Proverbs Test have objective scoring criteria and were scored by the author. Due to my familiarity with the behavior of psychopaths, the responses to Form III of The Proverbs Test, which has only semi-objective scoring criteria, were scored by an independent rater (doctoral level) who was blind to psychopathy ratings. A randomly selected subset of the proverb responses (n=22) were scored by another rater blind to psychopathy ratings. The interrater reliability was $r = .85$. 
RESULTS

Control Variables

The group means for the control variables are presented in Table III. A liberal statistical procedure - multiple univariate t-tests, uncorrected for inflated Type I error rate - revealed no significant group differences. The results indicate that the two groups were very similar across all variables.

Although many of the inmates reported having had potential brain injuries, overall performance on the cognitive measures used in the study does not suggest clinically significant impairment in the group as a whole. The mean anxiety scores for each group fell at the 50th percentile for adult males, and mean IQ scores fell in the average range. The Hollingshead SES scores can range from 1 (highest) to 5 (lowest). The average SES scores would suggest that, overall, both groups tended to come from lower socio-economic backgrounds, not a surprising finding in a prison population. The scores on the MAST and DAST suggest significant problems with substance use in this sample. Again, this is not a surprising finding in a forensic population. In addition, both groups have spent on average approximately 8 years of their
Table III

Means and t-Test Results for the Control Variables Across Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>t (43)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nonpsychopaths (n=28)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>31.25</td>
<td>8.4</td>
<td>32.24</td>
<td>9.18</td>
<td>-.37</td>
</tr>
<tr>
<td>Educ./Upgrade</td>
<td></td>
<td>11.25</td>
<td>1.62</td>
<td>11.58</td>
<td>2.06</td>
<td>-.61</td>
</tr>
<tr>
<td>Educ./Formal</td>
<td></td>
<td>8.92</td>
<td>1.72</td>
<td>9.35</td>
<td>1.20</td>
<td>-.75</td>
</tr>
<tr>
<td>IQ Estimate*</td>
<td></td>
<td>105.39</td>
<td>10.76</td>
<td>102.56</td>
<td>12.65</td>
<td>.79</td>
</tr>
<tr>
<td>Vocabulary</td>
<td></td>
<td>9.64</td>
<td>2.18</td>
<td>9.53</td>
<td>2.70</td>
<td>.16</td>
</tr>
<tr>
<td>Block Design</td>
<td></td>
<td>11.71</td>
<td>2.69</td>
<td>10.68</td>
<td>2.06</td>
<td>1.32</td>
</tr>
<tr>
<td>Mo.in Prison</td>
<td></td>
<td>100.61</td>
<td>63.21</td>
<td>106.44</td>
<td>85.42</td>
<td>-.26</td>
</tr>
<tr>
<td>Alcohol/MAST</td>
<td></td>
<td>15.29</td>
<td>14.08</td>
<td>19.94</td>
<td>14.27</td>
<td>-1.07</td>
</tr>
<tr>
<td>Drugs/DAST</td>
<td></td>
<td>13.57</td>
<td>7.25</td>
<td>13.06</td>
<td>7.28</td>
<td>.23</td>
</tr>
<tr>
<td>Anxiety/STAI</td>
<td></td>
<td>33.96</td>
<td>7.55</td>
<td>33.00</td>
<td>11.64</td>
<td>.34</td>
</tr>
<tr>
<td>SES</td>
<td></td>
<td>4.25</td>
<td>.97</td>
<td>4.47</td>
<td>.51</td>
<td>-.87</td>
</tr>
<tr>
<td>Pic.Completion</td>
<td></td>
<td>11.36</td>
<td>2.36</td>
<td>10.82</td>
<td>2.72</td>
<td>.69</td>
</tr>
<tr>
<td>Undocumented*</td>
<td></td>
<td>16</td>
<td>(57%)</td>
<td>6</td>
<td>(35%)</td>
<td></td>
</tr>
<tr>
<td>Head Injury</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Frequencies.

Note. Educ. = education; Mo. = months; SES = social economic status; Pic. = Picture. None of the univariate t-tests were significant.
lives in prison. Given the lack of group differences, these controls variables were not included in the main analysis.

Main Analysis

A multivariate t-test (Hotelling $T^2$) on the six dependent measures yielded a significant group difference, $F(6,38) = 3.28$, $p < .02$. (The assumption of homogeneity of dispersion matrices was satisfied). This analysis was followed by six univariate t-tests to test for significant differences between group means on the six dependent variables. The results of these analyses can be found in Table IV. Using the Bonferroni technique to control for Type I error (ie. $p < .008$), there was one significant group difference. Psychopaths obtained significantly lower scores than did nonpsychopaths on the abstraction score of Form III (free answer) of the Proverbs Test, $t(43) = 3.79$, $p < .001$. An examination of the distribution of proverb scores revealed that 13 of the 17 psychopaths (76%) fell below the median.

The motivation check revealed that none of the inmates appeared to be unmotivated on the tasks. Some inmates appeared very uncomfortable during the Proverbs Test but this discomfort seemed to result from their perception that they were not doing well on the task. All subjects completed all the tasks.
Table IV

Means and t-Test Results for the Abstraction Measures Across Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Nonpsychopaths (n=28)</th>
<th>Psychopaths (n=17)</th>
<th>t (43)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M (SD)</td>
<td>M (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Similarities</td>
<td>10.35 ( 2.08)</td>
<td>9.71 ( 2.31)</td>
<td>.98</td>
</tr>
<tr>
<td>Shipley Abst.</td>
<td>55.82 ( 5.31)</td>
<td>54.52 ( 6.19)</td>
<td>.74</td>
</tr>
<tr>
<td>SCT/# Errors+</td>
<td>26.90 (14.83)</td>
<td>31.88 (10.58)</td>
<td>1.20</td>
</tr>
<tr>
<td>Proverbs Test (Form III)</td>
<td>13.11 ( 3.74)</td>
<td>8.53 ( 4.23)</td>
<td>3.79*</td>
</tr>
<tr>
<td>Proverbs Test (MC-abstraction)</td>
<td>27.68 ( 4.57)</td>
<td>25.12 ( 4.57)</td>
<td>1.80</td>
</tr>
<tr>
<td>Proverbs Test+ (MC-concrete)</td>
<td>.75 ( .89)</td>
<td>1.71 ( 1.61)</td>
<td>2.57</td>
</tr>
</tbody>
</table>

Note. + Higher scores on these tests indicate impairment. Abst. = Abstraction score; MC = Multiple Choice; SCT = Short Category Test
* p < .001
Post-Hoc Analyses of the Proverb Responses

As the significant findings were limited to The Proverbs Test, some post hoc descriptive analyses were carried out to help interpret the results. The proverb responses were rescored for idiosyncratic content and form and were also divided into various categories designed to give a more accurate picture of the response patterns of each group. In addition, the mean scores on each of the proverb measures were compared with normative data collected on normals, schizophrenics, and brain-damaged subjects. These post hoc inquiries are discussed below.

Idiosyncratic-Bizarre Response Style

Gorham (1956) found that the free answer version of the Proverbs Test elicits psychotic material from schizophrenic samples in the form of bizarre or idiosyncratic responses. A post hoc descriptive analysis of the proverb responses was done to investigate whether the Proverbs Test elicited any bizarre or idiosyncratic responses from the psychopaths in this study. The proverb responses were rescored using a method developed by Harrow and Quinlan (1985) (see also Marengo, Harrow, Lanin-Kettering, and Wilson, 1986). This
method assigns an idiosyncratic score to each of the responses based on the presence of peculiar linguistic form and content and the responses relationship to the proverb itself. The resulting scores on the 12 proverbs were averaged to yield an overall bizarre-idiosyncratic score for each subject. These scores were then averaged to obtain a mean score for each group. Overall, there was little idiosyncratic form or content displayed by either group and no significant difference emerged between the two groups $t(43) = .07, p = .94$. Scores on this measure can range from 0 (no abnormal thinking) to 36 (very bizarre thinking). The means scores were 1.50 for the nonpsychopaths and 1.53 for the psychopaths. Based on these mean scores, both groups are categorized as Level 2 (minimal to mild bizarre-idiosyncratic thinking) which lies well within the normal range (Marengo et al, 1986).

**Becker’s Categories of Proverb Responses**

Gorham’s scoring procedure does not provide any detailed qualitative information about the proverb responses. In order to get a clearer picture of the patterns of response made by each group, the responses to the Proverbs Test were rescored using a procedure developed by Becker (1956). The proverbs responses made by all members of each group were pooled and each was assigned to one of the categories listed in Table V.
Table V
Categories of Proverb Responses (Becker, 1956)

Abstract 3: A correct generalized interpretation without detracting elements. (Brooding over past mistakes is futile*)

Abstract 2: A correct example with reference to human behavior; another proverb meaning the same thing; a response partly generalized, partly restricted to a specific example, a lower level generalization. (What’s done is done).

Abstract 1: A response tinged with the literal; a response which would be acceptable at Abstract 2 but for some minor inaccuracy, overstatement or alternative explanation which is false. (Don’t cry over something that’s happened; can’t be helped).

Vague responses: An attempt at interpretation which is on the right track, but fails to account for part of the proverb (eg. It’s too late in other words).

False Interpretation: The interpretation is very inaccurate, yet an attempt was made to interpret. The error is usually due to faulty symbolism. (eg. Don’t let defeat stop you).

General Literal: The interpretation is literal in effect, though stated in general terms. (eg. What is wasted is wasted; no tears).

Literal: The proverb is interpreted literally. (eg. Don’t cry when you spill some milk).

Absurd: The response indicates a failure to interpret and/or is logically absurd in terms of the task at hand. (eg. The milk is on the floor and the horses will drink the water).

Literal-Abstract: A response that gives both a literal and an abstract interpretation. The tendency to be drawn into a literal interpretation is strong but the subject is able to counteract it. (eg. Call the cat to lick it up, or what happened has happened, let’s look ahead). (p. 233).

* Example responses to the proverb ‘Don’t cry over spilled milk are given for category.
Table VI

Percentage of Proverb Responses of Psychopaths and Nonpsychopaths in each of the Becker (1956) Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Nonpsychopaths</th>
<th>Psychopaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract 3</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Abstract 2</td>
<td>30</td>
<td>28</td>
</tr>
<tr>
<td>Abstract 1</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Total Abstract</td>
<td>66</td>
<td>57</td>
</tr>
<tr>
<td>General Literal</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Literal</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Total Literal</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Vague Response</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Absurd</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No answer</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>False Interpretation</td>
<td>19</td>
<td>22</td>
</tr>
</tbody>
</table>
by an independent rater who was blind to psychopathy diagnosis and the purpose of the analysis. The categories were able to accommodate all the types of responses obtained on this test. The percentage of each type of response category for all proverbs made by psychopaths and nonpsychopaths are listed in Table VI. Group differences were very small and not tested for statistical significance. In keeping with the results of the idiosyncratic analysis, the subjects did not provide any patently absurd responses to any of the proverbs.

Comparison with Normative Data

A comparison of the results obtained on the three measures of The Proverbs Test with norms reported in past studies can be found in Table VII. This comparison reveals that the mean scores obtained by the nonpsychopaths were comparable to those obtained by groups of similar gender, age, education, and socio-economic status (eg. male labour workers). Mean scores obtained by the psychopaths fell between the means of normals and schizophrenic samples. Organic groups tended to show the most impairment on this test.
Table VII
Mean Scores of the Psychopaths and Nonpsychopaths on The Proverbs Test Compared to Normative data*

<table>
<thead>
<tr>
<th>Sample</th>
<th>Form III</th>
<th>Best Answer Form</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Abstract</td>
<td>Concrete</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Psychopaths</td>
<td>8.5</td>
<td>25.1</td>
<td>1.7</td>
</tr>
<tr>
<td>Nonpsychopaths</td>
<td>13.1</td>
<td>27.7</td>
<td>.8</td>
</tr>
<tr>
<td>Grade 10 Students</td>
<td>14.0</td>
<td>26.2</td>
<td>Not Available</td>
</tr>
<tr>
<td>Air Force Enlistees</td>
<td>11.5</td>
<td>24.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Chronic Schizophrenics</td>
<td>5.2</td>
<td>16.7</td>
<td>4.7</td>
</tr>
<tr>
<td>Organic Patients</td>
<td>1.2</td>
<td>11.3</td>
<td>6.8</td>
</tr>
</tbody>
</table>

*Norms taken from Gorham (1956) and Elmore and Gorham (1957)
DISCUSSION

The purpose of this study was to 1) test the hypothesis that psychopaths have a deficit in abstract thinking, 2) obtain more information about the thought processes of psychopaths and, 3) obtain more information about possible associations between psychopathy, schizophrenia, problems with the "abstract attitude", and frontal lobe functioning. Each of these areas is discussed below.

The Hypothesis

This study has one major finding: Psychopaths do significantly less well than nonpsychopaths on a task where they are asked to provide the meaning to a set of twelve proverbs (Proverbs Test). No significant differences were found across groups on the other measures of abstraction, both verbal and nonverbal. Therefore, the central hypothesis of the study, that psychopaths have general difficulties with abstract thought, is not supported.

The Thought Processes of Psychopaths

There were no group differences in variables typically associated with cognitive functioning (e.g., age, education, IQ, SES, anxiety, and alcohol and drug abuse). In addition,
both groups appeared equally motivated to do well on the Proverbs Test. Assuming that other potentially confounding variables were not overlooked, some alternative hypotheses regarding the thought processes of psychopaths can be offered:

1) Psychopathy is associated with thought disorder of some kind.

2) Psychopathy is associated with problems with symbolic thought/translation.

These hypotheses are discussed below.

Thought Disorder

Psychopaths had difficulty with the Proverbs Test but not with other verbal tasks or abstraction tasks. This may imply that the Proverbs Test taps some type of ability or aspect of cognitive function (beyond verbal abstraction) that was not measured by the other tasks in the study.

In an attempt to discover what exactly the Proverbs Test was measuring Gorham (1956) correlated it with 40 other measures and found that the factor on which they were related was the "verbal comprehension factor". Gorham states that research shows that the verbal comprehension factor "exhibits remarkable resistance against breaking into subfactors". However, when he analyzed the scores obtained by psychotic
patients on this test, another factor emerged that reflected the severity of breakdown in the thought processes.

Gorham also found that the Proverbs Test reliably differentiated normals from schizophrenics even when he controlled for verbal ability. He believed that this is because the test is sensitive to the thought disorder associated with schizophrenia. In fact, for years psychiatrists and other practitioners have used proverbs as part of mental status exams to screen for problems with thought processes.

If the results of this study are viewed in this context, they suggest that the psychopath may be thought disordered. A similar suggestion was made by Williamson (1991).

A Deficit in Symbolic Thought

An alternative hypothesis is that psychopaths, like schizophrenics, have problems with a specific type of abstract thinking. Pishkin and Bourne (1981) proposed that a deficit in abstract thinking in schizophrenia only emerges with higher levels of abstraction. To reiterate, they found that,

When the task requires the formation of a pure abstraction, that is, knowledge that has no concrete realization in the stimulus materials and requires purely symbolic processes, the schizophrenic subjects are at a clear and substantial disadvantage. (p.202)
It can be argued that the Proverbs Test is just such a task and the other dependent measures are not. It involves the translation of concrete symbols into abstract ideas and, in most cases, the answer is not contained in the stimulus itself (see Appendix A for a list of all 12 proverbs). The other dependent measures do not seem to involve these features. For example, on the 'Similarities' test the subject is required to come up with a way in which two items are alike. It can be argued that the way in which they are alike is contained in the stimuli themselves. For example, with orange and banana, we can first look at the attributes or class to which each item belongs until we find a match. The analogue test of the Shipley Institute of Living Scale can also be seen as having the answer contained in the stimulus. The subject must figure out what the pattern is in the sequence of stimuli and determine what should come next in the sequence. The Short Category Test requires one to make up a hypothesis and test it and be able to rule it out or accept it, based on the examiner's responses. Again, the subject is not required to go beyond what is presented in the test materials.

In many ways, interpreting a proverb, especially out of social context, is a very demanding task. An individual must take a sentence such as "The sun shines upon all alike" and
translate that into a meaningful comment on human life.

Benjamin (1946) states that

the symbols must be translated into their respective figures, categories, and actions which they represent, a process which we have called, for the limited purpose of this inquiry, desymbolization.

In order to desymbolize, the person must search through his knowledge and experience of the world and come up with something that makes sense, given the nature of a particular proverb.

It should be noted that psychopaths did not do significantly poorer than others on the multiple choice version of the proverbs test. Gorham (1956) reports that the free response versions of his test are more difficult than the multiple choice version. It makes sense that being able to pick out the best response would be far less difficult than generating the symbolism with no clues. This ties into the earlier discussion concerning why a deficit might have gone undetected in psychopaths; that is, that they have had years of adaptation and could conceivably navigate moderately well with the use of cues in the environment despite a deficit.

A study by Simon, Holzberg, and Unger (1951) offers support for the notion that cues may improve psychopaths' abilities to function on different tasks. They used a free
response versus a multiple choice test to study judgment in psychopathic girls. They concluded that, "the psychopathic girl has learned social values and is able to recognize them where they are overtly presented (as in the multiple choice task) but where the psychopath is thrown upon her own resources in resolving a conflictual situation (as in the free response), these learned values are not readily available as guides, apparently because of their superficial incorporation into the personality structure" (p.147). Perhaps if the psychopaths were asked to elaborate on why a particular multiple choice answer is the correct one, performance deficits would appear because they would have problems properly interpreting the symbolism.

In addition, usually two of the four choices for each proverb are clearly incorrect (providing the person is not completely concrete in his thinking). This leaves two answers and a 50/50 probability of obtaining the correct answer by guessing if more finely tuned symbolic processing is not available to the subject.

Fishkin and Bourne (1981) believe that tasks requiring symbolic translation are higher level abstract tasks which makes them more difficult than conceptual tasks such as the Similarities subtest. Buhler (1907) stated that proverbs demand "all the psychic energy of the subject". The writer is
not aware of any research investigating the relative difficulty of, or formal categorization of, abstraction tasks that can help to address this issue. If Pishkin and Bourne are correct then it can also be hypothesized that psychopaths have problems with tasks requiring higher levels of abstract thinking such as symbolic translation.

**Psychopathy and the "Abstract Attitude"**

Abstract thinking is one aspect of the "abstract attitude". Based on the results of the study, it cannot be said that the psychopath has a general deficit assuming the "abstract attitude" as it was described by Goldstein (1939). However, the above hypothesis that psychopaths have problems with a specific form of abstract thought, namely translation of concrete symbols into abstract ideas, could be extended to include what Goldstein and Sheerer (1941) called the "total capacity of the individual" (p. 1). In other words, psychopaths may have a deficit in a more specific aspect of the "abstract attitude" which could be termed the "symbolic attitude". Perhaps psychopaths have difficulty engaging in functions that involve material that has no concrete realization in the external world and this includes areas such as emotional functioning. One could speculate that complex social emotions such as love and guilt may be a form of more
symbolic functioning. This inability to assume the "symbolic attitude" may be the dimension of experience that Cleckley (1976) and others have noted to be missing in the psychopath. Although the notion of a problem assuming the "symbolic attitude" is an interesting one, it is at present purely speculative.

Psychopathy and Schizophrenia

Regarding psychopathy and schizophrenia, the results of the study point to some of the same types of similarities and differences between these disorders discussed earlier in this thesis. The results suggest that psychopaths may be thought disordered, as Williamson (1991) argued. However, a comparison between the scores obtained by the subjects in this study and normative data reveal that the nonpsychopaths performed similarly to normals and that the psychopaths fell between normals and psychotic patients. In addition to not doing as poorly as do schizophrenics, their answers were qualitatively different from those typically given by schizophrenics. Compare the following example responses given by schizophrenics taken from Gorham's (1956) scoring manual to some responses made by two psychopaths who scored very low on the Proverbs Test in this study (see also responses of randomly chosen subject in Appendix A).
Proverb: Where there is a will there is a way.

**Disorganized Schizophrenic:** "That's correct. The way I was forced to see them - that led - the way I was to see the parachute jump - if you put a pin in something - you see through and through that man". (Bizarre and disorganized)

Proverb: Barking dogs seldom bite.

**Paranoid Schizophrenic:** "In other words watch out for people that talk quietly". (Paranoia, little relationship to the actual proverb).

Proverb: The grass is always greener in the other fellow's yard.

**Psychopath 1:** Only if he waters it (Pure concrete response).

Proverb: One today is worth two tomorrows.

**Psychopath 2:** Means that...one day is really special...I don't know (desymbolization is not completed).

Responses of those diagnosed with schizophrenia are often idiosyncratic and odd, at times not showing much relation to the actual stimuli. The post hoc analyses of idiosyncratic responses and the Becker categories revealed that the psychopaths made no responses of this nature. Psychopaths tended to provide less abstract or wrong answers but their answers made sense and related in some way to the proverb in question. In addition, schizophrenics also demonstrate difficulties with the multiple choice version of the Proverbs Test whereas psychopaths do not.
In summary, like schizophrenics, psychopaths have difficulty with the Proverbs Test. The commonality between the disorders may be thought disorder or a problem with symbolic processes. Psychopaths, however, respond quantitatively and qualitatively differently than do schizophrenics. They do not do as poorly as schizophrenics on the task and the more bizarre aspects are missing from their responses. The absence of bizarre responses recalls the discussion above pointing out the absence of the more bizarre symptoms of schizophrenia in psychopaths such as hallucinations and delusions.

**Psychopathy and Frontal Lobe Dysfunction**

The findings of this study also bear upon the hypothesized link between psychopathy and frontal lobe dysfunction. Organic patients as a group do more poorly on the Proverbs Test than do other groups (see Table VIII and Fogel, 1965). Benton (1968) administered the multiple choice version of the Proverbs Test to groups of frontal lobe patients. Those with bilateral and right frontal lobe damage had difficulty in doing this test, with the bilateral group having more difficulty (average score of 11.4) than those with right damage only (average score of 20.1). Patients with left frontal damage did not have difficulty with the task (average
score of 26.4). Benton did not use the 'free response' version of the test so it is not known if the left frontal patients would have difficulty when the demands are increased. However, frontal lobe patients also do poorly on the other dependent measures used in this study, i.e. they have a more general deficit in abstraction. Therefore, as was the case with schizophrenia, there are similarities and there are differences between psychopaths and frontal lobe patients.

The literature suggests that if psychopaths have frontal lobe dysfunction, it likely involves the orbital area (see Blumer & Benson, 1975; Lapierre et al, in press). Orbitofrontal patients often do not do poorly on many measures of neuropsychological functioning (e.g. Lapierre et al, 1994; Meyers et al, 1992); they have problems with what Meyers et al. (1992) term "metacognition", that is, problems in areas such as insight and planning. It would be interesting to know if orbitofrontal patients have problems interpreting proverbs. I am not aware of any empirical studies investigating this association. If they do, it may be that the problem with 'metacognition' that Meyers et al (1992) noted in the orbitofrontal patient may be linked to higher levels of abstract thinking or symbolic thinking.
Psychopathy, Frontal Lobe Dysfunction and Schizophrenia

There seems to be an increasing body of empirical work to suggest that psychopathy, schizophrenia, and frontal lobe dysfunction may be linked in some way. The findings of this study offer further evidence for this possibility. A possible common denominator might be frontal lobe dysfunction. The similarities but not identical presentations between psychopaths, schizophrenics and those with frontal lobe syndromes could indicate that there are some similar but also some key differences in the frontal lobe areas affected in each condition. In addition, there are numerous connections between the frontal lobes and other cortical and subcortical regions; any number of these areas could be contributing directly or indirectly to the symptom picture of each disorder.

CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

Psychopaths appear to have difficulties interpreting proverbs, possibly because of thought disturbance or problems with symbolic thought. The results are consistent with those reported by Williamson (1991); in each case it appeared that psychopathy is associated with a subtle form of thought disorder. Further investigation into the thought processes of
psychopaths is clearly warranted. The results of this study need to be replicated and extended using other tasks involving abstract (particularly symbolic) processing. Moreover, given the recent SPECT finding of hypofrontality in psychopaths, it would be fruitful to measure cerebral activity in psychopaths and nonpsychopaths while they perform the Proverbs Test.

A limitation of this study is that the subjects were criminals. There are some anecdotal reports that psychopaths, without a criminal record, show anomalies in their styles of speaking and writing (see Hare, 1993 for examples) but there are no empirical studies looking at language usage and abstract thinking in noncriminal psychopaths. Cognitive dysfunction of the sort described here may only pertain to criminal psychopaths. Empirical research on the cognitive/neuropsychological functioning of noncriminal psychopaths is needed to ensure that it is not simply psychopaths with cognitive difficulties who end up in the prison system.

Finally, the early conceptualizations of the psychopath as mentally ill or as having cerebral dysfunction continue to be tenable. More specifically, it seems possible that there is a relationship between the pathological process(es) underlying psychopathy and those underlying schizophrenia and frontal
lobe dysfunction. Further research on the association between psychopathy and these disorders is clearly needed.
REFERENCES


Harlow, J. (1868). Recovery from the passage of an iron bar through the head. Publication of the Massachusetts Medical Society, 2, 329-332. Cited in Elliott (see reference this section).


NOTES

Note 1. The concept of psychopathy as outlined by Cleckley and as measured by the PCL-R is inadequately covered in the current American Psychiatric Association Diagnostic and Statistical Manual (DSM-IV). The diagnostic category most related to psychopathy is Antisocial Personality Disorder (APD) which relies heavily on the use of objective behavioral criteria to make the diagnosis. Numerous authors have pointed out that APD is almost synonymous with chronic criminality (eg. Hare, 1991; Millon, 1981; Smith, 1978; Weiss, 1985) rather than a true clinical syndrome. According to Hare (1991), studies have shown that a very high percentage of prison inmates satisfy the criteria for a diagnosis of APD (90%). Although many psychopaths qualify for this diagnosis, many who receive this diagnosis do not meet the Cleckley/Hare criteria for psychopathy (20-30%).

Note 2. Thought disorder has usually been diagnosed and measured on the basis of what is said by the patient or the subject. There has been some controversy about whether psychotic communication should be labelled as language or speech disorder rather than thought disorder (see Brown, 1973; Fromkin, 1975). Holzman, Shenton, and Solovay (1986) make a good argument in favor of the long standing view that it is indeed the thought behind the speech that is disordered. They make the following arguments for their position:

1) "Language is the medium through which thought is communicated". (p. 361)

2) "Psychotics do not speak a shared language or a shared dialect" (p. 361). They cite Hunt and Walker (1966) who noted that schizophrenics have as much difficulty understanding the speech of another schizophrenic as do normal individual.

3) "Language and thought disorders are not only conceptually but empirically separable".

They concluded by saying:

It seems to us, therefore, that until there is convincing demonstration of a purely linguistic disorder in psychosis, it is more fruitful to regard the verbal productions of psychotic patients as the outcome of disordered thought processes. (p. 361).
Note 3. It should be noted that not all schizophrenics exhibit all the symptoms described in this section. For example, Klinka and Papageorgis (1984) found that not all schizophrenics show evidence of thought disorder.

Note 4. Verbal communication with Paula Barata, October, 1994, who has recently completed a study using the University of Pennsylvania Smell Identification Test. Psychopaths had more difficulty identifying smells than did nonpsychopaths. Her study was supervised by R. D. Hare, Psychology Department, University of British Columbia.
APPENDIX A

Responses to The Proverbs Test - Form III
by a Randomly Selected Subject from Each Group.

Nonpsychopath:

1. The sun shines upon all alike; We’re all basically the same. (1)

2. The grass is always greener in the other fellow’s yard. People are never content with what they got. (2)

3. Words cut more than swords. Watch what you say I guess. Its just trying to tell you to be careful I guess how you talk to people because you can hurt them. (1)

4. One today is worth two tomorrows. Live for today I guess. (2)

5. A drowning man will clutch at a straw. Desperate people will do anything I guess. (2)

6. Too many cooks spoil the broth. Don’t know...I’ll guess...need a leader I guess. (0)

7. The worst spoke in the cart breaks first. A chain is only as strong as its weakest link type of thing. (1)

8. Speech is the picture of the mind. Choose words carefully or something. (0)

9. It never rains but it pours. When things seem to be going bad, they seem to become even worse or whatever... it always seems to happen that a whole bunch of things happen at once type of thing. (2)

10. Don’t throw good money after bad. Don’t waste your money on things that...that it is useless to try and spend it on...actually it should be...you have already spent some money so don’t waste more money on something that is useless. (2)

11. There is many a slip between the cup and the lip.
I guess between the time that it takes to pick up the cup and take a drink ...from the table top to your lips...you could screw up in that time. (0)

12. The more cost the more honour.

War or something. (Q> what does it say). (Long pause). That's wrong.. something to do with rich people...the more it costs...like driving around in a Rolls Royce or whatever...I can't put a name to that or whatever. (0)

Examiner's note: Seems to be trying.

Total score: 13

Psychopath:

1. The sun shines upon all alike.
We're all equal. (2)

2. The grass is always greener in the other fellow's yard.
You always think Mr. Jones is doing better than you. (1)

3. Words cut more than swords.
You can hurt people more by what you say than what you do. (1)

4. One today is worth two tomorrows.
Not true. (Repeats proverb) I have not a clue. (0)

5. A drowning man will clutch at a straw.
True. (Laughs). People who are sinking will grab anybody and pull..take them with them. (0)

6. Too many cooks spoil the broth.
Too many chiefs and not enough Indians. (Can you put it in nonproverb terms). Too many people telling you what to do confuses the mind. (1)

7. The worst spoke in the cart breaks first.
You should always think before you talk. (0)

8. Speech is the picture of the mind.
If you couldn't speak you couldn't tell the people what you're thinking. I feel stupid doing this. (0)
9. It never rains but it pours. 
Depression. (0)

10. Don't throw good money after bad.
Don't beat a dead horse. (Can you explain without a proverb). If something's not working, don't continue doing it. (2)

11. There is many a slip between the cup and the lip.
Big mouths. Rats. (0)

12. The more cost the more honour.
You always think its better if it costs more. (0)

Examiner's Note: This person felt very uncomfortable doing these but tried.
Total score: 7