

Impulsive-Aggression and Psychopathic Tendencies in Female Undergraduates


by

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Abstract

Impulsive-aggression was investigated in a female university sample. A base rate analysis of impulsive-aggression in male ($n=220$) and female ($n=686$) university students at the University of Tasmania was conducted. As expected, males showed higher levels of impulsivity and aggression than females, and females were more empathic than males. Results from a background questionnaire indicated that some students reported psychosocial factors consistent with characteristic impulsive-aggression. Four groups of female students (impulsive-aggressive, $n=23$; aggressive, $n=24$; impulsive, $n=33$; and control, $n=119$) were then selected on the basis of impulsivity scores and aggression scores. In comparison to other women the impulsive-aggressive group was more physically aggressive and had a greater tendency to fight or argue. They were also more likely to report a drug problem, were more sexually active, and were more likely to have faced charges as a result of antisocial activity. They also reported a large number of suicide risk factors with fewer protective social supports in place. Surprisingly, the impulsive-aggressive group did not differ from other groups on empathy scores and had lower lie scores than the other three groups. The profile of impulsive-aggressive women was similar to the diagnostic criteria for antisocial personality disorder. Subsequent investigation of psychopathic traits was conducted. Women in the impulsive-aggressive ($n=11$), aggressive ($n=9$), impulsive ($n=7$), and control ($n=11$) groups were individually interviewed following the semi-structured interview format from the PCL:SV (Hart, Cox, & Hare, 1995) and subsequently rated using the P-Scan (Hare & Herve, 1999). The impulsive-aggressive group ($M=6.33$, $SD=3.48$) scored significantly higher than all other groups ($M_s<1.70$, $SD_s<1.90$) on total P-Scan psychopathy ratings and on the three facets of the P-Scan. Attentional bias was investigated with the above

interviewees completing a modified Stroop task, a dot probe (words) task, and a dot probe (faces) task. No significant group differences were found for reaction times to unpleasant (aggressive) or pleasant (neutral/happy) stimuli on the Stroop task or on either of the dot probe tasks. However, impulsive-aggressive women tended to show an attentional bias towards impulsive-aggressive words (e.g., 'rape') on the dot probe (words) task, whereas aggressive women showed an attentional bias away from impulsive-aggressive words. This was evident at the longer 1500ms stimulus duration but not at the shorter duration (100ms). In general it was shown that impulsive-aggressive women were distinct from their aggressive (and other) peers. It was concluded that impulsive-aggressive women have characteristics in common with sub-clinical psychopathy, as evidenced by their P-Scan scores, antisocial behaviours, and responses to affective stimuli. Results show support for a dimensional diagnostic approach to this disorder. Further research of the relationship between impulsive-aggression and sub-clinical psychopathic tendencies is warranted.

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Chapter 1

Introduction

The study of human aggression has resulted in a greater understanding of the ways in which characteristically aggressive people differ from others. For instance, we know that aggressive individuals are most likely to be young males and that most perpetrators of violence resulting in imprisonment are male (Cunningham, 2000; Shaw & Dubois, 1995). However, young women are being convicted of violent offences at a growing rate, predominantly for assault (Leschied, Cummings, Van Brunschot, Cunningham, & Saunders, 2000; Shaw & Dubois, 1995). Despite the increasing numbers of women incarcerated for violent crimes, research into non-incarcerated women's aggression has not increased proportionally. In a meta-analysis of research investigating aggression and violence within heterosexual relationships, Archer (2000a) reports that more women than men engage in some form of physical aggression against their partners, although more women than men are injured by their partners. Strauss and Gelles (1990) state that women are as aggressive as men within the family, which is in contrast to their levels of aggression outside the family.

Cunningham (2000) offers potential explanations for the increase in young women's violent conviction rates, such as zero tolerance policy crackdowns and changes in decision-making processes within the criminal justice system. She also highlights that it is equally possible that young women are simply more aggressive than they used to be. To date, there does not seem to be enough empirical evidence to include or exclude any of these explanations from the debate. As more young women enter the criminal justice system for violent offences it is likely that more research

with this population will follow. In particular a better understanding of characteristic aggression is needed. To this end, impulsive-aggression, antisocial behaviour, and psychopathic personality traits in young women require increased research attention.

Impulsivity and aggressiveness are linked with antisocial personality disorder and the behavioural elements of psychopathy (Verona, Patrick, & Joiner, 2001). This thesis focuses on the links between impulsive-aggression and sub-clinical levels of antisocial personality disorder and psychopathy. It begins with the premise that antisocial personality and psychopathy are not synonymous terms (Hare, 1996a). While both of these disorders are readily found in female offenders (Cale & Lilienfeld, 2002; Vitale & Newman, 2001a), only a few studies have investigated the dimensional levels of antisocial personality disorder and psychopathy by recruiting non-clinical and non-forensic samples (e.g., Forth, Brown, Hart, & Hare, 1996; Forth, Kisslinger, Brown, & Harris, 1993). The major aim of this investigation is to identify impulsive-aggressive women within a non-forensic sample to assess how they differ from other women, with specific reference to personal background and antisocial activity. As impulsivity and aggression are symptoms of antisocial personality disorder and psychopathy, a further aim is to identify whether characteristic impulsivity or characteristic aggressiveness are related to sub-clinical levels of these disorders, or whether a vital combination of the two (i.e., impulsive-aggressiveness) is required. In other words, this thesis aims to identify whether women who are impulsive-aggressive, impulsive alone, or aggressive alone have higher scores on a measure of psychopathy. Further to this, can simple self-report measures of impulsive-aggression therefore be useful screening tools in the identification of increased likelihood of antisocial activity and sub-clinical psychopathic personality traits?

This study investigates impulsive-aggression in young women from a university sample. More specifically, it investigates women who identify themselves as characteristically impulsive and aggressive by their responses to self-report measures. Investigations will compare impulsive-aggressive women with women who are impulsive but not aggressive, women who are aggressive but not impulsive, and a control group of women who are neither. A review of the relevant literature will be provided in Chapter 2 and base rate comparisons of impulsivity and aggression between male and female university students will be presented in Chapter 3. In Chapter 4 groups of female students (impulsive, aggressive, impulsive-aggressive, and control) will be compared on a number of self-report measures related to impulsive-aggression and on a background questionnaire. Through the administration of these questionnaires a profile of impulsive-aggressive women will be provided. This profile will in turn direct attention to the antisocial behaviours of impulsive-aggressive women and in Chapter 5 features of antisocial personality disorder and psychopathy (as measured by a post-interview psychopathy rating scale) will be investigated. Finally impulsive-aggressive women will be compared against the other above-mentioned groups for the presence or absence of attentional bias for aggression-related stimuli. This will be measured using dot probe tasks and a modified Stroop task and results will be presented in Chapter 6. In Chapter 7 overall findings will be discussed in relation to impulsive-aggression and sub-clinical psychopathic tendencies in young women.

Chapter 2

Impulsive-Aggression and Psychopathy: A Review of Relevant Literature

Impulsive-Aggression

Impulsive-aggression has been defined as “a hair-trigger, non-premeditated response to a stimulus that results in an immediate aggressive act or an agitated state that culminates in an aggressive act” (Barratt, Stanford, Kent, & Felthous, 1997, p. 1049). Coccaro (1998, p. 336) provides the following definition of impulsive-aggression:

Aggressive behavior includes any deliberate verbal or physical act directed against a person or object that has the potential to cause physical or emotional harm. The descriptor “impulsive” indicates that the aggressive act occurs as a quick, non-premeditated response to some form of real, or perceived, provocation.

Note that Coccaro does not mention the *intent* to cause harm, only the *potential* to do so. It is also appropriate to point out that “directed against a person” may include aggressive behaviours that are self-directed. Barratt, Stanford, Dowdy, Liebman, and Kent (1999, p.164) add that impulsive-aggressive acts “are either unprovoked or out of proportion to the provocation”.

In a study involving male and female college students Barratt et al. (1999) found that impulsive and premeditated acts of aggression are independent constructs that coexist to varying degrees within most individuals. It is important to note that not all acts of aggression are accompanied by anger (Blackburn, 1989; for a review of the literature pertaining to women’s anger see Crump, 1995). Coccaro’s mention of real or perceived provocation reflects the fact that aggressive individuals tend to misattribute hostile intent to others (Dodge & Schwartz, 1997) and consequently retaliate in a self-

defensive way, often resulting in acts of aggression. For further definition of impulsive-aggression, see Barratt and Slaughter (1998).

Confusion occurs within the aggression literature due to the interchangeable use of aggression-related terms such as hostility, violence, destructiveness, etc. It has been recommended that researchers restrict their usage to two primary terms: 'aggressiveness' to refer to a characteristic or personality construct, and 'aggression' to refer to behaviour (Caprara et al., 1985). This thesis is primarily concerned with aggressiveness as a personality construct, as opposed to aggression as a behavioural consequence (although this behavioural aspect is addressed).

There is also a degree of terminological confusion surrounding the terms 'impulsiveness' and 'impulsivity'. Although some researchers use these terms interchangeably, this thesis relies on the following discrete definitions provided by Eysenck, Pearson, Easting, and Allsopp (1985). 'Impulsiveness' refers to an inability to consider future consequences before acting. This is similar to the future non-planning construct described by Patton, Stanford, and Barratt (1995). 'Impulsivity' on the other hand is a conglomerate of impulsiveness and venturesomeness. 'Venturesomeness' relates to a predisposition to engage in risk-taking behaviours and when combined with the non-planning nature of impulsiveness leads to characteristic impulsivity. In other words, impulsivity is a predisposition to engage in risky activities without regard to future consequences. The remainder of this thesis will use the terms impulsive and impulsivity based on this definition. Where reference is made specifically to an inability to consider future consequences of behaviour, the term impulsiveness will be used.

Impulsivity is commonly associated with the impulse control disorders classified within DSM-IV (APA, 1994) including pathological gambling,

kleptomania, and pyromania. The impulse control disorder most commonly associated with impulsive-aggression is intermittent explosive disorder, which is defined as an inability to resist impulsive-aggressive impulses out of proportion to perceived stressors (DSM-IV-TR; APA, 2000). This description bears striking resemblance to Coccaro's (1998) definition of impulsive-aggression outlined at the beginning of this chapter. However, the focus of this thesis is not impulse control disorders, but links between impulsive-aggression and personality disorders, specifically antisocial personality disorder and psychopathy. Impulsivity and aggressiveness are associated with antisocial personality disorder, borderline personality disorder, and histrionic personality disorder, however the anxiety proneness common to borderline personality disorder is not associated with antisocial personality disorder or psychopathy (Meloy & Gacono, 1998; Cloninger, Bayon, & Przybeck, 1997). Similarly the reward dependence common to histrionic personality disorder is not found in the latter disorders. This is distinct from the reward bias that psychopaths show, which is the converse of their well-documented failure to learn from punishment (Hare, 1999).

There are a number of theories relating to the proposed causes of impulsivity and aggressiveness. Strong evidence supports a neuropharmacological explanation. Specifically, reduced central serotonergic function has been associated with impulsive-aggressive behaviour in individuals with personality disorder (Coccaro, Kavoussi, Sheline, Berman, & Csernansky, 1997) and in patients with either major affective disorder or personality disorder with a history of suicide attempt (Coccaro et al., 1989). Impulsive-aggression is also associated with suicide attempt, suicide completion, violent crime, and impulsive arson (Coccaro, Harvey, Kupsaw-Lawrence, Herbert, & Bernstein, 1991). These authors reported that reduced central serotonin is

more closely linked with aggressiveness than overt aggressive behaviour. This suggests a pathway beginning with reduced serotonin which is related to trait aggressiveness, which under conditions of adverse or provocative stimuli is more likely to result in an aggressive state that may conclude with aggressive behaviour.

Serotonergic agents such as fluoxetine have consistently been shown to reduce impulsive-aggressive behaviours due to their role in increasing serotonin levels in the brain (Coccaro et al., 1991; 1998). Further, this function appears to be independent of fluoxetine's antidepressant properties. More specifically though, fluoxetine has been shown to have significant effects in the reduction of verbal and indirect (i.e., against objects) impulsive-aggression, but little impact on physical aggression against others (Barratt, Felthous, Kent, Liebman, & Coates, 2000). Lithium and stimulants have also been shown to be successful in reducing impulsive-aggressive behaviour (Campbell, Cueva, & Adams, 1999). Barratt, Kent, Bryant, and Felthous (1991) found that phenytoin (an anticonvulsant) reduces the frequency of aggressive acts. Replication studies have produced equivocal results, but further investigation has shown that phenytoin may reduce incidences of impulsive-aggression, but not premeditated aggression (Barratt et al., 2000).

It has been suggested that impulsive-aggression is the result of a combination of neural factors including frontal lobe dysfunction, high levels of anger and impulsiveness, lower arousability threshold, and developmental deficits in brain maturation in posterior areas (Barratt et al., 1997). These deficits and differences could explain the common finding of decreased verbal abilities and reading ability in impulsive-aggressive individuals, which from an early age could lead to frustration in social and scholastic settings, which in turn may lead to impulsive-aggressive behaviour. Barratt et al. conclude that an interaction between developmental deficits

in verbal skills and lower arousal thresholds may result in a greater tendency to be impulsive-aggressive. In addition, Dodge and Newman (1981) have reported that aggressive children used fewer cues from their environment (sanctions, social cues, etc.) to direct behaviour, compared to non-aggressive children. Barratt et al. found that verbal skills were lower for prison inmates who had committed impulsive-aggressive acts while in prison compared with those who committed non-impulsive (i.e., premeditated) aggressive acts while in prison. Levels of impulsiveness did not differ between these two groups.

It is beyond the scope of this review to provide a full and comprehensive coverage of the literature pertaining to impulsive-aggression in survivors of traumatic brain injury (TBI), however recent findings by Greve and his colleagues are of particular relevance here. Greve et al. (2001) compared two groups of chronic, severely brain injured patients who did not differ in severity of brain injury or neuropsychological impairment. They found that impulsive-aggressive TBI patients were more antisocial, showed higher levels of irritability, and were more impulsive than non-aggressive TBI patients. Further, the former group was more aggressive prior to brain injury. The authors concluded that rather than causing personality change, the brain injury suffered by individuals in the impulsive-aggressive group acted to further disinhibit their already impulsive-aggressive behaviours. Indeed, their premorbid impulsive-aggressiveness may have rendered these individuals more vulnerable to head injury via accident or fighting.

Psychopathy

At present the term psychopathy is mostly used as a research category (Connelly & Williamson, 2000), as there is no specific diagnostic category within either the DSM

(APA, 1994; 2000) or the ICD-10 (WHO, 1992). The DSM-IV states that antisocial personality disorder is also known as psychopathy, but the current thesis begins on the premise that these disorders are discrete (Hare, 1991; 1996a) and therefore warrant separate definition.

Connelly and Williamson (2000) reviewed the literature relating to serious violent and sexual offenders and identified the use of the term 'psychopathy' as a descriptor for severe personality pathology comorbid with antisocial behaviour. This does little to differentiate psychopathy from DSM-IV antisocial, borderline, or narcissistic personality disorders, or from ICD-10 dissocial personality disorder.

Cleckley's (1941; 1988) description of psychopathy forms the basis for the current conceptualisation of this disorder. This is a personality-based definition that focuses on the psychopaths' stereotypical presentation: lack of empathy and remorse, glibness, superficial charm, pathological lying, egocentricity, shallow affect, and lack of anxiety. Behavioural outcomes of these personality variables are not outlined. Original DSM criteria were derived from these personality characteristics until replaced in later revisions by the current behaviourally-based antisocial personality disorder diagnostic criteria (Cale & Lilienfeld, 2002). Hare (1996a) has argued for a re-inclusion of the personality factors specific to psychopathy in the DSM criteria for antisocial personality disorder. As can be seen in Table 1, Criterion A of the antisocial personality disorder diagnostic set allows for diagnosis on the basis of pervasive patterns of behaviour, without specific stipulation that personality variables be included.

Table 1.

Diagnostic criteria for antisocial personality disorder (DSM-IV; APA, 1994).

Criterion A. Pervasive pattern of disregard for and violation of the rights of others since age 18 years, indicated by three (or more) of:	
1.	Failure to conform to social norms by repeatedly performing acts that are grounds for arrest
2.	Deceitfulness (repeated lying, use of aliases, or conning others for personal profit/pleasure)
3.	Impulsivity or failure to plan ahead
4.	Irritability and aggressiveness (repeated physical fights or assaults)
5.	Reckless disregard for safety of self or others
6.	Consistent irresponsibility (repeated failure to sustain consistent work behaviour or honour financial obligations)
7.	Lack of remorse, as indicated by being indifferent to or rationalising having hurt, mistreated, or stolen from another
Criterion B. The individual is at least 18 years old	
Criterion C. Evidence of Conduct Disorder with onset before age 15 years.	
Criterion D. Antisocial behavior not exclusively during the course of Schizophrenia or Manic Episode.	

Based on Cleckley's (1941) original criteria for psychopathy, Hare (1991; 1999) developed the current consensus criteria that underpin research in this field. While there is overlap in some of the items upon which psychopathy and antisocial personality disorder may be diagnosed (e.g., impulsivity, lack of remorse), the process of diagnosing psychopathy relies on attention being paid to personality variables as well as behaviour patterns. Through extensive research Hare devised a two-factor model of psychopathy which has been shown to be a reliable representation of this disorder (Harpur, Hare, & Hakstian, 1989). This research led to the development of the Psychopathy Checklist and its revision (PCL-R; Hare, 1991) which provides clinicians with a method for rating individuals on the behavioural and personality characteristics psychopathy. Items from the PCL-R (Hare, 1991) are presented in Table 2, along with relevant factors upon which items are mapped. Factor 1 is characterised by the emotional and interpersonal personality features described by

Cleckley. Factor 2 represents the behavioural components of psychopathy such as impulsivity, aggressiveness, sensation-seeking, and antisocial activities (Verona et al., 2001). Consequently Factor 1 has been referred to as emotional detachment and Factor 2 as antisocial behaviour (Patrick, Bradley, & Lang, 1993).

Table 2.

PCL-R items and associated factors (1 = Factor 1; 2 = Factor 2).

Item #.	Description	PCL-R Factor
1.	Glibness/Superficial Charm	1
2.	Grandiose Sense of Self-Worth	1
4.	Pathological Lying	1
5.	Conning/Manipulative	1
6.	Lack of Remorse or Guilt	1
7.	Shallow Affect	1
8.	Callous/Lack of Empathy	1
16.	Failure to Accept Responsibility for Own Actions	1
3.	Need for Stimulation/Proneness to Boredom	2
9.	Parasitic Lifestyle	2
10.	Poor Behavioural Controls	2
12.	Early Behavioural Problems	2
13.	Lack of Realistic, Long-Term Goals	2
14.	Impulsivity	2
15.	Irresponsibility	2
18.	Juvenile Delinquency	2
19.	Revocation of Conditional Release	2
11.	Promiscuous Sexual Behaviour	-
17.	Many Short-Term Marital Relationships	-
20.	Criminal Versatility	-

Individuals with high scores on Factor 2 are typically irresponsible, aggressive, and impulsive and have more in common with antisocial personality disorder than with a full diagnosis of psychopathy (Verona et al., 2001). However, it is this description of the behavioural factor of the psychopathy construct that

illustrates the link between impulsive-aggression and both antisocial personality disorder (e.g., PCL-R Factor 2 only) and psychopathy (Factor 1 plus Factor 2).

Table 2 (adapted from Hart, Cox, & Hare, 1995, p. 10) illustrates those PCL-R items which are associated with the personality factor (Factor 1) and the antisocial behaviour factor (Factor 2). Some items are not associated with either factor. These include 'promiscuous sexual behaviour' (item 11), 'many short-term marital relationships' (item 17), and 'criminal versatility' (item 20). Although not associated specifically with the behavioural factor or the personality factor, these items were retained due to their strong association with psychopathy overall (Hare, 1991). The fact that item 20 is not associated with either factor is not surprising as both Cleckley (1941; 1988) and Hare (1991; 1999) have identified that a criminal lifestyle is not necessary for a diagnosis of psychopathy (Hart et al, 1995). In addition, some concerns have been expressed about the validity of applying items 11 and 17 to female samples (e.g., Cale & Lilienfeld, 2002; Rutherford, Cacciola, & Alterman, 1999; Salekin, Rogers, & Sewell, 1997). Small sample sizes and imprecise sample selection methods (e.g., Salekin et al.) have limited the strength of these claims. However, it does appear that promiscuity, many marital relationships, and criminal versatility may not be as robust characteristics of psychopathy in females as they are in males (Warren et al., 2003). Regardless, Vitale and Newman (2001a) reviewed the relevant literature and concluded that the use of the PCL-R with female populations is valid, despite these limitations.

Concerns such as these have led to strong debate regarding the validity of the two-factor structure of the psychopathy construct. Although a number of models were presented by Hare (1991), the two-factor model has been widely accepted as the foundation of psychopathy and the PCL-R (Harpur, Hare, & Hakstian, 1989; Salekin,

Rogers, & Sewell, 1997). However, recently Cooke and Michie (2001) provided solid evidence for a three-factor hierarchical model of psychopathy. Their model comprises a superordinate construct (psychopathy) with three underlying factors. The first is an arrogant and deceitful interpersonal style, the second factor is deficient affective experience, and the third factor is an impulsive and irresponsible behavioural style. Through confirmatory factor analysis Cooke and Michie were able to show that this model achieves a better fit with PCL-R data than does the previous two-factor model. They also showed that it generalises across cultures (Northern American data were compared with Scottish data), and that it is also applicable to the screening version of the PCL. These findings will have implications for the forthcoming PCL-R-2 and for future research into psychopathy.

Eastman and Peay (1998) suggest that psychopathy is a clear conceptual bridge between forensic psychiatry/psychology and the criminal justice system in the sense that psychopathic individuals characterise the “mad versus bad” debate regarding serious offenders. In other words, psychopaths represent the crux of the forensic mental health practitioner’s dilemma over those convicted offenders who are mentally ill and require treatment and those who are not (and therefore require punishment). This concept underpins the debate regarding the separation between antisocial personality disorder and psychopathy (e.g., Hare 1996a), despite the suggestion in the DSM-IV that these terms are synonymous. Even Cleckley (1988) in later revisions of his book *Mask of Sanity* defers to the DSM by occasionally referring to psychopathy as antisocial personality.

The DSM-IV reports a positive relationship between antisocial personality disorder and low socio-economic status (APA, 1994). However in an epidemiological survey of over 18,000 individuals in the United States (Robins, Tipp, & Przybeck,

1991) no relationship was found between antisocial personality disorder and unemployment, career achievement, or current earnings. In contrast, no relationship has been found between low socio-economic status and psychopathy (e.g., Hare; 1999; Rutter, Giller & Hagell, 1998).

Lykken (1995) cites incompetent parenting as a causal factor in psychopathy. He states that competent parents who focus on positive reinforcement and praise rather than punishment can successfully socialise the child with psychopathic tendencies. However, Hare (1999) states that there is no association between psychopathy and poor parenting techniques. He also denies links with birth complications, early psychological trauma, or other early environmental influences. On the other hand, these factors are consistently found in the backgrounds of individuals with antisocial personality disorder (Ramchand, 2002). Neither does there appear to be any evidence to support neuro-anatomical explanations for psychopathy (Pitchford, 2001), although support has been found for a link between frontal lobe damage and antisocial behaviour (see Ramchand, 2002).

Psychopaths have been shown to be more impulsive and aggressive than non-psychopaths (Serin, 1991). Suicidality is associated with increased impulsivity and aggressiveness (Coccaro et al., 1989), but Cleckley's (1941) original proposition described psychopaths as immune to suicide due to their self-preservation instinct. The nature of suicide risk in individuals diagnosed with antisocial personality disorder is unclear. In a review of the literature, Cloninger et al. (1997) report that the risk of suicide is high in antisocial personality disordered psychiatric patients, but low in those within the criminal justice system. Verona et al. (2001) investigated suicide risk in incarcerated offenders with diagnoses of either antisocial personality disorder or psychopathy. They found that suicide risk was significantly correlated with a

diagnosis of antisocial personality disorder and with high PCL-R scores on Factor 2 (antisocial behaviour), but not with high scores for the personality-driven Factor 1. These findings support Cleckley's original contention that suicide is not associated with the psychopathic personality (i.e., Factor 1). It then appears that the behavioural characteristics of antisocial personality disorder (and high scores on PCL-R Factor 2 only) are greater risk factors. Unfortunately Verona et al. fail to differentiate between inmates' so-called 'genuine' versus 'manipulative' suicidal behaviours, which seriously limits the specific conclusions reached about incarcerated offenders' suicide risk *per se*, but the findings do clarify self-harm behaviours in general in incarcerated populations with these diagnoses.

Psychopaths have been shown to exhibit abnormal responding to affective stimuli (Patrick, 1994; Patrick & Lang, 1999; Verona & Carbonell, 2000; Verona et al. 2001). These emotion-processing abnormalities include physiological reactions such as reduced startle-reactivity to unpleasant or threatening verbal and facial stimuli. This effect is found in male and female psychopaths (Sutton, Vitale, & Newman, 2002), but appears to be predominantly associated with high scores on Factor 1 of the PCL-R ('emotional detachment' personality traits) as opposed to high scores on Factor 2 (antisocial behaviour; Patrick, 1994; Patrick & Lang, 1999; Verona & Carbonell, 2000; Verona et al. 2001). However, it appears that psychopaths' responses to emotional stimuli may be delayed rather than absent as previously thought (Sutton et al., 2002). Further to this, emotional abnormality in psychopaths does not extend to emotion-appropriate self-report of emotional experiences (Herpertz et al., 2001). Despite the consistent findings of abnormal emotional reactivity in psychopaths, research is yet to address attentional bias with this population.

Diagnostic Confusion: Antisocial Personality Disorder and Psychopathy

The history of the interchangeable use of the terms antisocial personality disorder and psychopathy begins with the DSM-II (APA, 1968), where the diagnostic criteria for antisocial personality included the psychopathic personality traits outlined by Cleckley (1941; 1988). The personality criteria were ejected from the diagnostic criteria in DSM-III (APA, 1980) as it was felt that a behaviourally based set of criteria was more robust and more easily identifiable for diagnosing clinicians than the rigorous assessment of personality traits (Hare, 1996a). Following DSM-III-R (APA, 1987), Hare was involved in the task force charged with investigating the diagnostic criteria for antisocial personality disorder for the then forthcoming DSM-IV (Hare, 1996a). The task force recommended that Cleckley's personality criteria for psychopathy be reinstated in order to return the diagnosis to the status of a true personality disorder and to reduce the over-diagnosing of criminal behaviours. Once again psychopathic personality traits were rejected on the basis of the reliability of clinicians to apply the diagnostic criteria in a rigorous fashion. This is despite the fact that psychopaths have consistently been shown to hold reliable personality traits in addition to the observable behaviours shared with the current antisocial personality disorder criteria. The result was that the DSM-IV and its text revision (DSM-IV-TR; APA, 2000) retain behaviourally defined diagnostic criteria for antisocial personality disorder, similar to DSM-III and DSM-III-R.

With regard to criminal recidivism, Hare (1996a;1996b) argues that psychopathic personality characteristics have greater predictive power than antisocial behaviours alone. In other words, these traits help differentiate the criminal behaviourist (antisocial personality disorder as currently defined by the DSM-IV) from the dangerous repeat offender (the psychopath as defined by the PCL-R or

PCL:SV). It is important to point out that individuals may meet criteria for both disorders. The general rule of thumb is that psychopaths are more likely to meet the criteria for antisocial personality disorder, but few with antisocial personality disorder meet the full criteria for psychopathy (Hare, 1999). This is because antisocial personality disorder is related to the antisocial behaviour factor of the psychopathy construct (Verona et al., 2001).

Why is this distinction important? The prediction of recidivism and dangerousness risk forms the basis of decisions regarding parole, security classification, and in some jurisdictions, the death penalty (Hare, 1999). Terminological confusion poses the dual risks that criminals incorrectly labelled as psychopaths will be over-penalised, or that psychopaths under-described by the antisocial personality label will be released back into the community. Hare (e.g., 1996b; Hare, Hart, & Harpur, 1991) hopes that the re-inclusion of the psychopathic personality traits into the antisocial personality disorder diagnostic criteria will serve a number of functions. It has the potential to reduce the tendency to pathologise criminal behaviour, to aid in the identification of the most dangerous recidivists, and to make the antisocial personality disorder diagnostic category meaningful beyond its current usage as a synonym for criminality.

Prevalence and Demographics

Impulsive-aggression is more prevalent in younger rather than older populations and more prevalent in young males than in other groups (Eysenck et al., 1985a; Stanford, Greve, Boudreaux, Mathias, & Brumbelow, 1996; Stanford, Greve, & Dickens, 1995). Impulsive-aggression is linked with antisocial personality disorder and the behavioural characteristics of psychopathy (Verona et al., 2001). Unsurprisingly,

antisocial personality disorder and psychopathy are more common in males than females and both disorders are more common in younger rather than older populations (e.g., Hare, 1991; 1999; Ramchand, 2002).

Within the general population, the prevalence of antisocial personality disorder is estimated to be approximately three per cent of males and one per cent of females (DSM-IV; APA, 1994). Epidemiological studies from the United States (Robins et al., 1991) and New Zealand (Oakley-Browne, Joyce, Wells, Bushnell, & Hornblow, 1989) report similar prevalence rates for antisocial personality disorder. Psychopathy is estimated to be present in approximately one per cent of the general population (Hare, 1999). Sex differences within the general population are not widely reported, however in their study with an undergraduate population Forth et al. (1996) found no female psychopaths, but males met the diagnostic cutoff at levels in line with Hare's prevalence estimate. For a review of sex differences in antisocial personality disorder and psychopathy, see Cale and Lilienfeld (2002).

Robins et al. (1991) report symptom onset for antisocial personality disorder occurs between the ages of eight and 11 years, with remission occurring most commonly by 45 years. Remission is usually defined by a decrease in the observable antisocial behaviours associated with this disorder, rather than personality change *per se* (Black, 1999). Hare (1998) states that psychopaths also tend to show a reduction in the number of criminal offences (and scores on PCL-R Factor 2) with middle age. However he reports that scores for the psychopathic personality factor(s) remain stable, and that aggressive and violent behaviours do not necessary recede as the psychopath ages. Epidemiological studies indicate that antisocial personality disorder is more common in Caucasians than other races (Oakley-Browne et al., 1989; Robins

et al., 1991). For a comprehensive review of the epidemiological literature relating to the prevalence of antisocial personality disorder, see Ramchand (2002).

In a study involving over 2,800 adolescents from the Netherlands, Garnefski and Okma (1996) reported the prevalence of aggressive and/or criminal behaviours was 26.4% in adolescent boys and 9.9% in adolescent girls. Ratios of males to females who engage in antisocial behaviour is more pronounced in groups whose behaviour persists well into adulthood than in groups whose antisocial activities are limited to adolescence (Moffitt & Caspi, 2001; Storvoll & Wichstrom, 2003). For a breakdown of demographics and conviction correlates in adolescent female offenders, see Walrath et al. (2003).

Prevalence rates for both antisocial personality disorder and psychopathy are higher in institutionalised samples. In a survey of psychiatric diagnoses within the prison population in England and Wales, Singleton, Meltzer, and Gatward (1998) noted that antisocial personality disorder was the most common Axis II diagnosis. They found that 49% of sentenced prisoners had this diagnosis. Within the female prisoner population 31% were diagnosed as antisocial personality disordered. Bonta, Harris, Zinger, and Carriere (1996) found that among Canadian prisoners classified as dangerous offenders (i.e., detained beyond the expiration of a custodial sentence for the protection of the greater community; Connelly & Williamson, 2000), 72.9% were diagnosed with antisocial personality disorder and 39.6% were diagnosed as psychopathic. These figures indicate that some individuals may have met the criteria for both disorders.

Street (1998) noted that of 372 offenders who received restricted hospital orders between 1992 and 1993, 13% were diagnosed as psychopathic and 4% were psychopathic with comorbid mental illness. Of 391 offenders receiving restricted

hospital orders between 1961 and 1989, 24% were diagnosed as psychopathic. In contrast a meta-analysis of 62 prison studies (Fazel & Danesh, 2002) revealed that 50% of male inmates and 20% of female inmates have antisocial personality disorder. In local terms, a Tasmanian study of female prison inmates found that 10% had a personality disorder diagnosis (Jones, Marris, & Hornsby, 1995). For inmates with a psychiatric history this figure increased to 27%. Unfortunately Jones and his colleagues do not specify the type of personality disorders diagnosed.

Hare (1999) estimates that in excess of 50% of serious crime is committed by psychopaths, and Prentky and Knight (1991) suggest that half of all serial rapists are psychopaths. Hare (1991; 1998) suggests that psychopathy is present in 15% to 30% of incarcerated offenders. More recently, Salekin et al. (1997) found that 15% of female inmates met the PCL-R criteria for psychopathy using a cut-off score of 29 or above.

Attributional and Attentional Biases

Social knowledge influences the encoding, interpretation, and behavioural response decisions relating to a given situation (Crick & Dodge, 1994; Zelli, Dodge, Lochman, & Laird, 1999). Errors in encoding or interpreting social settings can therefore influence behavioural outcomes. This is of particular relevance in relation to impulsive-aggressive behaviours.

Dodge and his colleagues have proposed a social information processing model of aggression arguing that aggressive individuals misinterpret ambiguous social events as hostile and subsequently retaliate in a self-defensive manner (Dodge & Schwartz, 1997). Aggressive boys have been shown to have a bias towards attributing hostile intentions to peers. They appear to have difficulty in accurately

interpreting the intentions of others, and subsequently find it difficult to link social interpretations with appropriate behaviour (Dodge & Somberg, 1987). It has been argued that children's experiences of aggression, including peer rejection for aggressive behaviour, may reinforce the cognitive cycle which leads to a tendency to over-attribute hostility in the world around them, thus reinforcing the likelihood for future aggressive behaviour. See Crick and Dodge (1994) and Zelli et al. (1999) for comprehensive reviews of the literature relating to childhood aggression and social cognition.

The early work of Toch (e.g., 1969, cited in Copello & Tata, 1990) showed that individuals who were habitually aggressive had cognitive and perceptual habits that predisposed them to behave in aggressive ways. This seems a somewhat circular conclusion, but subsequent research has consistently shown that aggressive individuals are indeed prone to misinterpret ambiguous social cues as hostile (e.g., Copello & Tata, 1990; Dodge & Somberg, 1987). Copello and Tata state that impulsive-aggressiveness is associated with biased interpretation of ambiguous cues, which is in turn associated with hostile attribution bias. These effects are particularly evident when impulsive-aggressive individuals make rapid decisions and perceive themselves to be targets rather than observers of ambiguous social events.

Copello and Tata (1990) investigated interpretive bias for ambiguous and unambiguous sentences in samples of violent offenders, non-violent offender controls, and non-offender controls. Both groups of offenders were more likely to interpret ambiguous statements as violent than were non-offenders. This effect was found for violent stimuli but not general anxiety-related stimuli, and was significantly correlated with measures of hostility. The lack of significant differences between offender samples may have been associated with the potentially higher rates of impulsive-

aggression in offenders overall compared to controls. However, research conducted with aggressive non-offenders has found similar results (Dodge & Somberg, 1987). Indeed, Copello and Tata suggest that a measure of hostility may be a more reliable indicator of aggressiveness than is a history of criminal violence.

Blackburn and Lee-Evans (1985) have shown that dangerous offenders selectively attend to unpleasant events. Copello and Tata (1990) state that this is linked with interpretive and attributional biases. There has also been some evidence to support the hypothesis that psychopaths show hostile attributional biases in ambiguous situations (Serin, 1991). As stated previously, hostile attributional biases are strongly associated with impulsive-aggression (Copello & Tata; Dodge & Schwartz, 1997). At this stage it is unclear whether it is predominantly a link with impulsive-aggression which makes this relationship also true for psychopathy. Despite the proposed links between hostile attributional and interpretive biases, and between hostile attribution bias and impulsive-aggression, there appears to be no research investigating attentional biases in aggressive populations, particularly aggressive females.

Women's Aggression

This chapter has thus far highlighted research relating to impulsive-aggression and psychopathy. Most of this research has been described in general terms, given the paucity of specific references to women. There has been a slow move towards an increase in research attention given to women's aggression, however few studies have specifically investigated impulsive-aggression in women. The exception is research into impulsive-aggression in women with borderline personality disorder (e.g., Dougherty, Bjork, Huckabee, Moeller, & Swann, 1999; Soloff, Kelly, Strotmeyer,

Malone, & Mann, 2003). The fact sheet for borderline personality disorder provided by America's National Alliance for Research on Schizophrenia and Depression (NARSAD, 2003) states that impulsive-aggression provides the bridge to self-destructive behaviours in borderline patients. This is in line with research that links suicidal behaviours and impulsive-aggression (Coccaro et al., 1991). While borderline personality disorder is more common in females than males (APA, 1994), it is beyond the scope of this thesis to fully explore this personality disorder.

Despite the lack of attention to impulsive-aggression in particular, women's violence in general has received increasing attention due to the growing rates of violent crime perpetrated by females. A number of jurisdictions report that young women are being arrested for minor assault and other violent crimes at a steadily growing rate. This trend has been reported in Australia (Australian Institute of Criminology, 2002; Cameron, 2001; Indemaur, 1996), the United States (Obeidallah & Earls, 1999; Snyder, 2000), the United Kingdom (Burman, Tisdall, & Brown, 1998), and Canada (Leschied et al., 2000; Shaw & Dubois, 1995). Snyder reports that in the United States arrest rates for assault, theft, and weapons charges have declined for young males, but have increased for young females. Shaw and Dubois state that violent offences accounted for 13.6% of all charges against Canadian women in 1991, as compared to 8.1% in 1970. The majority of these violence convictions were for minor assaults. Cameron reports that Australian women are being sentenced for violent offences at an increasing rate, while there has been a decline in the proportion of property offences. In the study period of 1991 to 1999, the proportion of Australian female offenders sentenced for property offences fell from 44% to 34%. The proportion sentenced for violent offences on the other hand increased from 26% to

31%. The proportion of Australian female offenders incarcerated for drug offences has remained relatively stable at around 10%.

Despite its rarity, murder has dominated much of the female aggression literature. Shaw and Dubois' (1995) review of the literature reports that when women murder they most commonly kill intimate partners. However, a summary of Canadian homicide statistics (Hoffman, Lavigne, & Dickie, 1998) indicated that women's homicide victims (usually male) were usually an acquaintance or intimate partner not living with the perpetrator. Contrary to popular belief, these women committed homicide not in reaction to spousal abuse but predominantly while robbing their victim. These homicides were most commonly committed under the influence of alcohol and/or drugs, and a knife was the most common murder weapon. The majority of female perpetrators of homicide had no prior convictions, but did have a history of depression, alcohol/drug abuse, and physical and/or sexual abuse. This description invites future investigation into the relationship between borderline personality disorder and homicidal acts in women.

In a review of research into female adolescent aggression, Leschied and her colleagues state that this is the one area where the community's perception of growing crime rates matches reality (Leschied et al., 2000). They concede that males continue to commit the vast majority of violent offences, with the male-to-female ratio of violent crimes committed by adolescents ranging from 3:1 to 12:1 depending on the type of violent crime reported. However, Mathews (1998) argues that the prevalence rates only favour a male predominance when repeat offences are included in the analyses. For first offences this sex difference is not replicated.

Pepler and Craig (1999) suggest that because male aggression is predominantly physical and female aggression is more indirect, the emphasis on physical aggression

in the literature has bypassed female aggression. Research has indicated that in terms of children's aggression, girls have been under-represented due to the lack of assessment of girls' forms of aggression and that girls are more likely to be represented in aggression data when verbal threats and intimidation are included (Everett & Price, 1995). Farrington (1995) conducted a longitudinal study of the developmental pathways of physical aggression in boys and girls. He found that of boys who were violent at ten years of age, 50% remained so at age 16. For girls the rate of continued violence at 16 was only 8%. However, this figure does not account for the developmental shift that girls make around puberty (Talbot, 1997). Talbot reports that boys and girls display similar rates of physical aggression until age 11, after which physically aggressive boys remain physically aggressive and physically aggressive girls become relationally aggressive. Relational aggression refers to indirect forms of aggression and bullying, which include gossip, spreading rumours, insults, threats, manipulating others to commit violence, and other forms of disruption to social relationships (Bjorkqvist, Lagerspetz, & Kaukianinen, 1992; Crick, Bigbee, & Howes, 1996; Leschied et al., 2000; Talbot, 1997). Crick and Dodge (1994) explain this shift in terms of a male orientation towards instrumentality in general (i.e., power-oriented) compared to females' characteristic orientation towards interpersonal factors. It has also been suggested that women maintain expressive beliefs about aggression reflecting a tendency to excuse aggression as a loss of control, but that men maintain instrumental beliefs which relate to exerting control over others and thus reflect an element of premeditation (Astin, Redston, & Campbell, 2003; Campbell, 1993). This conclusion could be interpreted as inferring that women's aggression is more likely to be impulsive.

Aggressive girls tend to come from homes that are characterised by verbal aggression. Further, this socio-environmental influence is more common in aggressive girls than aggressive boys (Garnefski & Okma, 1996). However, aggressive boys report problems at school more often than aggressive girls. Garnefski and Okma note that aggressive girls are more likely than aggressive boys to report negative feelings about their homelife and to report regular serious arguments or other forms of conflict with their parents.

In a meta-analytic review, Archer (2000a) concluded that women perpetrate partner violence within heterosexual relationships to a greater extent than men, but women receive more injuries than men from partners' violent acts. This conclusion has understandably generated further debate (e.g., Archer, 2000b; Frieze, 2000; O'Leary, 2000; White, Smith, Koss, & Figueredo, 2000). However Archer's findings regarding women's violence within relationships are consistent with the growing body of literature relating to women's increasing rates of violent crime (Leschied et al., 2000; Shaw & Dubois, 1995).

Although largely neglected, there is a small body of recent research investigating psychopathy in women. Cale and Lilienfeld (2002) provide an up-to-date review of sex differences in antisocial personality disorder and psychopathy. To date studies have indicated that (a) the separation of antisocial personality disorder and psychopathy into discrete constructs is valid for women (Rutherford et al., 1999); (b) the PCL-R (Hare, 1991) as a measure of psychopathy is reliable and valid for use with women (Vitale & Newman, 2001a); and (c) female psychopaths also display the abnormal emotion reactivity common to male psychopaths (Sutton et al., 2002). Psychopathy has been estimated to be present in approximately 15% of female offenders (Salekin et al., 1997). Men tend to score higher on categorical and

dimensional measurements of antisocial personality disorder and psychopathy (Cale & Lilienfeld, 2002). Contrary to results with male psychopaths, female psychopaths have not been found to display response perseveration on the Wisconsin Card Sort (Vitale & Newman, 2001b).

With specific reference to female psychopaths, the validity of the PCL-R's two-factor structure of psychopathy (Hare, 1991) has received mixed support. Salekin et al. (1997) report that items relating to impulsivity, behavioural dyscontrol, and irresponsibility loaded on Factor 2 (antisocial behaviour) for males but on Factor 1 (personality traits) for females. These authors conclude that the two-factor model may not be as applicable to women. However there are two major qualifications to this conclusion (Cale & Lilienfeld, 2002). Firstly, the small sample size and the combining of African Americans and Caucasians in their factor analyses indicate a lack of generalisability of results (Oakley-Browne et al., 1989; Robins et al., 1991; Vitale & Newman, 2001a). Secondly, it is possible that these results may simply reflect a gender bias in the PCL-R's items relating to promiscuous sexual behaviour. Indeed, Cale and Lilienfeld found no support for sex differences in the factor structure of psychopathy. However, they recommend further investigation with undergraduate samples in order to clarify the factor structure with non-clinical samples. Cale and Lilienfeld also support the use of a dimensional approach to investigating psychopathy and antisocial personality disorder in non-clinical samples due to the mildness of traits likely to be found in these populations (which therefore predict low base rates of categorically defined diagnoses). Again, it is hoped that the manual for the forthcoming PCL-R-2 may shed some light on this issue.

Despite the relatively low numbers of experimental studies in the area of women's aggression, a number of quality literature reviews have been produced in

recent years (e.g., Cale & Lilienfeld, 2002; Leschied et al., 2000; Vitale & Newman, 2001a). For comprehensive coverage of theories, prevalence rates, and treatment approaches to women's violence, see Shaw and Dubois (1995).

Research Questions and Aims

There is little available data on the nature of impulsive-aggression in non-forensic or non-clinical female samples. Therefore, the present investigations begin with the initial question: Are impulsive-aggressive women different from their peers? For example, do women who are characteristically impulsive *and* aggressive report different demographics factors in comparison to women who are impulsive but not aggressive, women who are aggressive but not impulsive, and women who are neither aggressive nor impulsive?

As the current investigation will focus on non-forensic and non-clinical samples, it is pertinent to ask a second question: How antisocial are impulsive-aggressive women? If impulsive-aggressive women are engaged in more antisocial behaviours than their peers, do they also display psychopathic personality characteristics? Furthermore, if impulsive-aggressive women show higher levels of psychopathic personality traits and antisocial behavioural characteristics than their peers, is this (a) predominantly one factor or the other, and (b) at clinical or sub-clinical levels? In other words, do impulsive-aggressive women represent a distinct sub-clinical psychopathy sub-group?

As emotional processing has been at the heart of so much research with psychopaths (e.g., Patrick et al., 1993), and attributional bias has been at the heart of much of the research into aggression (e.g., Dodge & Schwartz, 1997), why has attentional bias been largely neglected in these fields? In comparison to women who

are aggressive but not impulsive do impulsive-aggressive women show an attentional bias towards aggressive stimuli, away from aggressive stimuli, or neither? Do they show different response patterns compared with women who are aggressive but not impulsive, women who are impulsive but not aggressive, and women who are neither? Finally, if impulsive-aggressive women are distinct from their peers in demographics, antisocial behaviours, psychopathic traits, and attentional bias, do they pose a greater risk to the community than their peers?

In light of these research questions, the current investigation aims to provide a profile of impulsive-aggressive women and to identify similarities between the characteristics of impulsive-aggressive women and the characteristic hallmarks of psychopathy. This will be achieved via the administration of demographic and other relevant questionnaires, and the administration of a semi-structured clinical interview (from the PCL:SV; Hart et al., 1995) followed by a psychopathy rating scale (the P-Scan; Hare & Herve, 1999). An additional aim of this project is to investigate attentional bias in impulsive-aggressive women. This study will be the first to investigate attentional bias in a population with psychopathic tendencies (if these are found to be present).

There has been much debate in the literature surrounding the categorical (as opposed to dimensional) nature of psychiatric diagnoses such as depression (e.g., Shankman & Klein, 2002) and personality disorders (e.g., Livesley, Schroeder, Jackson, & Jang, 1994). This debate has intensified as task forces work towards diagnostic reviews for the forthcoming DSM-V (see Kupfer, First, & Regier, 2002; Phillips, First, & Pincus, 2003). A proposed move towards a dimensional model of diagnosis for personality disorders is of particular relevance to diagnostic criteria for antisocial personality disorder and psychopathy. Indeed Cleckley (1988) proposed

that psychopathy may appear at every level from trait through to total disability (i.e., from minimum to maximum impact to the self and society). Therefore, a final aim of the current investigation is to contribute to the debate regarding revision of the diagnostic criteria for antisocial personality disorder by identifying (a) evidence for the dimensional nature of psychopathic traits, and (b) providing insight into these traits within a female sample.

Validity and Reliability of Primary Measures

The fundamental basis of this project is the selection of women who are characteristically impulsive and aggressive. In other words, women who have both high levels of impulsivity as defined by Eysenck's criteria (Eysenck et al., 1985a), and high levels of aggressiveness (as opposed to high levels of aggressive behaviours). In order to achieve this, two primary measures of impulsivity and aggression have been selected, the I7 Impulsivity Questionnaire (Eysenck et al., 1985a) and the Aggression Questionnaire (Buss & Perry, 1992). The latter is a revision of the much respected and widely used Buss-Durkee Hostility Inventory (Buss & Durkee, 1957).

The I7 Impulsivity Questionnaire

The I7 Impulsivity Questionnaire is a 54-item self-report measure which consists of three subscales: impulsiveness (associated with psychoticism on the Eysenck Personality Questionnaire; EPQ), venturesomeness (associated with extraversion on the EPQ), and empathy (Eysenck et al., 1985a). The authors report a high degree of reliability for each of the subscales with both males and females. Alpha coefficients for the impulsiveness and venturesomeness subscales were reported to be around 0.8

and around 0.7 for the empathy subscale. A moderate correlation between impulsiveness and venturesomeness (r s around 0.4) reflects the association between these factors in terms of the combined impulsivity trait. The alignment of impulsiveness and venturesomeness with psychoticism and extraversion respectively attests to their measurement of separate aspects of impulsivity. Empathy was positively related to neuroticism, but negatively to psychoticism. The authors conclude that this self-report measure robustly assesses three important characteristics in impulsivity research: impulsiveness, venturesomeness, and empathy. It is the inclusion of empathy that makes this particular scale of further relevance for the current investigation into impulsive-aggression and psychopathic tendencies in women, as lack of empathy is a defining characteristic of psychopathy (Cleckley, 1941; 1988; Hare, 1991)

The Aggression Questionnaire

The Aggression Questionnaire (Buss & Perry, 1992) is a 29-item self-report measure that produces four robust factors: physical aggression, verbal aggression, anger, and hostility. The authors state that the physical and verbal aggression subscales reflect behavioural elements of aggression, the hostility subscale reflects the cognitive element of aggression, and anger reflects the emotional element and is a bridge between the cognitive and behavioural elements. Strong internal consistency is reported for each subscale and total aggression scores (r s = 0.72-0.89). Test-retest reliability is reportedly sound, with coefficients ranging from .72 to .80. Total scores and subscale scores were shown to be positively related to impulsiveness, although this relationship was strongest for total aggression scores (r = 0.46).

The Aggression Questionnaire is a particularly important tool for the measurement of aggressiveness in women as it quantifies characteristic aggressiveness rather than cataloguing aggressive acts and it extends its scope beyond purely physical aggression.

Psychopathy Measures

Despite present debate regarding its factor structure, the PCL-R (Hare, 1991) shows strong internal reliability, with the two factors correlated at $r = .50$ (Hart & Hare, 1997). This measure has been validated against American and Canadian samples, predominantly consisting of incarcerated males. However it has also been found to be reliable for use with other groups such as female offenders (e.g., Vitale & Newman, 2001a) as well as male and female non-offenders (e.g., Alterman, Cacciola, & Rutherford, 1993; Forth et al., 1996). The PCL-R has high internal reliability with a median alpha coefficient of 0.87 across 11 test samples (Hart et al., 1995). Factor scores are not as reliable as total scores and it is therefore recommended that total scores be used for clinical purposes, however factor scores are suitable for research purposes (Hare, 1991).

The construct validity of the PCL-R is somewhat limited in non-criminal populations as the items were developed with the intention of use with criminal populations, however Hart et al. (1995) recommend that criminal items may be omitted and the PCL-R prorated accordingly. It was this issue and the time consuming nature of the PCL-R (approximately 3.5 hours to administer and score) that led Hare and his team to devise the PCL:SV.

The PCL-R has strong predictive validity in terms of future criminal and violent behaviour, criminal recidivism, institutional misconduct, and offender

treatment program outcomes (Hare, 1991; Hare & Hart, 1993). Salekin et al. (1996) provide a review and meta-analysis of the predictive validity of the PCL-R. Its discriminant validity has been found to be robust as a function of its two-factor structure. Many of the behaviours associated with antisocial personality disorder, particularly substance abuse, have been shown to be associated with psychopathy, but only with Factor 2. Factor 1 has been negatively associated with anxiety and empathy but positively associated with narcissism and dominance (Hart et al., 1995).

The PCL:SV takes approximately half the time to administer and score as the PCL-R. Although Hare (1991) recommends that psychopathy measures be used in conjunction with collateral information such as medical, employment, and schooling records, the PCL:SV may be scored without criminal history information and is therefore more appropriate for use in non-forensic settings (Hart et al., 1995). In addition, the PCL:SV has been shown to yield valid scores on the basis of interview alone. Forth et al. (1996) found no significant differences between PCL:SV scores rated with collateral information and those rated without.

The PCL-R and the PCL:SV are restricted psychological tools. Their use is limited to suitably qualified personnel such as those with an advanced degree in the behavioural sciences (Hare, 1991; Hart et al., 1995). Alternatively, the P-Scan (Hare & Herve, 1999) may be used by non-clinicians in mental health or correctional settings to estimate the risk posed by an individual. It is not a diagnostic tool, and high scoring individuals should be referred to a clinician for a full diagnostic assessment of psychopathy. It is a 90-item rating scale, with three 30-item facets. Criticism of the two factor structure of the PCL-R (see Cooke & Michie, 2001) led to development of the P-Scan's three facet structure. These are: the interpersonal facet (with items relating to glibness, grandiosity, lying, etc.); the affective facet (with items relating to

shallow affect, remorselessness, lack of empathy, etc.); and the lifestyle facet (with items relating to impulsivity, antisocial behaviours, lack of goals, etc.). It can be seen from this description that the interpersonal and affective facets of the P-Scan are reminiscent of the personality-based Factor 1 of the PCL-R and PCL:SV, and the lifestyle facet is similar to the behaviourally based Factor 2.

At the time of writing, Elwood, Poythress, and Douglas (in press) have provided the only available reliability and validity information specific to the P-Scan. Following investigations involving 100 male and female undergraduate students, these authors found excellent reliability ($r_s \sim .90$) for the three sub-scales of the P-Scan and modest external validity ($r_s = 0.22-0.24$). However this study relied on participants rating each other in friendship-based dyads with little training in the psychopathy construct, which is contrary to recommendations by the P-Scan's authors (Hare & Herve, 1999).

Attentional Bias Measures

In order to investigate attentional bias, responses to the modified (emotional) Stroop task and the dot probe task will be measured. Williams, Mathews, and MacLeod (1996) have comprehensively reviewed the modified Stroop. This task requires participants to name the colour of ink in which words are written. Slower reaction times have consistently been found when threatening or emotional words (as opposed to neutral words) are related to participants' psychopathology. By interfering with attentional processes, participants are less efficient in correctly naming emotional words. This represents an attentional bias towards threatening stimuli (Egloff & Hock, 2003).

Mogg and her colleagues (e.g., Bradley, Mogg, Falla, & Hamilton, 1998; Mogg et al., 2000) investigated attentional bias through use of the dot probe paradigm. In this task, two words are presented on a computer screen simultaneously (one threat-related, one neutral), followed by a dot probe in the location of one of the words. Participants respond to the location of the dot probe. If there is an attentional bias towards threat words, participants will respond faster to the probe when it appears in that location. Responses to both the Stroop and the dot probe tasks can be indicative of a bias toward threat words, away from threat words (faster when the probe is in the neutral word's position), or no bias (Egloff & Hock, 2003).

Whether or not the Stroop and the dot probe tasks both measure attentional bias is equivocal. Mogg et al. (2000) argue that there is no association between the two tasks, whereas others argue that there is a slight (Brosschot, de Ruiter, & Kindt, 1999) to moderate (Egloff & Hock, 2003) relationship between the assessment of attentional bias by these tasks. Both tasks are used predominantly in research related to anxiety, although Egloff and Hock selected non-clinical participants for their study. There appears to be no available research at this stage which uses either task in specific studies of impulsive-aggression, antisocial personality or psychopathy. The conflicting conclusions regarding the ability of these tasks to measure attentional bias, coupled with the scarcity of attentional bias investigations with the current population, justifies the use of both tasks in order to maximise the opportunity to capture attentional bias effects. As an additional precaution, the dot probe task will be administered using verbal stimuli (words) in one procedure and facial stimuli in another in order to capture any effects of the additional salience that facial stimuli may provide (Bradley et al., 1998).

The following chapter will identify base rates of impulsive-aggression in female and male university students. From this basis, female students will then be selected for further investigation with specific reference to impulsive-aggression and psychopathy.

Chapter 3

Impulsivity and Aggression in a University Sample

Rationale

One aim of this study was to establish base rates of impulsive-aggressiveness in university students. A further aim was to compare the present sample against normative samples for each of the self-report measures to be used in later studies. This was to establish whether the current sample of psychology undergraduates was sufficiently representative on the scales being employed for selection of experimental participants. An additional aim was to investigate the demographic characteristics of the sample by means of a background questionnaire.

A number of self-report measures have been selected based on their ability to help build a profile of impulsive-aggressive women. As discussed in Chapter 2, the I7 Impulsivity Questionnaire (Eysenck et al., 1985a) will be used to identify levels of impulsivity and the Aggression Questionnaire (Buss & Perry, 1992) will be used to identify levels of aggressiveness. Additional measures include the Conflict Tactics Scale (Straus, 1979), the Barratt Impulsiveness Scale (BIS-11; Patton et al., 1995), the Lie Scale from the Eysenck Personality Questionnaire (EPQ; Eysenck, Eysenck, & Barrett, 1985), the Social Desirability Scale (Crowne & Marlow, 1964), and a modified version of the Anger Expression Scale (Spielberger, 1988).

The Conflict Tactics Scale has been used widely in aggression research, including studies of female aggression (Archer, 2000a; George, 2003). It investigates participants' perceptions of the types of strategies employed by parents (or other caregivers) to resolve interpersonal conflict. It yields three subscales reflecting different conflict tactics: reasoning, verbal aggression, and physical aggression. The

BIS-11 (Patton et al., 1995) was chosen to provide a comparison of impulsiveness styles between males and females.

The Lie Scale from the EPQ (Eysenck et al., 1985b) and the Social Desirability Scale (Crowne & Marlow, 1964) were included in the current study for two main reasons. Firstly, as the authors of these scales attest, self-reports by experimental participants are often prone to influence from social desirability factors. The Social Desirability Scale gives a quantifiable measure of these influences, and the EPQ Lie Scale tests the overall validity of participants' self-reports. The latter will be particularly important at later stages of the current investigation when women with characteristic impulsive-aggression and (potentially) psychopathic tendencies will be compared with other women. As dissimulation and lying are characteristic attributes of the psychopath (Hare, 1991) it is important to measure these factors. The Social Desirability Scale and the EPQ Lie Scale have been shown to have strong positive correlations with one another (Lara Cantu, 1990; Liberty, 1994), although they are not considered interchangeable (Liberty, 1994).

The Anger Expression Scale is a component of the State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988). The Anger Expression Scale has three subscales: anger-in, anger-out, and anger control. Anger-in refers to anger that is expressed inwardly towards the self. Anger-out refers to anger expressed outwardly towards others or objects. Anger control refers to the degree with which the expression of anger is controlled or "bottled up". This measure was selected due to its ability to identify participants' expressions of anger. This has particular relevance to the study of impulsive-aggression. The STAXI has 44 items and a 24-item research version is also available. However, for the purposes of this study the 12-item screening version described by Spielberger, Krasner, and Solomon (1988) was used

(see Appendix A). The Anger Expression Scale has been included to gauge overall anger levels for impulsive-aggressive women and their peers. Although anger is not always associated with aggressive behaviours (Blackburn, 1989), it is relevant to have an understanding of this construct at an early stage of this research. All of the above measures were selected for their relevance to later studies involving impulsive-aggressive women. However, prior to participant selection it is relevant to have an overall impression of the base rates of impulsivity, aggression, anger, familial conflict, and response validity in a university sample.

It was hypothesised that male participants would score higher on measures of aggression and impulsivity than female participants, and female participants would have higher scores than males on the empathy subscale of the I7 Impulsivity Questionnaire and on the Social Desirability Questionnaire. It was also expected that results from the Social Desirability Scale and the EPQ Lie Scale would indicate that most participants' responded to self-report measures in an appropriately valid manner.

Method

Participants

Between 1999 and 2002, first year psychology students at the University of Tasmania were asked to complete a number of questionnaires. Participation was undertaken on a voluntary basis, as part of course requirements. The number of participants who completed each of the questionnaires is provided in Table 3. Not all participants completed all questionnaires. Participants' ages ranged from 17 to 75 years. There was one age outlier, a 75 year old male (the age range for the remainder of the male sample was 17 to 50 years). In the interests of taking a "snapshot" of the undergraduate sample (including mature age students) this participant's data was not

excluded. Means (and standard deviations) for age and age ranges for male and female participants are presented in Table 4.

Table 3.
Number of participants who completed each questionnaire.

Scale	Male	Female	Total*
I7 Impulsivity Questionnaire	220	686	910
EPQ Lie Scale	137	421	558
BIS-11 Impulsiveness Scale	137	421	558
Aggression Questionnaire	137	422	559
Conflict Tactics Scale	68	223	291
Anger Expression Scale	66	230	296
Social Desirability Scale	70	236	
Background Questionnaire	75	241	306

* Not all participants identified their sex

Of the 910 participants, six chose not to provide identifying information such as age or sex. A one-way ANOVA revealed that male participants tended to be older than female participants at the .01 alpha level, $F(1,901) = 5.13$, $MSE = 52.55$, $p = .02$. This trend was not expected to have a substantial effect on the results of this study, and was possibly due to the inclusion of the sole 75 year old male. This sample was not randomly selected and is specific to the local psychology undergraduate population, which substantially under-represents male students.

Table 4.
Mean age of participants (SDs in parentheses).

	Male	Female	Total*
<i>n</i>	220	686	910
Age	23.06 (8.40)	21.55 (7.12)	21.91 (7.47)
Age Range	17-75	17-56	17-75

As can be seen in Figure 1, there were a number of age outliers, most notably one participant aged 75. Age outliers were not excluded from analysis as the intention was to take a broad “snapshot” of the student body, including mature aged students.

Materials

To measure impulsiveness and impulsivity, the I7 Impulsivity Questionnaire (Eysenck et al., 1985a) and the BIS-11 (Patton et al., 1995) were employed. The I7 is widely used for measuring impulsiveness, venturesomeness, empathy, and impulsivity. The BIS-11 separately assesses the cognitive and behavioural aspects of impulsiveness. Its subscales include attentional impulsiveness (the inability to maintain focused attention), motor impulsiveness (the tendency to be physically, as opposed to cognitively, impulsive), and future non-planning (the tendency to act without regard to future consequences). The Aggression Questionnaire (Buss & Perry, 1992) was employed to measure self-reported aggression.

The Lie Scale from the EPQ (Eysenck et al., 1985b) was embedded within the I7 to act as a validity measure. Participants with very high Lie scores (i.e., a lack of validity to their responses) were not excluded from this phase of investigation, as a broad understanding of overall responses was desired at this stage. In addition to the core screening questionnaires outlined above, participants were administered the Social Desirability Scale (Crowne & Marlowe, 1964), the Conflict Tactics Scale (Straus, 1979), and an abbreviated version of Spielberger’s Anger Expression Scale (Spielberger et al., 1988). In addition to the above-mentioned experimental questionnaires, participants completed a 65-item background questionnaire that assessed drug and alcohol history, psychiatric history, history of aggression, and other psychosocial factors (see Appendix B).

Procedure

First year psychology students were screened using the above questionnaires in order to identify potential participants for further research. Data was collected in 1999, 2000, 2001, and 2002. Questionnaires were presented in the form of a booklet, and participants completed these either at home or in class. Participants were advised that their scores on the questionnaires formed part of a research project investigating personality characteristics and that they might be invited to participate further. Those who did not wish to be identified were encouraged to complete the questionnaires supplying only their age and sex. All studies reported in this thesis had the approval of the Human Ethics Committee of the University of Tasmania (see Appendix C for participant information sheet and consent form).

Design and Data Analysis

The independent variable was sex (male, female). The dependent variables for the published questionnaires were the scores from each scale. The dependent variables for the background questionnaire were the percentage of participants responding to yes/no items and means for the quantitative items. Aside from percentage data, raw data was analysed by ANOVAs or MANOVAs and post hoc SNKs as appropriate. Alpha was set conservatively at $p < .01$ due to the large number of one-way ANOVAs. Inferential testing of percentage data was not conducted as there were too few participants responding to many items to justify categorical analyses.

Results and Discussion

I7 Impulsivity Questionnaire and EPQ Lie Scale

Highest possible scores on the subscales of the I7 were 19 for the impulsiveness subscale, 16 for the venturesomeness subscale, and 19 for the empathy subscale. Impulsivity scores were derived by summing the scores from the impulsiveness and venturesomeness subscales. The EPQ Lie Scale has a total possible score of 21. Data were broken down by sex for further analysis by one-way ANOVA. Data from participants who did not indicate their sex (*n*=4) were excluded from the between-groups (sex) analyses.

Means and standard deviations are shown in Table 5, along with adult norms for the I7 Impulsivity Questionnaire (Eysenck et al., 1985a) and the EPQ Lie Scale (Eysenck et al., 1985b). Although age norms are provided by these authors for each of these scales, the present sample’s age range (17-75) indicated that use of total normative sample norms were more appropriate for comparison.

Table 5.
Mean scores (and standard deviations) from the I7 Impulsivity Questionnaire and the EPQ Lie Scale. Normative data are also provided.

I7 Subscale	Total (<i>n</i> =910)	Male (<i>n</i> =220)	Female (<i>n</i> =686)	Adult Norms	
	Mean (SD)	Mean (SD)	Mean (SD)	Male	Female
Impulsiveness (max.=19)	8.42 (4.27)	8.64 (4.31)	8.35 (4.24)	*6.55 (4.43)	*7.48 (4.24)
Venturesomeness (max.=16)	8.92 (3.76)	10.91 (3.28)	8.28 (3.69)	*7.64 (4.25)	*6.51 (4.0)
Empathy (max.=19)	14.02 (3.16)	12.40 (3.41)	14.56 (2.89)	*12.01 (3.31)	*14.32 (2.92)
Impulsivity (max.=35)	17.34 (6.48)	19.55 (6.18)	16.63 (6.43)	n/a	n/a
Lie (max.=21)	6.52(3.52)	6.16 (3.41)	6.64 (3.55)	**7.10 (4.28)	**6.88 (3.97)

*Eysenck et al. (1985a); **Eysenck et al. (1985b)

One-way ANOVAs were performed to identify significant differences between male and female participants. As expected, male participants scored significantly higher than female participants on the venturesomeness subscale ($F(1,904) = 89.74$, $MSE = 12.92$, $p < .001$) and on impulsivity scores ($F(1,904) = 35.11$, $MSE = 40.58$, $p < .001$), and female students scored significantly higher than males on the empathy subscale, $F(1, 904) = 84.98$, $MSE = 9.14$, $p < .001$. There were no significant sex differences for impulsiveness or for EPQ Lie Scale scores.

To better compare the magnitude of sex differences against those of the normative sample, effect sizes were derived by dividing the difference of male/female means by the average standard deviation $((\text{male SD} + \text{female SD})/2)$. The effect size for the current sample on the impulsiveness scale was .07, compared with the normative sample (.21). The effect size for venturesomeness was .75 (compared with .27), .69 for empathy (compared with .74), and for the lie scale .14 (compared with .05). An effect size comparison for impulsivity was not possible as norms were not provided for this conglomerate score. Although effect sizes for the current sample are greater than the normative sample's on the venturesomeness subscale and the lie scale, and lower than the normative sample's on the impulsiveness and empathy subscales, all means are within one standard deviation of the normative means, as seen in Table 5.

In summary, results for the I7 Impulsivity Questionnaire were as predicted. Males scored significantly higher on the venturesomeness subscale and the conglomerate impulsivity score than females, and female participants scored significantly higher on the empathy subscale. The present findings are in line with those of Eysenck et al. (1985a), whose normative results indicated higher

venturesomeness and impulsivity (impulsiveness + venturesomeness) for males, higher empathy for females, and no sex differences on impulsiveness.

Significant sex differences were not found for mean scores on the EPQ Lie Scale. There is little difference between means for participants in the present sample and for those in the normative sample of Eysenck et al. (1985b). Overall, present results on the I7 and the EPQ Lie Scale were well within one standard deviation of norms.

BIS-11 Impulsiveness Scale

Overall data (n=558) from the BIS-11 impulsiveness scale were collated. Subscale scores were summed to provide a total impulsiveness score. Data were then broken down by sex for further analysis by one-way ANOVA. Mean scores for the total sample, and for the breakdown by sex are shown in Table 6. Also provided are undergraduate norms for total impulsiveness (Patton et al., 1995). Unfortunately norms for each of the subscales were not available.

Table 6.

Mean subscale and total scores (standard deviations in parentheses) from the BIS-

11. Adult norms for total impulsiveness scores are also shown (Patton et al., 1995)*

BIS-11	Total (n=558)	Male (n=197)	Female (n=421)
Scale	Mean (SD)	Mean (SD)	Mean (SD)
Attentional Impulsiveness (max.=32)	18.75 (3.06)	19.26 (2.91)	18.59 (3.09)
Motor Impulsiveness (max.=40)	22.26 (4.28)	22.58 (4.26)	22.16 (4.28)
Future Non-Planning (max.=48)	25.94 (4.73)	26.61 (5.15)	25.72 (4.57)
Total Impulsiveness (max.=120)	66.95 (10.25)	68.44 (10.40)	66.47 (10.16)
Undergraduate Norms*	63.82 (10.17)	64.94 (10.19)	63.32 (10.16)

No significant sex differences were found between males and females on the BIS-11. A trend towards a significant sex difference was found for the attentional impulsiveness subscale ($F(1,556) = 4.98$, $MSE = 9.28$, $p = .03$) with male participants tending to score higher than female participants. This result suggests that adult males may have a tendency towards greater difficulties in attentional maintenance in comparison to females. Effect sizes were derived for total impulsiveness scores. The current sample yielded a between sex effect size of .19, and the normative data resulted in a similar effect size of .16. From their normative studies, Patton et al. (1995) did not find significant differences between male and female undergraduates (or for other clinical samples) for total impulsiveness scores. Although slightly higher than means from the normative sample, the current results are well within one standard deviation of all total impulsiveness norms.

Aggression Questionnaire

Overall group data ($n=559$) from the Aggression Questionnaire were collated. Subscale scores were summed to provide a total aggression score. Mean scores for the total sample, and for the breakdown by sex are shown in Table 7. Also provided for comparative purposes are Buss and Perry's (1992) psychology student norms for each aggression subscale and for total aggression.

One-way ANOVAs were performed to identify significant differences between male and female participants' aggression scores. Highly significant sex differences were found for total aggression ($F(1,557) = 14.28$, $MSE = 323.84$, $p < .001$) and the physical aggression subscale ($F(1,557) = 53.03$, $MSE = 46.78$, $p < .001$) with male participants scoring higher than female participants. Males tended to score higher than females on the verbal aggression subscale, $F(1,557) = 5.20$, MSE

= 17.16, $p = .02$. This result may seem contrary to the literature regarding the physical nature of male aggression and the indirect nature of female aggressive behaviours (Pepler & Craig, 1999). However verbal aggression is not considered an indirect form of aggression, it is a direct and open act of aggression which may include yelling or threats of physical violence (Buss & Perry, 1992). No significant sex differences at the .01 level were found between males and females on the anger or hostility subscales of the Aggression Questionnaire.

Table 7.

Mean scores (standard deviations in parentheses) from the Aggression

*Questionnaire. Undergraduate norms are also shown. *Buss and Perry (1992)*

	Total (n=559)	Male (n=137)	Female (n=422)	Norms*	
Aggression Subscale	Mean (SD)	Mean (SD)	Mean (SD)	Male	Female
Physical Agg. (max.=45)	18.11 (7.15)	21.80 (8.89)	16.91 (6.03)	24.3 (7.7)	17.9 (6.6)
Verbal Agg. (max.=25)	13.04 (4.16)	13.74 (4.30)	12.82 (4.09)	15.2 (3.9)	13.5 (3.9)
Anger (max.=35)	15.92 (5.61)	16.10 (5.80)	15.86 (5.55)	17.0 (5.6)	16.7 (5.8)
Hostility (max.=40)	18.70 (6.47)	19.16 (6.52)	18.55 (6.45)	21.3 (5.5)	20.2 (6.3)
Total Agg. (max.=145)	65.76 (18.21)	70.81 (20.39)	64.12 (17.15)	77.8 (16.5)	68.2 (17.0)

Means for the present sample were well within one standard deviation of Buss and Perry's (1992) student norms for each subscale and for total aggression scores on the Aggression Questionnaire. Effect sizes were notably smaller for the present sample compared with the normative sample on all subscales (physical aggression .66 vs .90; verbal aggression .22 vs .44; hostility .09 vs .19; total aggression .36 vs .57). The only exception was the anger subscale which yielded a similar effect size to that of the normative sample (.04 vs .05). The smaller effect sized may reflect evidence for

the notion that females are more aggressive than they once were (Cunningham, 2000) and that the sex difference in aggression is diminishing. Alternatively this could be a result of the sampling bias against male students. Further investigation is required to clarify this.

To summarise the results from the Aggression Questionnaire, male participants reported being a great deal more physically aggressive than did female participants. This was as hypothesised. Males also yielded significantly higher total aggression scores than females. Males tended to score higher on the verbal aggression subscale, but this difference did not reach significance at the .01 level. Males and females did not differ significantly in levels of anger or hostility. In other words, men and women reported themselves to be equally capable of the anger and hostility which may precede aggressive acts, but men may be more likely to follow this up with overt physical and verbal aggression.

Buss and Perry's (1992) means for male and female participants' scores on the Aggression Questionnaire reveal similar patterns. Their results indicate that men are a great deal more physically aggressive than women, that they are moderately more verbally aggressive than women, and that they are only a little more hostile than women. In their normative sample men and women did not differ significantly in levels of self-reported anger. On the anger subscale, effect sizes were comparable across both samples. Buss and Perry (1992, p.457) state that women 'become just as angry as men but inhibit expression of this anger by means of instrumental aggression'. This is relevant when considering that women's motivation for aggression may be the same as men's but they express it differently, but perhaps just as harmfully, in the form of relationship disruption and other indirect means

(Leschied et al., 2000). An example of this is the indirect bullying commonly used by girls compared to the more physical bullying associated with boys.

Conflict Tactics Scale

Raw scores from the Conflict Tactics Scale were collated for male and female participants' ratings of their parents on each of the three conflict tactics. Not all participants rated both parents. Means and standard deviations for male and female participants' ratings parents on each subscale are shown in Table 8. In addition, mean ratings have been converted to percentages for ease of visual comparison between scales. As can be seen, participants rated parents much lower on use of violence as a conflict tactic, and female participants tended to rate their fathers as proportionally more violent than did male participants. This difference was not significant however.

Table 8.

Mean scores (standard deviations in parentheses) and percentage ratings for the Conflict Tactics Scale subscales for participants' ratings for each parent.

	Conflict Tactics Scale Subscales					
	Reasoning (max.=16)		Verbal Aggression (max.=20)		Violence (max.=20)	
	Mean (SD)	% Rating	Mean (SD)	% Rating	Mean (SD)	% Rating
Mothers						
Males n=68	7.51 (3.02)	46.94	7.10 (4.06)	35.50	1.49 (3.08)	7.45
Females n=223	7.92 (3.37)	49.50	6.72 (3.41)	33.60	1.17 (2.63)	5.85
Total n=291	7.83 (3.29)	48.94	6.81 (3.57)	34.05	1.25 (2.74)	6.25
Fathers						
Males n=66	6.50 (3.61)	40.63	6.40 (3.71)	32.00	1.54 (2.91)	7.70
Females n=217	6.98 (3.67)	43.63	6.84 (3.95)	34.20	1.79 (3.97)	8.95
Total n=283	6.87 (3.66)	42.94	6.74 (3.89)	33.70	1.74 (3.75)	8.70

A trend for a two-way interaction was found for sex of participant x parent, $F(1,289)=3.60$ MSE = 5.12, $p=.06$. As can be seen in Figure 1, male participants rated their fathers lower on the Conflict Tactics Scale than did female participants ($p<.05$). One-way ANOVAs were conducted within subscales and revealed that participants' rated their mothers' use of reasoning as a means of conflict resolution significantly higher than their fathers', $F(1,289) = 16.33$, MSE = 6.14, $p<.001$. No other pairs of means reached significance.

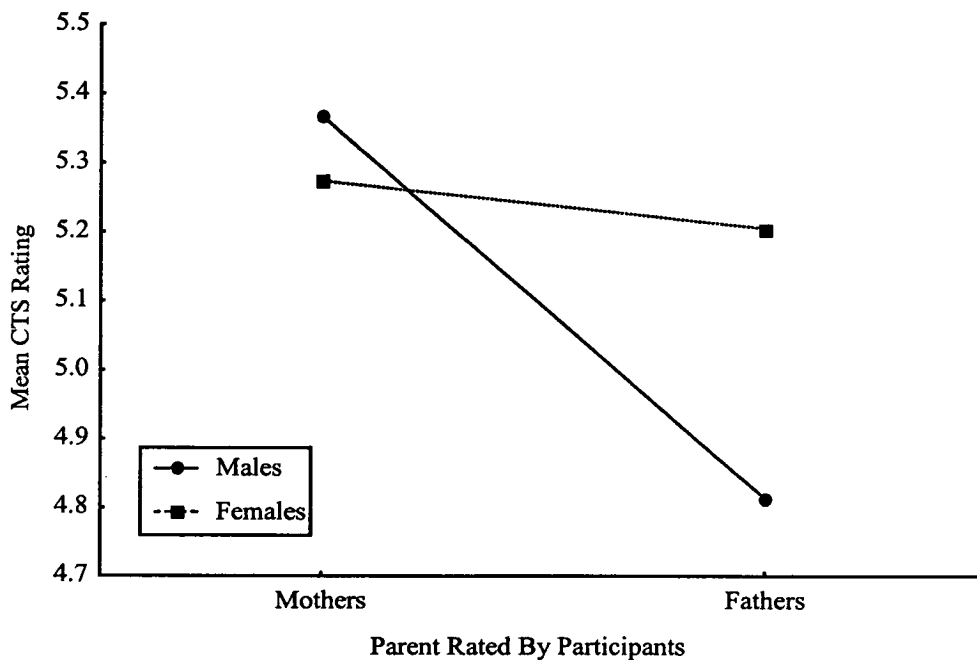


Figure 1. Male and female participants' mean ratings of their mothers and fathers on the Conflict Tactics Scale.

In other words, mothers were reported as more likely to use reasoning to resolve conflict than were fathers. However mothers and fathers differed little in their use of verbal aggression as a conflict resolution tactic. They also did not differ significantly in their use of violence within the home. Male and female participants

did not significantly differ in their ratings of mothers or fathers on any of the subscales.

In comparison to Straus' (1979) normative sample, the current participants' ratings of their mothers and their fathers on the reasoning and verbal aggression subscales were at the 65th percentile. Participants' mean ratings of their mothers' use of violence was at the 85th percentile, while their fathers' mean rating was at the 90th percentile, indicating that overall participants reported that their parents engaged in violence as a means of conflict resolution more often than was average for the 1979 normative sample.

These normative comparisons are disturbing, particularly for results on the violence scale. These suggest that participants in the current study were in the top 10-15% of the population in terms of reported parental violence as a means of conflict resolution. This result seems extreme. However, it may be more plausible to consider that in recent years government and community bodies have actively worked towards an increased awareness of the issues relating to domestic violence and spousal abuse. As a result of this increased awareness, it is possible that an increased rate of willingness to report such problems within the home has followed. In other words, it may be that participants today are more willing to report parental violence than were participants of the 1979 sample. This however does not necessarily mean that familial violence is more common now than it was in 1979.

Anger Expression Scale

The highest possible score for each of the three subscales of the 12-item abbreviated version of the Anger Expression Scale was 12 (Spielberger et al., 1988). The highest possible total score (derived by Spielberger's (1988) formula: Anger Out + Anger In –

Anger Control + 16) was 28. Spielberger's use of the relatively arbitrary additive 16 was designed to remove any negative scores from the equation. Despite the abbreviated scale used here, the additive 16 was thought to have the same role and was therefore unchanged.

Overall data (n=296) from the Anger Expression Scale were collated. Subscale scores were combined following the above formula to provide a total anger expression score. Means and standard deviations for each subscale and for total anger expression scores are presented in Table 9. As can be seen in the table, males scored higher than females on anger-in and anger control, but females scored higher than males on anger-out.

The one-way ANOVA conducted on total anger expression scores showed that female participants tended to score higher than males overall, $F(1,29) = 6.45$, $MSE = 20.45$, $p=.01$).

Table 9.

Mean scores (standard deviations in parentheses) from the Anger Expression Scale subscales and for total anger expression.

Anger Scale	Male n=66 Mean (SD)	Female n=230 Mean (SD)	Total n=296 Mean (SD)
Anger-out (max.=12)	3.89 (2.29)	4.40 (2.45)	4.29 (2.42)
Anger-in (max.=12)	7.02 (2.84)	6.33 (2.65)	6.48 (2.70)
Anger Control (max.=12)	7.53 (2.57)	5.75 (2.47)	6.15 (2.59)
Total Anger Ex (max.=28)	19.38 (4.71)	20.98 (4.47)	20.63 (4.56)

A two-way MANOVA for sex (male/female) x subscale (anger control/anger-out/anger-in) conducted on the data yielded a significant interaction, Rao R $(2,293)=7.32$; $p<.001$. A significant main effect for sex was found with females

scoring higher than males, $F(1,29)=13.20$, $MSE = 4.94$; $p<.001$. A significant main effect for subscale was also found ($Rao R(2,293)=45.95$; $p<.01$) with participants scoring lower on the anger-out subscale than on the anger control subscale and the anger-in subscale ($ps<.01$). Male participants scored significantly higher than female participants on the control subscale ($p<.01$). There were no other significant sex differences. The interaction of sex and anger expression subscales is shown in Figure 2.

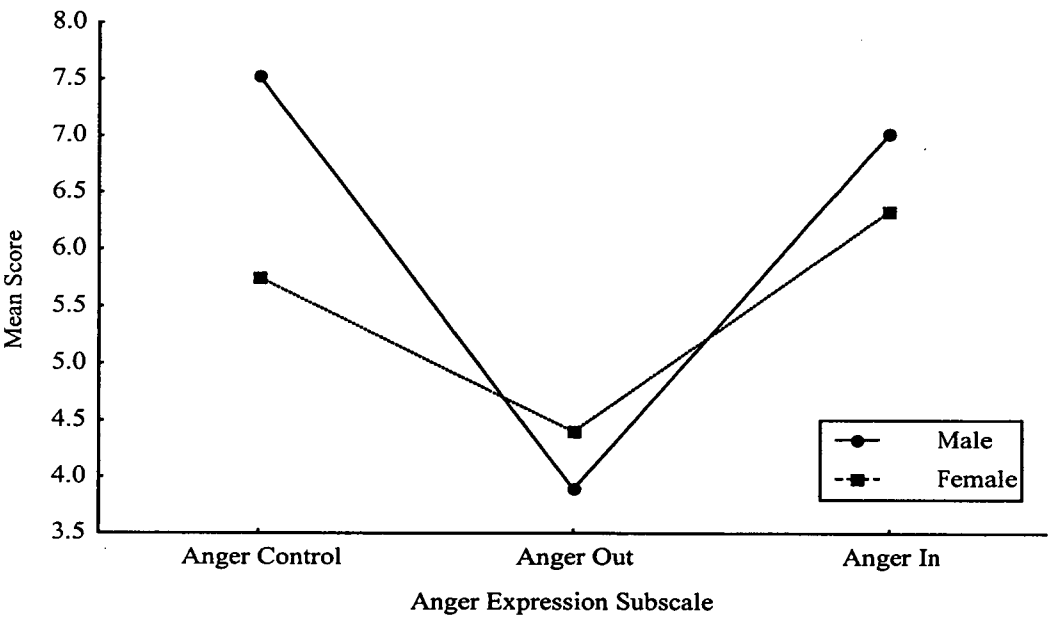


Figure 2. Mean subscale scores for male and female participants on an abbreviated version of the Anger Expression Scale (Spielberger et al., 1988).

To summarise, female participants scored higher on total anger expression scores. Spielberger (1988) found slightly elevated scores for female college students. This illustrates that overall women tend to express anger more frequently than men, but this sex difference becomes more complex when assessing how this anger is expressed. Males and females reported similar levels of both outwardly-expressed and inwardly-expressed anger. However males reported a higher degree of anger control

than did female participants, suggesting that female participants may be less likely to control their anger. There is debate within the literature about whether or not loss of anger control necessarily leads to violence, especially in relation to women. Campbell (1993) argues that anger and aggression exist on a continuum, but Thomas (1993) and Blackburn (1989) argue that violence and aggression can occur without anger, and vice versa.

Social Desirability Scale

Participants' raw scores from the Social Desirability Scale were collated. Means and standard deviations are shown in Table 10, along with undergraduate student norms and percentiles provided by Crowne and Marlowe (1964). As can be seen, males and females show similar mean social desirability scores.

Table 10.

*Mean scores (standard deviations in parentheses) from the Social Desirability Scale. Norms and percentiles are also provided *Crowne and Marlowe (1964)*

	Total (n=306)	Male (n=70)	Female (n=236)	% ile*	% ile*
	Mean (SD)	Mean (SD)	Mean (SD)	Male	Female
Social Desirability Scores (max.=33)	14.59 (5.71)	14.36 (6.52)	14.66 (5.46)	47	41
Undergraduate Norms*	n/a	15.06 (5.58)	16.82 (5.50)		

The one-way ANOVA conducted on the raw scores showed that males and females did not significantly differ in mean social desirability scores $F(1,304) = 0.15$, $MSE = 32.72$, $p = .70$. This was contrary to the expectation that females would score higher than males. In fact, the differences between males and females as reflected by effect sizes were much smaller for the present sample (.05) than for the normative

sample (.32). Similarly, a significant sex difference was not found for lie scores on the EPQ Lie Scale. This combined with the lack of sex differences in social desirability susceptibility may indicate that the influence of social desirability factors has changed for men since the inception of these two tests. Or, as suggested previously, this may be the result of the under-representation of males in the current sample.

Mean scores on the Social Desirability Scale were within one standard deviation of Crowne and Marlowe's undergraduate student norms. This indicates that there is no evidence that participants were overly influenced by social desirability factors in their responses. In conjunction with results for the EPQ Lie Scale this finding shows support for the appropriateness of participants' response styles to self-report questionnaires, as hypothesised.

Background Questionnaire

Male ($n = 75$) and female ($n = 241$) participants completed a 65-item background questionnaire. This questionnaire covered a wide range of psychosocial issues. These included medical and psychiatric history, drug and alcohol usage, childhood delinquency, history of fighting, illegal activity, victim of crime issues, parental education and occupation, perceptions of childhood discipline and family of origin, social support, and sexual activity.

Not all participants completed all items, indeed participants were instructed to leave blank any items they found too confronting. Results are presented in the format of percentages of male and female participants who responded to certain items. In some places, questionnaire items had sub-sets of questions (e.g., Do you smoke cigarettes; If so do you smoke daily). In these cases, results are presented firstly as the percentage of participants who endorsed the initial question (e.g., Do you smoke

cigarettes) and then as the percentage of *those* participants who endorsed the sub-set questions (e.g., the percentage of smokers who smoke daily). These are clearly marked in tables within this section as items in parentheses, which are subsets of the previous item. In addition, some items were collapsed to provide a more meaningful statement of results (e.g., descriptions of who participants fought with as children). As there was such a large quantity of data collected, only the most relevant results are presented here. The results for male and female undergraduates' responses for each item of the background questionnaire are shown in Appendix D.

In response to items relating to medical history, approximately 30% of participants reported a history of concussion and/or a loss of consciousness. Of these respondents, there was a greater percentage of males than females. Close to 12% of the sample reported currently taking prescription medications for a medical matter (contraceptive medications were excluded), while eight per cent reported currently taking psychiatric medications. Higher percentages of males (25%) than females (18%) reported taking each type of medication. A higher percentage of males (15%) than females (10%) reported having deliberately misused prescription medication.

Almost eight per cent of participants reported suffering some kind of trauma or injury at birth and/or that their mother drank alcohol while pregnant with them, as far as they knew. Males and females reported suffering birth trauma or injury at similar rates (around eight percent), but a slightly higher percentage of females (eight percent) than males (seven percent) reported that their mothers drank alcohol while pregnant with them (as far as they knew).

Table 11 outlines the number and percentage of male and female participants who responded to items inquiring about drug and alcohol usage. As can be seen, males and females did not differ greatly in their reported substance use. Over 18% of

participants reported smoking cigarettes, and 81% of smokers reported smoking everyday. A greater percentage of females than males reported smoking cigarettes, but a higher percentage of males than females reported smoking every day. In addition, when asked to estimate their average weekly consumption of cigarettes, males reported smoking more cigarettes per week ($M=73.33$, $SD = 67.94$) than female participants ($M=50.97$, $SD = 54.74$). A one-way ANOVA did not yield a significant difference between these means, $F(1,67)=1.76$, $MSE = 3335.07$, $p>.01$.

Table 11.

Number and percentage of male and female participants responding to drug and alcohol history items on the background questionnaire.

	Male (n=75)		Female (n=241)		Total (n=316)	
	n	%	n	%	n	%
Smoke cigarettes	14	18.67	55	22.82	59	18.66
Of these, smoke every day	(11)	78.57)	(37)	67.27)	(48)	81.30)
Drink alcohol	63	84.00	205	85.06	268	84.75
Of these, drink everyday	(2)	2.67)	(5)	2.44)	(7)	2.61)
Smoke marijuana	18	24.00	45	18.67	63	19.92
Of these, smoke everyday	(3)	4.00)	(3)	6.67)	(6)	9.52)
Recreational drugs (e.g. cocaine/ecstasy)	9	12.00	13	5.39	22	6.69
Of these, use every month or two	(2)	22.22)	(4)	30.77)	(6)	27.25)
Of these, use a few times per year	(4)	44.44)	(1)	7.69)	(5)	22.73)
Of these, use rarely	(3)	33.33)	(9)	69.23)	(12)	54.64)
Lost consciousness from alcohol/drugs	24	32.00	61	25.31	85	26.88
Loss of memory from alcohol/drugs	43	57.33	133	55.19	176	55.56
Ever frightened by level of intoxication	29	38.67	100	41.49	129	40.82

* Figures in parentheses are subsets of the previous item.

Around 85% of participants reported drinking alcohol, but less than three per cent of drinkers reported drinking daily. A one-way ANOVA indicated a non-significant trend ($F(1,175)=5.03$, $MSE = 41.22$, $p=.03$) for males to estimate a higher

average number of standard drinks per week ($M = 7.61$, $SD = 6.20$) than females ($M = 5.13$, $SD = 6.49$).

Approximately 20% of participants reported smoking marijuana, with around 10% of these reportedly smoking daily. A higher percentage of males than female reported smoking marijuana, but of these respondents a higher percentage of females than males reported smoking marijuana daily. When marijuana-smoking participants were asked to estimate their average consumption, reporting methods varied (e.g., number of cones smoked, number of joints smoked, weight of marijuana bought). To break this down to an estimate of consumption, responses were converted to an average number of “cones” (the amount of marijuana mixed with tobacco that fills the cone of a bong). Despite a higher percentage of females reporting daily marijuana consumption, males reported smoking five times more cones per week on average ($M = 6.25$, $SD = 2.47$) than did female marijuana smokers ($M = 1.25$, $SD = 1.06$). However a one-way ANOVA did not yield a significant difference between these means, $F(1,2)=6.90$, $MSE = 3.63$, $p=.12$. However, the methods used to estimate this rate of consumption indicate that caution should be used in interpreting and generalising this result.

Almost seven per cent of participants reported use of recreational drugs such as cocaine or ecstasy. A higher percentage of males than females reported using recreational drugs. Between 22% (males) and 31% (females) of recreational drug users reported using these drugs every month or so, but the vast majority reported only occasional use.

Quite high rates of loss of consciousness (27%) and loss of memory of events (56%) as a result of intoxication were reported. A greater percentage of males than females reported having lost consciousness from drugs or alcohol, but similar

percentages of males and females reported having a loss of recollection of events (memory loss) from alcohol and/or drugs. Around 41% of participants reported having ever experienced a feeling of being frightened by their level of intoxication, with slightly higher percentages of females than males reporting this.

To summarise drug and alcohol findings, a higher percentage of females reported smoking cigarettes but a higher percentage of males reported smoking daily; similar percentages of males and females reported drinking alcohol; a higher percentage of males reported marijuana and recreational drug usage. Finally, a large proportion of participants reported having lost consciousness, having loss of memory for events, and/or having experienced fearfulness at their level of intoxication, as a result of drug and/or alcohol consumption. This suggests that large percentages of this undergraduate population have consumed alcohol and/or drugs well beyond their individual limits at least once, which may indicate binge consumption of these substances. Substance use is related to impulsivity, antisocial personality, and the behavioural characteristics of psychopathy (Hart et al., 1995; Lynam, Leukefeld, & Clayton, 2003; Verona et al., 2001). It may be that students with these characteristics are more likely to report binge-related substance issues. This will be further explored in the next chapter.

Table 12 shows the number and percentage of participants who responded to items relating to personal history of psychosocial problems. As can be seen, when asked if they had a history of alcohol problems, males were twice as likely as females to respond in the affirmative, which is consistent with the above.

Around 45% of participants reported a history of depression, anxiety, and/or mood swings. A greater percentage of females than males reported this history. Almost 19% of participants reported a history of having problems with temper/anger

management and nine per cent reported a history of violent behaviour. A greater percentage of males than females endorsed these variables. Seventeen per cent of participants reported having ever received psychiatric medication for these symptoms, which contrasts with the eight percent who reported current prescriptions of psychiatric medication.

More than 40% of the participants reported a history of suicidal thoughts and 17% of those respondents reported having attempted suicide (7.59% of the total sample). Thirty-seven per cent of participants reported that someone close to them had either attempted or completed suicide.

Table 12.

Number and percentage of male and female participants responding to personal psychiatric history items on the background questionnaire.

	Male (n=75)		Female (n=241)		Total (n=316)	
Personal psychosocial history:	n	%	n	%	n	%
Depression	30	40.00	110	45.64	140	44.25
Anxiety	29	38.67	108	44.81	137	43.29
Mood swings	29	38.67	122	50.62	151	47.85
Temper/anger management	18	24.00	41	17.01	59	18.66
Violent behaviour	13	17.33	14	5.81	27	8.55
Alcohol/other drug issues	11	14.67	18	7.47	29	9.17
Relationship difficulties	33	44.00	102	42.32	135	42.74
Prescribed medication for above	14	18.67	40	16.60	54	17.09
Suicidal thoughts	41	54.67	97	40.25	138	43.67
Attempted suicide	4	5.33	20	8.30	24	7.59
Close other attempted/committed suicide	22	29.33	95	39.42	117	37.04

* Figures in parentheses are subsets of the previous item.

While a higher percentage of males than females reported suicidal thoughts, a higher percentage of females than males reported suicide attempts. This is in contrast

with suicide statistics showing that females attempt suicide more often, but males complete suicide in greater numbers (Mission Australia, 2000; Snowden, 1997). These findings show that a large proportion of this sample identified significant suicide risk factors such as a history of depression, a history of suicidal thoughts and/or attempts, and the attempted or completed suicide of a significant other. Further investigation of these reported risk factors within university populations, along with clarification of the reported rates of suicidal thoughts versus attempts could assist with the provision of information relevant to the development of strategies for the prevention of youth suicide.

Table 13 shows the number and percentage of participants who responded to items relating to a family history of psychosocial difficulties. As can be seen below almost 30% of participants (a higher percentage of females than males) reported that a member of their family had suffered from depression. This is perhaps relevant to the 37% of participants (as seen in Table 12 above) who reported an attempted or completed suicide by someone close to them.

Table 13.
Number and percentage of male and female participants responding to family psychiatric history items on the background questionnaire.

	Male (n=75)		Female (n=241)		Total (n=316)	
Family psychosocial history:	n	%	n	%	n	%
Depression	19	25.32	74	30.67	93	29.41
Anxiety	13	17.33	34	14.10	47	14.88
Mood swings	13	17.33	40	16.58	53	16.78
Temper/anger management	12	16.00	33	13.70	45	14.25
Violent behaviour	9	12.00	21	8.71	30	9.50
Alcohol/other drug issues	15	20.00	33	13.70	48	15.20
Relationship difficulties	15	20.00	36	14.95	51	16.13

Between 9% and 16% of respondents reported a family member with problems associated with anger management, violent behaviour, and/or alcohol or drug issues. A greater percentage of males than females identified this family history. In general participants were less likely to report a family history of psychosocial problems than a personal history. The reasons for this are unclear, but could reflect an exaggerated or egocentric approach to responding. However, as stated previously, participants were shown to be responding appropriately to self-report measures, as evidenced by results on the Social Desirability and EPQ Lie Scales.

Table 14 shows the number and percentage of participants who responded to items relating to a childhood tendency to get into trouble at school. Almost 15% of participants reported a tendency to get into trouble when they were at school. A much greater percentage of males than females reported this tendency, with most tending to get into trouble for their behaviour. Higher percentages of males than females reported having ever been suspended or expelled from school.

Table 14.

Number and percentage of male and female participants who responded to items relating to being in trouble at school on the background questionnaire.

	Male (n=75)		Female (n=241)		Total (n=316)	
	n	%	n	%	n	%
Tend to get into trouble at school	24	34.67	22	9.13	46	14.56
Of these, trouble for talking	(8	30.77)	(7	31.82)	(15	32.57)
Of these, trouble for behaviour	(14	53.84)	(13	59.09)	(27	58.82)
Of these, trouble for work	(8	30.77)	(3	13.64)	(11	23.92)
Of these, trouble for aggression	(1	3.85)	(1	4.55)	(2	4.35)
Ever suspended from school	7	9.33	13	5.39	20	6.33
Ever expelled from school	2	2.67	2	0.83	4	1.27

* Figures in parentheses are subsets of the previous item.

Table 15 shows the number and percentage of participants who responded to items relating to a childhood tendency to get into fights or arguments. As can be seen, 37% of participants reported a tendency to get into fights or arguments as a child, of these only 27% report being the one who tended to start these fights. A greater percentage of males than females reported a tendency to fight or argue, but similar percentages of males and females reported starting fights.

Table 15.

Number and percentage of male and female participants who responded to items relating to a childhood history of fighting on the background questionnaire.

	Male (n=75)		Female (n=241)		Total (n=316)	
	n	%	n	%	n	%
Tended to get into fights/arguments as a child	31	41.33	86	35.68	117	37.04
Of these, did you tend to start them	(8	25.81)	(24	27.91)	(32	27.32)
Of these, fought/argued with sibling	(19	61.35)	(77	89.29)	(96	81.97)
Of these, fought/argued with parents	(12	38.76)	(53	61.73)	(65	55.56)
Of these, fought/argued with teachers	(4	12.90)	(4	4.65)	(8	6.84)
Of these, fought/argued with friends	(8	25.77)	(13	15.11)	(21	17.95)
Of these, fought/argued with other	(9	29.07)	(6	6.98)	(15	12.82)
Of these, fought/argued daily	(4	12.90)	(3	3.49)	(7	5.98)
Of these, fought/argued weekly	(14	45.16)	(48	55.81)	(62	52.91)
Of these, fought/argued fortnightly	(4	12.90)	(12	13.95)	(16	13.68)
Of these, fought/argued monthly	(9	29.03)	(16	18.60)	(25	21.37)
Of these, fought/argued rarely	(1	3.23)	(10	11.63)	(11	9.40)

* Figures in parentheses are subsets of the previous item.

The vast majority of participants who tended to fight or argue as a child reported that they were most likely to fight with a sibling (82%) and/or parents (56%), with this being true for a greater percentage of females than males. Where participants reported fighting with “others” (e.g., strangers) a higher percentage of males than females fought in defense of friends or over bullying. Only males reported fighting

with others/strangers over sports or games. When asked how often they tended to fight or argue as a child, the greatest proportion of participants (53%) reported having fought weekly (a higher percentage of females than males). A higher percentage of males than females reported fighting daily.

Table 16 shows the number and percentage of male and female participants who responded to items relating to adult tendencies to engage in fighting and/or arguing.

Table 16.

Number and percentage of male and female participants who responded to items relating to adult fighting/arguing behaviours on the background questionnaire.

	Male (n=75)		Female (n=241)		Total (n=316)	
	n	%	n	%	n	%
Do you tend to fight/argue as an adult	12	16.00	48	19.92	60	18.98
Of these, alcohol/drugs usually involved	(3	25.00)	(7	14.58)	(10	16.67)
Of these, ever used a weapon	(7	58.33)	(6	12.50)	(13	21.65)
Of these, last fought within last 2 days	(4	33.33)	(17	35.42)	(21	34.97)
Of these, last fought within last 2 weeks	(2	16.67)	(18	37.50)	(20	33.33)
Of these, last fought within last month	(3	25.00)	(11	22.92)	(14	23.31)
Of these, last fought within last year	(3	8.33)	(2	4.17)	(5	8.33)
Of these, did you start the fight	(1	8.33)	(19	39.58)	(20	33.33)
Of these, fought/argued with sibling	(5	41.67)	(17	35.46)	(22	36.63)
Of these, fought/argued with spouse	(2	16.67)	(12	25.00)	(14	23.31)
Of these, fought/argued with friend	(0	0)	(7	14.58)	(7	11.67)
Of these, fought/argued with other family	(3	25.00)	(13	27.10)	(16	26.67)
Of these, fought/argued with stranger	(2	16.67)	(4	8.33)	(6	10.00)
If you do fight/argument, mostly physical	3	4.00	1	0.41	4	1.27
If you do fight/argument, mostly verbal	21	28.01	65	26.95	86	27.25

* Figures in parentheses are subsets of the previous item.

As can be seen, around 19% of participants reported an adult tendency to get into fights or arguments (a greater percentage of females than males), of these alcohol

or drugs was usually involved for almost 17% of respondents and a weapon had been used by almost 22% of respondents. A greater percentage of males reported these elements than did females. Over 58% of males with a tendency to fight as an adult reported having ever used a weapon in a fight or argument, although the number of participants reporting this is small ($n=7$).

Asked when they last fought or argued, the majority of participants reported that this occurred within the previous day or two. Thirty-three per cent of respondents with an adult tendency to fight reported having started their last fight. This figure is made up by almost 40% of the female fighters, compared to only around 8% of the males. When asked who they tend to fight or argue with and what about, the majority of participants (37%) identified that they tend to fight with a sibling (a higher percentage of males than females), followed by other family members (27%) and spouse (23%). It was implied from responses that "other family member" seemed to indicate parents. A higher percentage of females than males reported fighting or arguing with their spouses (i.e., intimate partners). Fights with spouses were mostly about the "relationship", although female participants also specified "alcohol/drugs" and "chores". Twice as many males as females (in terms of percentage of sample) identified fighting with a stranger. Only females reported fighting or arguing with friends and this tended to be about "relationships" and "jealousy". This female-specific tendency to fight with friends both as a child and as an adult may relate to recent findings regarding bullying by girls. Leschied et al. (2000) reported that girls are just as prone to bully as boys, but that girls use more indirect strategies which revolve around social disruption and threats to the stability of friendships. Boys tend to be mostly physical in their bullying efforts, whether directly or through threats of physical violence.

Participants were asked whether their fights were mostly physical or verbal, regardless of general tendency and 27% of the population stated that if they did fight, it was usually a verbal fight. However, the number of respondents to this last question was higher than the number of respondents to the “tendency to fight” questions, but far lower than the overall number of participants. It is therefore unclear how representative this result is.

The current findings for both adult and childhood tendencies to engage in fights or arguments is of particular relevance to this investigation of impulsive-aggression in women and are consistent with previous findings relating to aggression. Canadian statistics for fighting behaviours in 12 and 13 year old boys and girls show that fights were reported within the previous 12 months by 55% of boys and 27% of girls (Cunningham, 2000). Similarly, more than a third of the present sample of undergraduates reported a tendency to fight or argue in childhood, and almost a third of those tended to start these fights. Females reported starting fights during childhood at comparable rates to males, but at far greater rates in adulthood. This is in line with George’s (2003) treatise on the misrepresentation in the aggression literature of women as victims. Both George and Archer (2000a) controversially report that women are more likely to be the aggressors in the case of intimate partner violence.

Participants fought or argued most frequently with siblings and parents, both in childhood and adulthood. Garnefski and Okma (1996) state that aggressive girls come from homes characterised by conflict with parents. The next chapter will compare aggressive and non-aggressive women and will therefore shed light on this. Connelly and O’Moore (2003) noted that bullies tend to demonstrate an ambivalent relationship with their parents and siblings. While the present questionnaire did not specifically ask if participants had ever been bullies, their tendency to start fights may

reflect bullyish behaviour. In addition to this, female participants in this study reported a tendency both as a child and as an adult to occasionally fight with friends over issues to do with jealousy. This is in line with conclusions drawn by Leschied et al. (2000) in a literature review on the topic, which showed that aggressive girls' indirect aggression and bullying is characterised by social disruption, gossip, and jealousy.

Participants were asked whether or not they had been victims of bullying at school, and if so how often this occurred and what they were bullied about. They were also asked whether or not their school had a specific policy to stop bullying. Thirty-three per cent of participants reported having been the victim of bullying at school. This figure represents 52% of the male participants and 27% of the females. Table 17 shows the frequency and topic of bullying suffered by these respondents. These results show that the majority of bullying victims (37%) stated that they had been bullied weekly or daily (22%).

Teräsahjo and Salmivalli (2003) state that in many cases bullies target students who they view are 'odd' or 'weird'. Bullies perceive these students as negatively deviant through their non-conformity to expected student behaviour and therefore will target them for "anything", leaving the victim perplexed as to how they might have earned such treatment. In the present study, the majority of respondents (33%) stated they were bullied about their appearance and/or weight. However, a large percentage of bullying victims (17%) stated they were bullied about "anything". A large percentage of females (but not males) reported having been bullied about their scholastic ability, intelligence, or being a "goody-goody". On the other hand 10% of males reported being bullied about being shy. These topics may reflect areas of personality or personal style that attract gender-specific bullying.

Table 17.

Number and percentage of male and female respondents who identified as victims of school bullying on the background questionnaire.

	Male		Female		Total	
	n (39)	% (52%)	n (65)	% (27%)	n (104)	% (33%)
Bullied daily	10	25.64	13	20.00	23	22.12
Bullied weekly	15	38.46	24	36.92	39	37.45
Bullied fortnightly	3	7.69	8	12.31	11	10.58
Bullied monthly	9	23.08	8	12.31	17	16.34
Bullied about appearance/weight	13	33.33	21	32.26	34	32.68
Bullied about race	2	5.13	5	7.69	7	6.73
Bullied about family	1	2.56	3	4.62	4	3.85
Bullied about being different	3	7.69	6	9.23	9	8.65
Bullied about "anything"	6	15.38	12	18.46	18	17.30
Bullied about ability/IQ" goody-goody"	1	2.56	9	13.85	10	9.62
Bullied about being shy	4	10.26	1	1.54	5	4.81
Bullied about sexuality	2	5.13	0	0	2	1.92
Physically attacked by bullies	24	61.54	15	23.08	39	37.45
Changed schools because of bullying	5	12.82	8	12.31	13	12.50

As seen in Table 17, a higher percentage of male bullying victims (62%) than female victims (23%) reported having been physically attacked by bullies, which is consistent with results from other research into bullying (Leschied et al., 2000). Equivalent percentages (12%) of males and females reported having changed schools as a result of bullying. Fifty-five per cent of the total sample of participants reported that their school had a policy against bullying, while 10% reported that their school had no such policy.

Participants were asked about their involvement in antisocial activities, for which they had either been in trouble with the police or could have been arrested for if caught. Table 18 shows the number and percentage of participants who responded to items relating to involvement in detected and undetected illegal activities. As can be

seen, almost 15% of participants reported having been in trouble with the police, and 38% of these respondents had faced charges as a result. The majority of respondents reported having been in trouble with the police for matters relating to alcohol or drugs (34%, with a higher percentage of males than females), followed by theft (21%, with a higher percentage of females than males). Respondents reported in equal percentages (15%) having been in trouble for driving offences (e.g., speeding) and DUI offences. However a greater percentage of females than males had been in trouble for driving offences whereas a slightly higher percentage of males than females had been in trouble for DUI offences. Only one respondent (female) reported having been in trouble with the police for matters of a violent nature.

Table 18.

Number and percentage of male and female participants who responded to items relating to illegal activity on the background questionnaire.

	Male (n=75)		Female (n=241)		Total (n=316)	
	n	%	n	%	n	%
Ever been in trouble with the police	25	33.33	22	9.13	47	14.88
Of these, for driving offences	(3	12.00)	(4	18.18)	(7	14.90)
Of these, for DUI	(4	16.00)	(3	13.64)	(7	14.90)
Of these, for delinquency	(3	6.82)	(0	0)	(3	6.38)
Of these, for theft	(4	16.00)	(6	27.27)	(10	21.28)
Of these, for alcohol/drugs	(10	40.00)	(6	27.27)	(16	34.01)
Of these, for violence	(0	0)	(1	4.55)	(1	2.13)
Of these, ever faced charges	(11	44)	(7	31.82)	(18	38.31)
Engaged in illegal acts but not caught	44	58.67	90	37.34	134	42.37
Of these, alcohol/drugs	(6	13.64)	(21	23.33)	(27	20.16)
Of these, driving/DUI	(1	2.27)	(6	6.67)	(7	5.22)
Of these, delinquency	(3	6.82)	(0	0)	(3	2.24)
Of these, theft	(28	63.64)	(58	64.44)	(86	64.10)
Of these, prostitution	(1	2.27)	(1	1.11)	(2	1.49)
Of these, multiple serious offences	(1	2.27)	(1	1.11)	(2	1.49)

* Figures in parentheses are subsets of the previous item.

Large percentages of both male and female participants (42% of the total sample) reported having engaged in illegal acts for which they could have been arrested if caught, with a higher percentage of males (59%) than females (37%) reporting this. Most of these respondents (64%) reported having engaged in theft (ranging from shoplifting to burglary). A greater percentage of females compared to males reported that they could have been arrested for alcohol or other drug matters (ranging from underage drinking to drug dealing). Only one male and one female reported having engaged in prostitution and/or multiple serious offences.

Participants were then asked about their experiences of violence, including witnessing domestic violence and being victims of crime themselves. Table 19 shows the number and percentage of participants who responded to these items. Twenty-nine percent of participants reported having been a victim of crime. This represents a high proportion of the current sample, but is less than those who had admitted to engaging in illegal acts for which they had not been caught (42%).

Table 19.

Number and percentage of male and female participants who responded to items relating to experience of violence and other crime.

	Male (n=75)		Female (n=241)		Total (n=316)	
	n	%	n	%	n	%
Witnessed domestic violence	42	56.00	95	39.42	137	43.29
Victim of domestic violence by a partner	9	12.00	39	16.18	48	15.20
Victim of abuse by other than partner	11	14.67	48	19.92	59	18.66
Victim of crime	30	40.00	62	25.73	92	29.15
Of these, victim of theft	(24	80.00)	(42	67.74)	(66	71.94)
Of these, victim of physical assault	(7	23.33)	(13	20.97)	(20	21.74)
Of these, victim of sexual assault	(1	3.33)	(7	11.29)	(8	8.70)

* Figures in parentheses are subsets of the previous item.

A greater percentage of males than females reported having been victims of crime and a greater percentage of males compared to females reported having witnessed domestic violence. However, a higher percentage of females than males reported having been victims of domestic violence and abuse. Most respondents who reported having been victims of crime stated they had been victims of theft, with a higher percentage of males than females. Slightly more male crime victims reported having been victims of physical assault. More than one in ten female crime victims reported being the victim of a sexual assault, although the number of female participants reporting this was small ($n=7$) compared with the total female sample ($n=241$). Only one male participant reported having been sexually assaulted.

Participants were also asked about their family background. Thirty-two per cent of participants reported that their fathers attended university and 35% reported the same for their mothers. Eighty per cent of participants reported being raised by both parents. Almost 30% reported that their parents were separated or divorced (this was reported by a greater percentage of males than females). On average this was reported to have occurred when these participants were around age nine. Participants reported on average that they were around 18 years old when they left home. However, 53% of males and 49% of females had not yet left home at the time of testing.

Participants were asked to endorse applicable adjectives from a list to describe their attitudes about the type of discipline they received as a child. Table 20 shows the number and percentage of participants who responded to these items. Responses are listed in order of the endorsement by the total sample. As can be seen, the majority of males and females described discipline administered to them when they were growing up as fair, effective, appropriate, firm, and consistent. However, around 20% of males

and 16% of females (17% of the total sample) also reported that discipline was inconsistent. Seven per cent described the discipline they received in childhood as violent.

Table 20.

Number and percentage of male and female participants who responded to items relating to describing childhood discipline and childhood in general.

	Male (n=75)		Female (n=241)		Total (n=316)	
	n	%	n	%	n	%
Describe discipline as:						
Fair	51	68.00	176	73.03	227	71.94
Effective	27	36.00	117	48.55	144	45.66
Appropriate	26	34.67	106	43.98	132	41.84
Firm	26	34.67	102	42.32	128	40.49
Consistent	18	24.00	87	36.10	105	33.22
Inconsistent	16	21.33	38	15.77	54	17.09
Harsh	9	12.00	24	9.96	33	10.44
Ineffectual	9	12.00	23	9.54	32	10.12
Unfair	7	9.33	21	8.71	28	8.86
Severe	9	12.00	12	4.98	21	6.64
Violent	6	8.00	15	6.22	21	6.64
Useless	4	5.33	17	7.05	21	6.64
Abusive	5	6.67	16	6.64	21	6.64
Cruel	2	2.67	9	3.73	11	3.48

Participants were then asked to endorse applicable adjectives to describe their childhood in general. Table 21 shows the numbers and percentages of participants who endorsed these items. Responses are listed in order of their endorsement by the total sample. As seen in Table 21, the majority of participants described their childhood as happy, safe, and stable. However, 28% of males and almost 17% of females (19% of the total sample) described their childhood as unpredictable. Twelve

per cent described their childhood as traumatic and eight per cent described it as frightening.

In summary, the majority of participants reported a happy childhood with discipline that they perceived to be fair. However a substantial minority of participants reported an unpredictable, traumatic and/or frightening childhood, with discipline that was inconsistent and/or violent.

Table 21.

Number and percentage of male and female participants who responded to items relating to describing childhood in general.

	Male (n=75)		Female (n=241)		Total (n=316)	
	n	%	n	%	n	%
Describe childhood as:						
Happy	45	60.00	188	78.01	233	73.53
Safe	36	48.00	152	63.07	188	59.52
Stable	35	46.67	140	58.09	175	55.25
Supportive	30	40.00	122	50.62	152	48.08
Nurturing	19	25.33	110	45.64	129	40.82
Carefree	11	14.67	51	21.16	62	19.61
Unpredictable	21	28.00	40	16.60	61	19.31
Traumatic	9	12.00	30	12.45	39	12.35
Perfect	2	2.67	30	12.45	32	10.12
Frightening	4	5.33	22	9.13	26	8.23
Nondescript	9	12.00	13	5.39	22	6.96
Deprived	6	8.00	16	6.64	22	6.96

Participants were asked a number of questions aimed at assessing their perceptions of the level of social support currently in place for them. As can be seen in Table 22, 83% of participants reported having a special friend that they could talk to about “anything”. This was true for a greater percentage of females than males. Eighty per cent of participants reported being close to their parents, and 66% reported

a close-knit family. Sixty-four per cent of participants reported a large social network. On all of these variables, a greater percentage of females than males responded in the affirmative.

Table 22.

Number and percentage of male and female participants who responded to items relating to social support networks on the background questionnaire.

	Male (n=75)		Female (n=241)		Total (n=316)	
	n	%	n	%	n	%
Close to parents	51	68.03	202	83.82	253	80.00
Close-knit family	39	52.08	170	70.54	209	66.23
Large social network	42	55.87	159	65.98	201	63.69
Special friend/confidante	54	71.94	207	85.89	261	82.64

Of concern are the resultant percentages of participants who reported that they did not have these supports in place. Twenty per cent reported not being close to their parents, 34% reported not having a close-knit family, 36% reported not having a large social network, and 17% reported that they do not have a special friend or confidante. These findings indicate that some of these university students are socially isolated or socially withdrawn, which adds another element to the above-mentioned suicide risk factors. This particular point is of great relevance to the present study, as impulsive-aggressiveness is a further suicide risk factor (Coccaro et al., 1991). Indeed, there has been a call for further research to investigate the links between impulsive-aggression and suicide, particularly with female populations (Conner, Duberstein, Conwell, & Caine, 2003). This will be further investigated in the following chapter.

Finally, participants were asked a number of questions about their sexual activity and childbirth, responses to which are shown in Table 23.. Sixty-eight per

cent of participants (n=217) reported being sexually active. A slightly higher percentage of males (71%, n=53) reported this than females (68%, n=164). Males and females reported becoming sexually active at a similar age. In addition sexually active males and females reported similar mean numbers of sexual partners, although there was a greater degree of variance around these means. One-way ANOVAs confirmed that these means did not differ significantly ($ps>.01$).

Table 23.

Means and standard deviations for items relating to sexual activity and childbirth for male and female participants.

	Male (n=75)		Female (n=241)	
	n	Mean (SD)	n	Mean (SD)
Age became sexually active	46	16.51 (2.29)	152	16.61 (1.77)
Number of sexual partners	45	4.47 (5.26)	141	4.54 (8.39)
Number of long-term relationships	48	1.73 (1.01)	178	1.71 (0.98)
Longest time in one relationship (months)	50	22.93 (33.78)	189	41.20 (58.87)
Time in this relationship (months)	21	17.77 (18.52)	132	41.33 (87.92)
How many children	9	2.00 (1.32)	33	2.73 (2.79)
Age when first child born	9	25.11 (4.96)	33	24.39 (3.39)

Forty-one per cent of participants (n=129) reported being in what they considered a long-term relationship. This was true of a greater percentage of females (46%, n=111) than males (24%, n=18). One-way ANOVAs indicated that males and females did not significantly differ in their mean numbers of long-term relationships or estimated length of current relationship ($ps>.01$), but females (M=41.20, SD=58.87 months) tended to report that their longest relationship lasted longer than did males (M=22.93, SD=33.76 months), $F(1,237)=4.42$, $MSE=2985.34$, $p=.04$. However there was a high degree of variability around these means. Large standard deviations may be a function of the inclusion of male and female age outliers in this study.

Thirteen per cent of participants ($n=42$) reported having children. There were few differences between males (12%, $n=9$) and females (14%, $n=33$) in percentage of respondents with children. One-way ANOVAs indicated that participants did not significantly differ in the number of children or age when first child was born ($ps>.01$). Of respondents with children, a greater percentage of females (79%, $n=27$) than males (56%, $n=5$) reported that their children lived with them.

Summary

Results supported the hypotheses that males would be more aggressive and more impulsive than female participants, and that females would be more empathic than male participants. The hypothesis that participants would perform in a manner comparable to normative samples on the published questionnaires was also upheld. Although mean scores were within one standard deviation of normative means, this does not necessarily indicate that the current sample does not include individuals with particularly high or low scores on these measures. The hypothesised sex difference on the Social Desirability Scale was not found.

In response to the background questionnaire, relatively large percentages of participants reported a history of drug use, psychological symptomatology, history of fighting (predominantly verbal), history of criminal behaviour, and victim issues. These factors are associated with impulsive-aggressive behaviour in adulthood (Conner et al., 2003; Crick & Dodge, 1994; Garnefski & Okma, 1996; Hoffman et al., 1998; Leschied et al., 2000). The number of respondents to some items on the background questionnaire was small and conclusions are therefore drawn cautiously. As a number of factors related to impulsive-aggression were found in this undergraduate sample, it is important to identify highly impulsive-aggressive women

within this population in order to assess how they differ from the female student population as a whole. This will be the focus of the following chapter.

Chapter 4

Impulsivity and Aggression in Female University Students

Rationale

The previous chapter investigated impulsivity, aggression, and other characteristics of male and female psychology students as a precursor to the selection of impulsive-aggressive female experimental participants. It was shown in Chapter 3 that participants scored within the normative range on the I7 Impulsivity Questionnaire and the Aggression Questionnaire, which supports the selection of experimental participants from the current student population on the basis of responses to these questionnaires.

Participants' responses to the background questionnaire shed light on the general university population and provided avenues for further investigation of female group differences in relation to impulsive-aggression. Some participants indicated a propensity for consuming alcohol and other drugs beyond their own levels of control, suggestive of binge consumption. A relatively high percentage of participants identified a history of suicide risk factors including depression, suicidal thoughts, suicide attempts, the attempted or completed suicide of a close other, and a lack of social supports. A relatively large proportion of women reported a tendency to fight (mostly verbal arguments) as a child and as an adult, with many acknowledging having started these fights. Although males were more likely to witness domestic violence, females were more likely to be victims of domestic violence and abuse. There was also a large proportion of female participants who reported being victims of bullying at school. In contrast to these victim statistics, a relatively large

percentage of the female population also reported having committed illegal acts (mostly theft).

The present chapter will report the results of investigations into group differences between female participants selected on the basis of impulsivity and aggression scores and placed into one of four groups: aggressive, impulsive, impulsive-aggressive, and control. As defined in Chapter 2, relevant groups in this study with the descriptors impulsive and impulsive-aggressive were selected on the basis of impulsivity scores (impulsiveness plus venturesomeness) rather than impulsiveness scores alone. Throughout this thesis, where the terms impulsive and impulsivity are used, they may be assumed to refer to impulsivity. Where specific future non-planning deficits are described, the term impulsiveness will be used.

The over-riding aim of this project is to investigate impulsive-aggression in women. Therefore the aim of the study described in this chapter was firstly to identify women within the student body who were characteristically high on impulsivity and aggression, and then to compare them with non-impulsive women and non-aggressive women on the same measures as those used in Chapter 3. It was expected that the aggressive group and the impulsive-aggressive group would share many similarities on factors having to do with anger, aggression, fighting, commission of illegal acts, suicide risk factors, and victim issues. However, it was hypothesised that the impulsive-aggressive group would exhibit these factors to a higher degree due to the known association between these factors and impulsive-aggression (Conner et al., 2003; Crick & Dodge, 1994; Garnefski & Okma, 1996; Hoffman et al., 1998; Leschied et al., 2000; Lynam et al., 2003).

It was also expected that the impulsive and impulsive-aggressive groups would share many commonalities on factors addressing risk-taking, impulsiveness,

drug and alcohol issues, sexual activity, suicide risk factors, and victim issues. Again, it was hypothesised that the impulsive-aggressive group would display these factors to a greater degree due to the strong association with impulsive-aggression (Lynam et al., 2003; Verona et al., 2001). The impulsive group and the aggressive group were not expected to differ in relation to suicidal risk factors and victim issues.

Method

Participants

Participants were 199 female first year psychology students from the University of Tasmania. These students were a subset of the 2000 and 2001 first year student participants described in Chapter 3. Mean impulsivity scores for female students from the 1999 to 2001 student pool and mean aggression scores for female students from the 2000 and 2001 student pool were used to define selection criteria for entry into groups. Females with scores on the EPQ Lie Scale more than one standard deviation above the normative mean reported by Eysenck et al. (1985b; i.e., scores greater than or equal to 11) were excluded from analysis. Four groups were identified: an impulsive group, an aggressive group, an impulsive-aggressive group, and a control group.

Selection criteria for group inclusion are outlined in Table 24. The impulsive group included women with high scores for impulsivity on the I7 Impulsivity Questionnaire (one standard deviation or more above the mean), but with scores at or below the mean for total aggression on the Aggression Questionnaire. The aggressive group comprised women with high scores on the Aggression Questionnaire (one standard deviation or more above the mean), but with scores at or below the mean for impulsivity on the I7. Women who may be considered “mildly impulsive” or “mildly

aggressive” (i.e., participants who scored within one standard deviation above the mean for impulsivity or aggression) were excluded. The impulsive-aggressive group comprised women who scored one standard deviation or more above the mean on both measures. The control group comprised women who scored at or below the mean on both measures.

Table 24.

Scores on the I7 Impulsivity Questionnaire and the Aggression Questionnaire used as inclusion criteria for each of the four groups of female participants.

Measure	Group				
	n	Aggressive	Control	Impulsive	Imp-Agg
I7 Impulsivity Questionnaire	690	≤ 16	≤ 16	≥ 23	≥ 23
Aggression Questionnaire	422	≥ 81	≤ 64	≤ 64	≥ 81
EPQ Lie Scale	422	≤ 10	≤ 10	≤ 10	≤ 10

Of the 414 women who completed both the I7 and the Aggression Questionnaire, 91 reached the cutoff for impulsivity, 68 met the cutoff for aggression, 121 met the cutoff for both impulsivity and aggression, and 132 met neither cutoff. Due to attrition of participant numbers only a percentage of identified participants were represented within each group.

The final numbers of women recruited for each group in this study and their mean ages are presented in Table 25. A one-way ANOVA indicated that groups did not significantly differ in age, $F(3,195)=1.92$, $MSE = 48.11$, $p=.13$. Despite this, it can be seen in Table 25 that there was a tighter age range in the impulsive-aggressive group than in the other three groups. It was decided to retain age outliers in all groups in order to maintain the idea of a “snapshot” of undergraduate females, including

mature age students. This has resulted in a preponderance of younger participants in the impulsive-aggressive group.

Table 25.

Age means, standard deviations, and ranges within each group.

Group	Mean Age	SD	Age Range
Aggressive (n=24)	21.17	5.95	17-43
Control (n=119)	22.41	7.93	17-56
Impulsive (n=33)	19.55	5.28	17-46
Imp-Agg. (n=23)	20.04	3.43	17-32
Total (n=199)	21.51	6.98	17-56

Materials

Materials used for this study were the same as those outlined in detail in Chapter 3. Although impulsivity scores from the I7 Impulsivity Questionnaire (Eysenck et al., 1985a) were used as selection criteria, differences between groups on the individual subscales of the I7 were investigated. In addition, the Barratt Impulsiveness Scale (BIS-11; Patton et al., 1995) was employed as a further tool to explore between-group differences in impulsiveness. To clarify, impulsiveness is a subscale of the I7 and the main focus of the BIS-11. Impulsivity is a conglomerate trait identified by summing scores from the impulsiveness and venturesomeness subscales of the I7.

Although participants with scores one standard deviation above the mean on the EPQ Lie Scale (Eysenck et al., 1985b) were excluded from this study the Lie Scale was embedded within the I7 to act as a validity measure between groups. In addition, the Aggression Questionnaire (Buss & Perry, 1992) was included as an experimental tool to investigate between-group differences on individual subscales, despite total aggression scores being used as selection criteria. The Social Desirability Scale (Crowne & Marlowe, 1964), the Conflict Tactics Scale (Straus, 1979), and the

abbreviated version of the Anger Expression Scale (Spielberger et al., 1988) were also employed. As in Chapter 3, participants were also given a background questionnaire.

Procedure

First year psychology students were screened following the same procedure as set out in Chapter 3. The number of participants in each group who completed each questionnaire is presented in Table 26.

Table 26.
Number of females per group who completed each questionnaire.

Scale	Group				
	N	Aggressive	Control	Impulsive	Imp.-Agg.
I7 Impulsivity Questionnaire	199	24	119	33	23
EPQ Lie Scale	199	24	119	33	23
BIS-11	196	23	118	33	22
Aggression Q'aire	199	24	119	33	23
Conflict Tactics Scale	124	20	71	16	17
Anger Expression Scale	114	18	64	15	17
Social Desirability Scale	101	16	57	14	14
Background Questionnaire	120	20	67	15	18

Design and Data Analysis

The independent variable was group (aggressive, control, impulsive, impulsive-aggressive). The dependent variables for the published questionnaires were the scores from each scale. The dependent variables for the background questionnaire were the percentage of participants responding to yes/no items and means for the quantitative items. Aside from percentage data, raw data was analysed by ANOVAs, MANOVAs, and post hoc SNKs as appropriate. Alpha was set conservatively at $p<.01$ due to the

large number of one-way ANOVAs. Inferential testing of percentage data was not conducted as there were too few participants responding to many items to justify categorical analyses.

Results and Discussion

I7 Impulsivity Questionnaire and EPQ Lie Scale

In all, 199 females completed the I7 Impulsivity Questionnaire and the embedded EPQ Lie Scale. Table 27 presents the means (and standard deviations in parentheses) for each of the subscales of the I7 Impulsivity Questionnaire and for the EPQ Lie Scale. High scores for impulsivity are due to these scores representing the sum of the impulsiveness and venturesomeness subscales.

Table 27.

I7 and EPQ Lie Scale means (and standard deviations) for the four groups.

Group	Impulsiveness (max.=19)	Venturesomeness (max.=16)	Impulsivity (max.=35)	Empathy (max.=19)	EPQ Lie (max.=21)
Aggressive (n=24)	6.95 (2.79)	5.88 (3.01)	12.83 (3.57)	14.79 (2.59)	5.58 (2.43)
Control (n=119)	5.78 (2.86)	6.12 (3.03)	11.90 (3.87)	14.85 (2.30)	6.41 (2.45)
Impulsive (n=33)	12.91 (2.59)	12.48(2.20)	25.39 (2.93)	15.30 (2.19)	5.24 (2.74)
Imp-Agg. (n=23)	15.09 (1.95)	10.61 (2.15)	25.70 (2.34)	13.61 (3.51)	3.74 (2.47)
Total (N=199)	8.18 (4.49)	7.66 (3.81)	15.84 (7.02)	14.77 (2.51)	5.81 (2.63)

A significant group main effect was found for the impulsiveness subscale, $F(3,195) = 115.37$, $MSE = 7.38$, $p < .01$. The impulsive-aggressive group had higher impulsiveness scores than all other groups, including the impulsive group ($ps < .01$). This was in the hypothesised direction. The aggressive and control groups did not significantly differ from each other ($p = .08$) but scored significantly lower than both the impulsive and impulsive-aggressive groups ($ps < .001$).

A significant group main effect was also found for the venturesomeness subscale, $F(3,195) = 55.80$, $MSE = 7.93$, $p < .001$. The impulsive group scored higher than all other groups on the venturesomeness scale ($ps < .01$). The impulsive-aggressive group achieved significantly lower venturesomeness scores than the impulsive group ($p < .01$), which was contrary to expectations, but higher than the aggressive and control groups ($ps < .001$). The control group and the aggressive group did not differ significantly from each other ($p = .73$).

Results indicate that even though participants in the impulsive group and the impulsive-aggressive group were selected on the basis of the conglomerate impulsivity score, the impulsive-aggressive group showed higher levels of impulsiveness but lower levels of venturesome than the impulsive group. In other words, impulsive-aggressive women reported being less likely to engage in risk-taking behaviours but less likely to consider future consequences before acting than impulsive women. However both groups were more likely to be impulsive and venturesome than either the aggressive group or the control group.

A significant group main effect was found for impulsivity, $F(3,195) = 193.59$, $MSE = 12.59$, $p < .01$. The impulsive and impulsive-aggressive groups did not significantly differ on impulsivity scores ($p = .73$) and scored significantly higher than both the aggressive and control groups ($ps < .001$). This was as expected from the group selection process.

Even though mean empathy scores for the impulsive-aggressive group were lower than all other groups, a significant group main effect was not found, $F(3,195) = 2.23$, $MSE = 6.16$, $p = .09$. This was unexpected and may be a function of either the relatively small sample size or the non-forensic nature of the present population.

A significant group main effect was found for the EPQ Lie Scale, $F(3,195) = 8.20$, $MSE = 6.24$, $p < .001$. Post hoc SNKs indicated that the impulsive-aggressive group scored significantly lower than the control and aggressive groups ($ps < .01$), and also tended to score lower than the impulsive group ($p = .02$). These low scores suggest that impulsive-aggressive women may have been responding with less susceptibility to 'socially desirable' responses than the other groups. This was unexpected. It is possible that as the impulsive-aggressive group had higher levels of impulsiveness than other groups they responded impulsively to the Lie Scale without regard to social desirability effects. However, it is also possible that women with impulsive-aggressive traits are simply less likely to be interested in conforming to socially desirable expectations.

Barratt Impulsiveness Scale (BIS-11)

In total, 196 females completed the BIS-11. Table 28 shows the means (and standard deviations in parentheses) for each group on each of the subscales of the BIS-11, along with total impulsiveness scores.

Table 28.

BIS-11 means (and standard deviations) for the four groups

Group	Attentional	Motor	Future	Total
	Impulsiveness (max.=32)	Impulsiveness (max.=40)	Non-Planning (max.=48)	Impulsiveness (max.=120)
Aggressive (n=23)	17.74 (3.18)	22.26 (4.76)	24.78 (4.40)	64.78 (10.94)
Control (n=118)	18.11 (2.94)	21.51 (4.39)	24.74 (4.20)	64.36 (9.58)
Impulsive (n=33)	18.12 (3.22)	22.48 (4.62)	24.76 (5.13)	67.36 (11.43)
Imp.-Agg. (n=22)	19.86 (2.85)	24.23 (4.32)	27.95 (7.31)	72.05 (12.82)
Total (n=196)	18.27 (3.04)	22.07 (4.51)	25.44 (4.92)	65.78 (10.67)

Although the impulsive-aggressive group had slightly higher mean scores than all other groups, no significant group main effects were found at the .01 level for the attentional impulsiveness subscale ($F(3,192) = 2.44$, $MSE = 9.03$, $p = .07$) or the motor impulsiveness subscale, $F(3,192) = 2.44$, $MSE = 19.94$, $p = .07$. A non-significant group trend was found for the future non-planning subscale, $F(3,192) = 3.80$, $MSE = 23.21$, $p = .01$. Post hoc analyses did not show any significant differences between group means, however the impulsive-aggressive group tended to score higher than the aggressive group ($p=.02$) and the control group ($p=.04$). A non-significant group trend was also found for total impulsiveness scores, $F(3,192)=3.68$, $MSE = 109.39$, $p=.01$. Post hoc SNKs indicated that the impulsive-aggressive group tended to score higher than the aggressive and control groups ($ps=.02$). This was similar to the results for the future non-planning subscale and to the results on the impulsiveness subscale of the I7, although it is noted that the impulsive-aggressive and impulsive groups did not differ from one another on total or subscale scores on the BIS-11. The future non-planning subscale of the BIS-11 is similar in intent to the impulsiveness subscale of the I7. Both speak to the tendency to act without regard for future consequences. The fact that the impulsive-aggressive group scored higher on both of these subscales is therefore not surprising. It is surprising however that the impulsive group did not have higher scores than the aggressive and control groups.

Aggression Questionnaire

A total of 199 females completed the Aggression Questionnaire. Table 29 presents the means (and standard deviations in parentheses) for each of the subscales of the Aggression Questionnaire. Total aggression scores were the sum of scores from each of the Aggression Questionnaire subscales. As can be seen, the aggressive and

impulsive-aggressive women showed higher scores than the control and impulsive groups of women.

One-way ANOVAs conducted on the data yielded significant group main effects for the physical aggression subscale ($F(3,195) = 94.62$, $MSE = 15.07$, $p < .01$), the verbal aggression subscale ($F(3,195) = 45.56$, $MSE = 10.89$, $p < .001$), the anger subscale ($F(3,195) = 85.03$, $MSE = 17.12$, $p < .01$), the hostility subscale ($F(3,195) = 65.40$, $MSE = 21.79$, $p < .001$), and total aggression scores, $F(3,195) = 260.61$, $MSE = 70.40$, $p < .01$. Post hoc SNKs confirmed that the aggressive group and the impulsive-aggressive group scored significantly higher than the control group and the impulsive group on each subscale and on total aggression scores ($ps < .001$). This was not surprising as total aggression scores formed part of the group selection process. The impulsive-aggressive group tended to score higher than the aggressive group on physical aggression scores ($p = .03$). No other significant differences were found for mean subscale scores or total aggression scores.

Table 29.

Aggression Questionnaire means (and standard deviations) for each group.

Group	Physical	Verbal				Total
	Aggression (max.=45)	Aggression (max.=25)	Anger (max.=35)	Hostility (max.=40)	Aggression (max.=145)	
Aggressive (n=24)	23.33 (5.36)	17.33 (4.24)	24.00 (8.66)	26.50 (6.28)	91.17 (8.84)	
Control (n=119)	13.55 (3.28)	10.80 (2.95)	12.78 (3.15)	15.19 (4.51)	52.32 (8.41)	
Impulsive (n=33)	13.39 (3.15)	11.85 (3.35)	13.55 (2.89)	14.88 (3.94)	53.67 (8.38)	
Imp.-Agg. (n=23)	25.43 (5.60)	17.48 (3.86)	23.91 (2.79)	25.52 (4.50)	92.35 (7.78)	
Total (N=199)	16.08 (6.04)	12.53 (4.27)	15.55 (6.24)	17.70 (6.56)	61.85 (18.64)	

In partial support of expectations, the impulsive-aggressive women showed a tendency to be more physically aggressive than the aggressive women. Perhaps the

cumulative effect of high impulsivity coupled with an aggressive tendency reduces the ability to consider the consequences of aggressive acts, as the impulsive-aggressive group's results for the I7 and the BIS-11 indicated. However, this explanation is limited by the fact that the impulsive and control participants did not significantly differ from each other on subscale or total aggression scores.

Anger Expression Scale

A total of 114 female undergraduates completed the abbreviated version of the Anger Expression Scale. Scores were collated to derive means for each subscale. The formula prescribed by Spielberger (1988) was followed in order to derive the total anger expression scores (total anger expression = [anger-out + anger-in – anger control + 16]). A two-way MANOVA for group (aggressive/control/impulsive/impulsive-aggressive) x anger expression style (anger control/anger-out/anger-in) was conducted and a significant interaction was found, Rao R (6,218) = 4.04, $p < .001$. This interaction is illustrated in Figure 3.

It was expected that the impulsive-aggressive group would show higher anger expression levels than the aggressive group. As can be seen in Figure 3, results were in the hypothesised direction but did not reach significance. A trend was found for a group main effect, $F(3,110) = 3.04$, $MSE = 4.57$, $p = .03$. Post hoc analyses indicated that females in the impulsive-aggressive group scored higher overall than the control and impulsive groups ($ps < .001$). The aggressive group tended to score higher than the control group and the impulsive group ($p = .02$). A main effect for anger expression style was also found, Rao R (2,109) = 6.39, $p < .01$. Overall scores were significantly higher on anger-in ($M = 6.31$, $SD = 2.66$) than anger-out ($M = 4.39$, $SD = 2.49$; $p < .001$) and also tended to be higher on anger-in than on anger control ($M = 5.89$, $SD = 2.53$;

$p=.03$). As expected, total anger expression scores were significantly higher for the aggressive group ($M=23.67$, $SD=4.39$) and the impulsive-aggressive group ($M=24.35$, $SD=3.33$) compared with the control ($M=19.22$, $SD=4.12$) and impulsive ($M=20.13$, $SD=4.05$) groups, $F(3,110) = 10.75$, $MSE = 16.41$, $p<.001$.

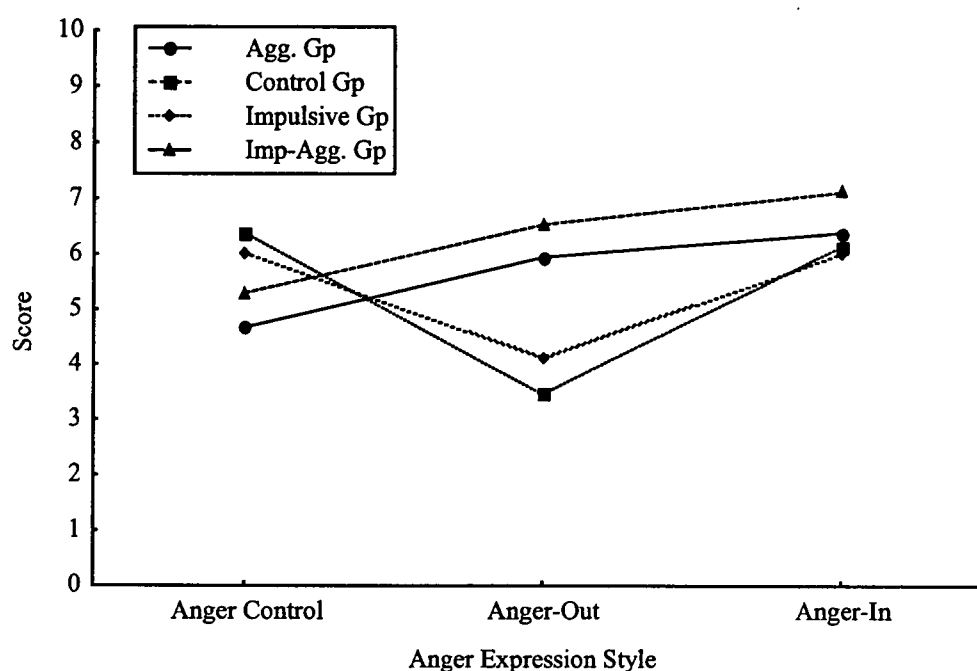


Figure 3. Means anger expression style scores on the Anger Expression Scale for females in each of the four groups.

Post hoc SNKs did not yield any significant differences between groups within the anger control or anger-in anger expression styles. The aggressive group ($p=.05$) and the impulsive-aggressive group ($p=.03$) tended to score higher than the control group for anger-out. The impulsive group did not significantly differ from the control group for anger-out. In other words, all participants showed similar levels of anger control and inwardly-expressed anger, but the aggressive group and the impulsive-aggressive group tended to be more likely than the impulsive group or the control

group to show outward expressions of anger. This was as hypothesised and could be attributed to the aggressive nature of these women.

Conflict Tactics Scale

Data for the Conflict Tactics Scale were analysed by two-way ANOVA for group (aggressive/control/impulsive/impulsive-aggressive) x parent (mother/father). No significant main effects or interactions were found for overall data. Further analyses were conducted within each subscale. Table 30 shows the means (and standard deviations in parentheses) for each of the subscales of the Conflict Tactics Scale. Means were converted to percentages of the maximum total score for each subscale in order to facilitate visual comparison between subscales. Examination of the percentages for each subscale suggests little difference between participants' perceptions of their parents' use of reasoning and verbal aggression, but it appears quite clear that participants' rated their parents' use of violence as comparatively very low.

The two-way ANOVA conducted on mean ratings within the reasoning subscale yielded a non-significant trend towards a main effect for parent, $F(1,110)=4.18$, $MSE = 25.10$, $p=.04$. As also seen for the total undergraduate sample in Chapter 3, participants tended to rate their mothers higher than their fathers in use of reasoning as a conflict tactic. No other significant differences were found for the reasoning subscale. A significant two-way interaction was found for group x parent on the verbal aggression subscale of the Conflict Tactics Scale, $F(3,110) = 5.18$, $MSE = 3.90$, $p<.01$. This interaction is shown in Figure 4. Post hoc SNKs confirmed that the impulsive-aggressive group rated their mothers as significantly more verbally aggressive than did the aggressive group and the control group ($ps<.01$).

Table 30.

Conflict Tactics Scale mean ratings (and standard deviations) by each group on parents' use of each of the conflict.

Group	Parent	Reasoning (max=16)		Verbal Agg. (max.=20)		Violence (max.=20)	
		Mean (SD)	% Rating	Mean (SD)	% Rating	Mean (SD)	% Rating
Aggressive (n=18)	Mother	7.11 (3.41)	44.75	6.06 (2.60)	30.3	0.67 (1.33)	3.35
	Father	5.50 (2.85)	34.38	7.72 (3.74)	38.6	1.83 (3.87)	9.15
Control (n=64)	Mother	8.00 (3.42)	50	5.91(3.37)	29.55	0.78 (2.41)	3.9
	Father	7.36 (3.51)	46	5.97 (3.87)	29.85	1.53 (3.56)	7.65
Impulsive (n=15)	Mother	7.80 (3.90)	48.75	6.53 (3.07)	32.65	1.33 (2.66)	6.65
	Father	8.73 (3.63)	54.56	5.27 (3.24)	26.35	1.33 (2.41)	6.65
Imp.-Agg. (n=17)	Mother	7.35 (3.28)	45.94	8.65 (2.69)	43.25	2.71 (3.48)	13.55
	Father	5.53 (3.54)	34.56	6.65 (3.57)	33.25	1.88 (4.69)	9.4
Total (n=114)	Mother	7.74 (3.43)	48.38	6.42 (3.23)	32.1	1.23 (2.57)	6.15
	Father	6.97 (3.56)	43.56	6.25 (3.75)	31.25	1.61 (3.63)	8.05

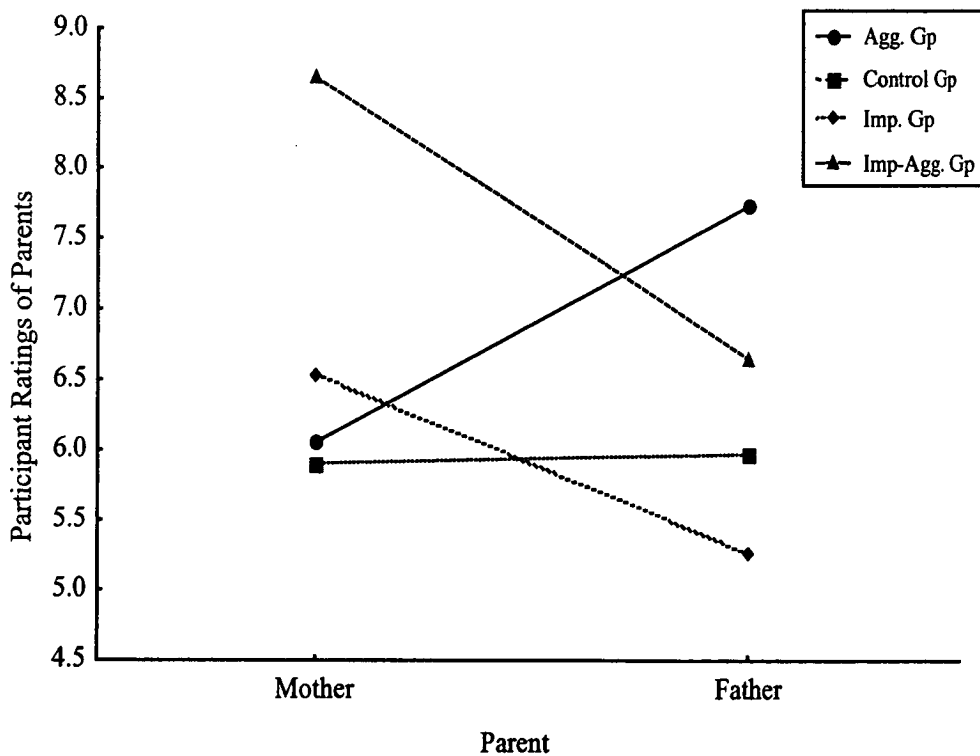


Figure 4. Mean verbal aggression ratings for each parent by each group.

There was also a tendency for impulsive-aggressive women to rate mothers as more verbally aggressive than did the impulsive group ($p=.01$). The impulsive-aggressive group rated their mothers significantly higher than their fathers on verbal aggression ($p<.01$). No other significant differences were found for the verbal aggression subscale.

No significant differences or interactions were found for the violence subscale of the Conflict Tactics Scale ($ps>.01$). Results for the control group are similar to the male and female undergraduate samples discussed in Chapter 3.

Conflict Tactics Scale Summary

These results suggest that impulsive-aggressive women may be more similar to their mothers in terms of verbal aggression, as evidenced by their high scores on the verbal aggression subscale of the Aggression Questionnaire. In turn, aggressive women appear more similar to their fathers in terms of verbal aggression (as evidenced by their high scores also on the verbal aggression subscale of the Aggression Questionnaire). These findings for both groups are in line with previous research indicating that aggressive girls come from homes characterised by verbal aggression (Garnefski & Okma, 1996), however the differentiation between paternal and maternal verbal aggression for aggressive and impulsive-aggressive young women respectively is an important distinction. There were no significant differences for ratings of parental violence. In conclusion, aggression in the family environments of the aggressive and impulsive-aggressive participants was reported to more frequently manifest in a verbal rather than physical manner.

Social Desirability Scale

A total of 101 female undergraduates completed the Social Desirability Scale. A between-groups breakdown of number of participants and mean scores and standard deviations is shown in Table 31. As can be seen, the impulsive-aggressive group yielded the lowest mean score on this scale. A one-way ANOVA for group revealed a significant group main effect, $F(3,97) = 4.24$, $MSE = 25.71$, $p < .01$. Post hoc SNKs confirmed that the impulsive-aggressive group tended to score lower than the control group ($p = .01$) but no other pairs of means approached significance.

Table 31.

Social Desirability Scale (max=33) means and standard deviations.

	Group				
	Aggressive (n=16)	Control (n=57)	Impulsive (n=14)	Imp.-Agg. (n=14)	Total (n=101)
Mean Score	14.25	16.28	14.21	11.04	14.95
SD	5.71	4.89	4.54	5.54	5.31

The trend for the impulsive-aggressive group to score lower on a measure of social desirability is in line with their significantly lower scores on the EPQ Lie Scale (in comparison to all other groups), which is not surprising as these scales have been shown to be positively correlated (Liberty, 1994).

Background Questionnaire

One hundred and twenty participants completed the background questionnaire. Not all participants responded to all items. Individual responses were collated in the same manner outlined in Chapter 3. Raw data for each item were converted to percentages of group responses. Where numerical answers were required, raw data were converted to means and standard deviations and analysed by one-way ANOVA for group

differences. A proportion of the information collected by the background questionnaire does not specifically relate to impulsive-aggression. Therefore, only specifically relevant results are presented here. Comprehensive results are presented in Appendix E.

Impulsivity and aggression have been linked to the use of alcohol and other substances (Lynam et al., 2003). Table 32 outlines the number and percentage of participants who responded to items inquiring about drug and alcohol usage. As can be seen, the impulsive-aggressive women reported being smokers at a far greater percentage than any other group. Control participants were least likely to indicate that they drink alcohol, with the other groups showing few differences.

Table 32.

Number and percentage of participants responding to items relating to alcohol and drug (AOD) history on the background questionnaire.

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp.-Agg. (n=18)	
	n	%	n	%	n	%	n	%
Smoke cigarettes	4	20.00	14	20.90	4	26.67	8	44.44
Drink alcohol	19	95.00	50	74.63	15	100.00	17	94.44
Smoke marijuana	3	15.00	10	14.93	5	33.33	3	16.67
Recreational drugs	1	5.00	3	4.48	1	6.67	1	5.56
Misused presc. meds	3	15.00	4	5.97	1	6.67	3	16.67
Loss of consciousness from AOD	8	40.00	11	16.42	5	33.33	10	55.56
Loss of memory from AOD	11	55.00	31	46.27	12	80.00	13	72.22
Frightened by intox.	9	45.00	24	35.82	10	66.67	8	44.44

A higher percentage of women in the impulsive group reported smoking marijuana than any other group. Few participants reported using other recreational drugs such as cocaine or ecstasy. The impulsive-aggressive and aggressive groups

reported having misused prescription medication at almost triple the percentage of the impulsive and control groups. More than 55% of impulsive-aggressive women reported having lost consciousness from drug or alcohol use, this was the highest group percentage followed by the aggressive group then the impulsive group. Far fewer control participants reported having had this experience. The impulsive and the impulsive-aggressive groups had the highest percentage of women who reported having been intoxicated to the point that they had little recollection of events. Finally, the impulsive group had the highest percentage of women who reported having ever been frightened by how intoxicated they were. While it was expected that the impulsive-aggressive group would report higher levels of drug and alcohol use compared with the impulsive group, this was only true for tobacco use, misuse of prescription drugs, and loss of consciousness through drug or alcohol use.

Participants were asked to indicate any history of psychiatric symptoms. Table 33 shows the number and percentage of women who responded to these items. The women in the impulsive-aggressive group reported having experienced depression to a greater degree than other groups. Anxiety was reported relatively uniformly across groups. The aggressive and impulsive-aggressive groups reported mood swings, anger management problems, and problems with violent behaviour to a greater degree than women in the control and impulsive groups. In fact the aggressive and impulsive-aggressive women reported a history of violent behaviour to a degree similar to the total male sample reported in Chapter 3. The impulsive-aggressive group reported these problems to a slightly greater degree than the aggressive group.

A greater percentage of women in the impulsive-aggressive group reported a history of problems with alcohol or other drugs than did any other group. This is in contrast to the results for current drug use presented in Table 32, and supports the

hypothesis of greater drug and alcohol usage in the impulsive-aggressive group compared with the impulsive group.

Table 33.

Number and percentage of participants responding to personal psychiatric history items on the background questionnaire.

Personal Psychosocial History:	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp.-Agg. (n=18)	
	n	%	n	%	n	%	n	%
Depression	11	55.00	26	38.81	6	40.00	11	61.11
Anxiety	8	40.00	30	44.78	5	33.33	7	38.89
Mood swings	13	65.00	30	44.78	8	53.33	13	72.22
Temper/anger m'ment	7	35.00	6	8.96	3	20.00	7	38.89
Violent behaviour	3	15.00	2	2.99	1	6.67	3	16.67
Alcohol/other drug issues	1	5.00	3	4.48	1	6.67	4	22.22
Ever presc. med. for above	3	15.00	9	13.43	2	13.33	3	16.67
Currently on psych. med.	1	5.00	3	4.48	2	13.33	2	11.11
Suicidal thoughts	11	55.00	23	34.33	5	33.33	11	61.11
Attempted suicide	2	10.00	4	5.97	1	6.67	2	11.11
Close other suicide	9	45.00	23	34.33	6	40.00	9	50.00

Groups differed little in percentages of women previously prescribed medication for psychiatric problems, however the impulsive-aggressive and impulsive groups were more likely to report current psychiatric medication usage. As anticipated, the impulsive-aggressive group reported the highest percentages of depression, suicidal thoughts, suicidal attempts, and the attempted or completed suicide of a close other. It was expected that the impulsive-aggressive group would show slightly higher rates of suicide risk factors in comparison to the impulsive group and the aggressive group. This was met with some support. The impulsive-aggressive group's results were moderately higher than those for the aggressive group. The

impulsive group differed marginally from the aggressive and control groups. This may indicate that aggressiveness is a greater contributor to the presence of suicide risk factors in young women than impulsivity. However, caution is warranted in the interpretation of these findings due to the small numbers of participants in each group endorsing these factors.

Table 34 shows the number and percentage of responses to items relating to a family history of psychosocial problems. As can be seen, the impulsive-aggressive group reported the highest percentage of participants with a family history of depression, although this was only slightly higher than the other groups. The impulsive-aggressive group and the impulsive group reported the highest percentages of participants with a family history of anxiety.

Table 34.

Number and percentage of participants responding to family psychiatric history items on the background questionnaire.

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp.-Agg. (n=18)	
	n	%	n	%	n	%	n	%
Family Psychosocial History:								
Depression	6	30.00	20	29.85	4	26.67	6	33.33
Anxiety	2	10.00	9	13.43	3	20.00	4	22.22
Mood swings	4	20.00	7	10.45	4	26.67	3	16.67
Temper/anger	4	20.00	7	10.45	3	20.00	3	16.67
Violent behaviour	1	5.00	3	4.48	2	13.33	1	5.56
Alcohol/other drugs	2	10.00	7	10.45	3	20.00	3	16.67

In contrast with the results from the Conflict Tactics Scale, the impulsive group and the aggressive group reported a family history of anger management problems at a greater rate than the impulsive-aggressive group or controls. The impulsive group was also more likely to report a family history of violent behaviour

and alcohol and/or other drug problems than the other three groups. It is surprising that the impulsive-aggressive group did not report higher rates of violent behaviour, anger management problems, etc., in their family histories. From these results it seems that these factors may have a greater impact on impulsivity alone, although the small numbers of respondents limits this conclusion.

In order to establish a pervasive pattern of aggressive behaviour, participants were asked whether they tended to get into trouble at school and whether they tended to fight as a child. Given the nature of aggression and bullying typical of girls (Cunningham, 2000; Leschied et al., 2000) fighting is defined as including verbal arguments or physical fights. As can be seen in Table 35, the impulsive-aggressive group reported a greater tendency to get into trouble at school than any other group, followed most closely by the impulsive group. Compared to all other groups, a higher percentage of participants in the impulsive-aggressive group reported having been suspended from school. The only participant expelled from school was also in the impulsive-aggressive group. This group also yielded the highest percentage of participants reporting a history of fighting or arguing as a child, followed by the aggressive group.

Table 35.

Number and percentage of participants who responded to items relating to being in trouble at school on the background questionnaire.

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg. (n=18)	
	n	%	n	%	n	%	n	%
Tend to get into trouble at school	2	10.00	3	4.48	3	20.00	5	27.78
Ever suspended from school	1	5.00	1	1.49	1	6.67	4	22.22
Fought/argued as a child	10	50.00	13	19.40	5	33.33	11	61.11

The number and percentage of childhood fighters who responded to items relating to their fighting is shown in Table 36. As can be seen, numbers of respondents were too few to draw firm conclusions. However the impulsive-aggressive women tended to be more likely to fight as a child and to be most likely to start these fights. Participants most commonly fought with their siblings and to a lesser extent with their parents.

Table 36.
Number and percentage of childhood fighters who responded to items relating to their fighting.

	Aggressive		Control		Impulsive		Imp.-Agg.	
	(n=10, 50%)		(n=13, 19%)		(n=5, 33%)		(n=11, 61%)	
	n	%	n	%	n	%	n	%
Tended to start fights	2.00	20.00	2	15.40	2	40.00	7	63.64
Fought with sibling	10.00	100.00	11	84.60	5	100.00	9	81.82
Fought with parent(s)	9.00	90.00	7	53.90	4	80.00	5	45.45
Fought with friend(s)	0	0	3	23.10	1	20.00	3	27.27
Fought weekly	5.00	50.00	4	30.80	3	60.00	6	54.55
Fought monthly or less	2.00	20.00	6	46.20	1	20.00	4	36.36

Participants were then asked about adult tendencies to get into fights or arguments. Table 37 shows the number and percentage of participants who responded to these items. Figures show that the impulsive-aggressive group yielded the highest percentage (61%) of women with a tendency to fight as adults. In contrast to these findings, it was reported in Chapter 3 that less than 20% of the total samples reported an adult tendency to fight. The impulsive-aggressive group was more than twice as likely as the aggressive group and more than three times as likely as the impulsive group to engage in fighting as an adult. This tendency may well be linked to their

higher levels of physical aggressiveness as evidenced by their results on the Aggression Questionnaire.

Table 37.

Number and percentage of respondents to items relating to adult fighting.

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp.-Agg. (n=18)	
	n	%	n	%	n	%	n	%
Do you tend to fight/argue now	5	25.00	8	11.94	3	20.00	11	61.11
Alcohol/drugs involved	(0	0)	(4	50.00)	(0	0)	(2	18.18)
Ever used a weapon	(1	20.00)	(1	12.50)	(1	33.33)	(2	18.18)
Fought within last 2 days	(2	40.00)	(2	25.00)	(1	33.33)	(4	36.36)
Fought within last 2 weeks	(1	20.00)	(5	62.50)	(2	66.67)	(5	45.45)
Did you start last fight	(3	60.00)	(3	37.50)	(0	0)	(5	45.45)
Fight with sibling	(1	20.00)	(3	37.50)	(1	33.33)	(3	27.27)
Fight with spouse	(1	20.00)	(3	37.50)	(1	33.33)	(2	18.18)
Fight with friend	(1	20.00)	(0	0)	(0	0)	(2	18.18)
Fight with other family	(0	0)	(3	37.50)	(2	66.67)	(4	36.36)

* Figures in parentheses are subsets of the previous item.

The control group was least represented in terms of likelihood to fight but of those who did report a current tendency to fight, the control group was the most likely to report that drugs or alcohol were usually involved. Compared to the male sample described in Chapter 3 the control group reported double the rate of alcohol or drug involvement in fighting behaviours. The impulsive-aggressive group also reported that alcohol or other drugs were associated with fighting, but to a lesser extent than controls. This may simply be a function of the impulsive-aggressive women's higher levels of alcohol and drug use compared with women in the control group, or a function of the sample size. Further investigation is needed to identify whether it is intoxication that *causes* women in the control group to fight.

Sixty percent of aggressive women who tend to fight as adults reported starting their most recent fight, followed most closely by the fighters in the impulsive-aggressive group (45%). This is in contrast with the 40% of adult female fighters in Chapter 3 who reported that they tended to start fights. There was a great deal of spread in terms of the subject of participants' fights. The impulsive group yielded the highest proportion of any group, reporting that they were most likely to fight with family members other than a sibling. Small numbers of respondents again limit these results.

Contrary to predictions, the impulsive-aggressive group and the aggressive group did not show strong similarities in terms of childhood and adulthood tendencies to engage in fighting behaviours. The aggressive group was less likely to start fights as a child than the impulsive-aggressive group, but more likely to start fights as an adult. However this is in contrast to the finding that the impulsive-aggressive group was more than twice as likely to have an adult tendency to fight and was more likely to have consumed drugs or alcohol at the time. Conclusions are tentative due to participant numbers, but it may be that these results indicate a cumulative effect of impulsivity and aggression. Alternatively there may be something distinctive to the impulsive-aggressive group's presentation (e.g., sub-clinical psychopathic personality traits) which might explain these results. This will be further explored in the next chapter.

Participants were asked if they had been the victims of bullying at school. Table 38 shows that the highest percentages of bullying victims were found in the aggressive group (40%) and the impulsive-aggressive group (33%), and that large percentages of these victims reported being bullied daily. As can be seen in Figure 5, victims reported being bullied for a wide variety of reasons, most commonly

“anything/being different” and “appearance/weight” The latter was most notable for impulsive women who reported being bullied about appearance/weight issues only.

Table 38.

Number and percentage of bullying victims’ responses to frequency and subject of bullying.

	Aggressive (n=8, 40%)		Control (n=12, 18%)		Impulsive (n=3, 20%)		Imp.-Agg. (n=6, 33%)	
	n	%	n	%	n	%	n	%
Bullied daily	2	25.00	2	16.67	0	0	2	33.33
Bullied weekly	1	12.50	7	58.33	3	100.00	1	16.67
Bullied monthly or less	3	37.50	2	16.67	0	0	3	50.00
Physically attacked	3	37.50	2	16.67	0	0	0	0
Changed schools	0	0	1	8.33	1	33.33	2	33.33

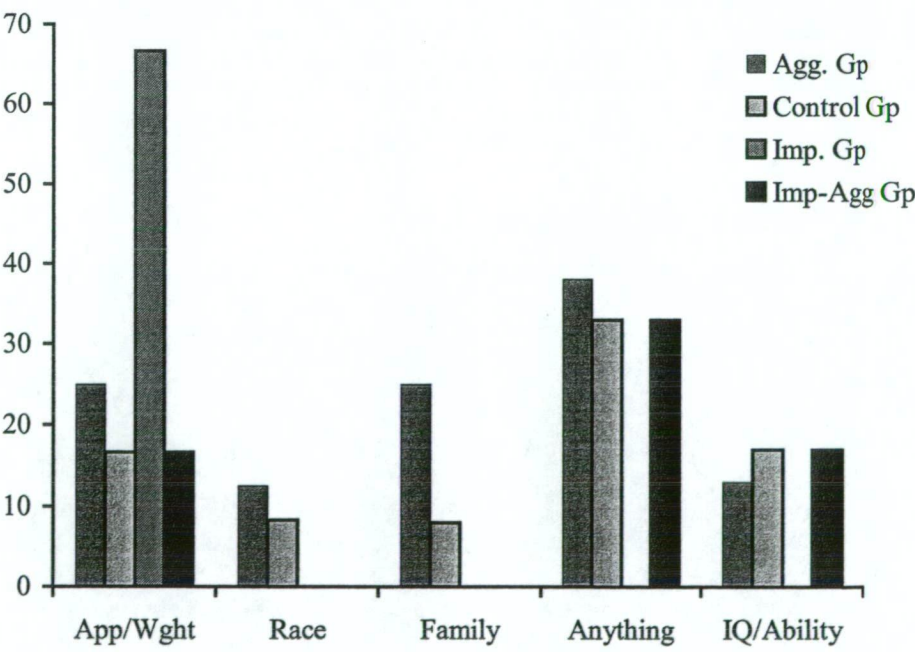


Figure 5. Percentage of bullying victims’ who reported most commonly cited reasons for being bullied.

Participants were then asked whether they had ever been in trouble with the police and if so for what type of behaviour. They were also asked whether or not they had knowingly engaged in illegal activities for which they could have been arrested if caught. Table 39 shows the number and percentage of participants who responded to these items. Numbers of respondents are small, however as anticipated the impulsive-aggressive group tended to show the highest percentage of women who had been in trouble with the police (22%), mostly for matters relating to drugs or alcohol, and engaging in undetected illegal activities which were grounds for arrest.

Table 39.

Number and percentage of participants who responded to items relating to illegal activity on the background questionnaire.

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp.-Agg. (n=18)	
	n	%	n	%	n	%	n	%
Ever been in trouble with the police	3	15.00	4	5.97	0	0	4	22.22
If so, for driving/DUI offences	1	33.33	1	25.00	0	0	0	0
If so, for theft	1	33.33	1	25.00	0	0	0	0
If so, for alcohol/drugs	1	33.33	1	25.00	0	0	3	75.00
Engaged in illegal acts but not caught	8	40.00	20	29.85	4	26.67	10	55.56

Of those who reported having been in trouble with the police, only members of the impulsive-aggressive group (50%) and the control group (20%) specified having been charged. These results are in contrast with those for total male and female samples reported in Chapter 3. It was shown that 44% of males and 32% of females who had been in trouble with the police went on to face charges. Impulsive women did not report having ever been in trouble with the police.

The highest percentage of women who had engaged in illegal activities without being caught was found in the impulsive-aggressive group, followed most closely by the aggressive group. As seen in Figure 6, these participants most commonly reported engaging in acts of theft, particularly the aggressive group, the control group, and to a lesser extent the impulsive-aggressive group. The impulsive group reported that where they had engaged in illegal acts without being caught, this was most often to do with drugs or alcohol, however the number of respondents from the impulsive group was comparatively small ($n=4$). Comparatively few women (and no controls) reported having engaged in undetected driving offences including speeding and driving under the influence of alcohol or other drugs. This is an interesting result, as in Chapter 3 it was shown that a higher percentage of females than males reported undetected driving/DUI offences.

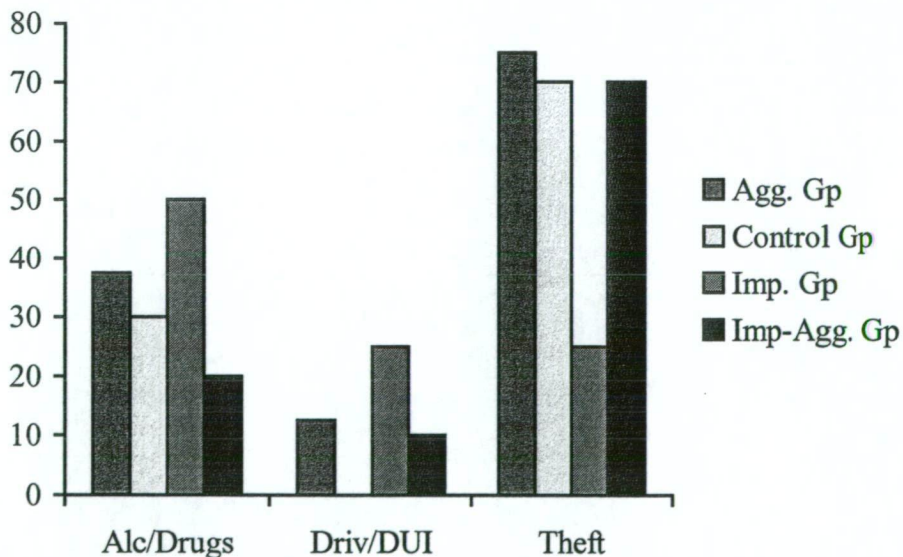


Figure 6. Percentage of participants engaging in undetected illegal activities (by most commonly cited activities).

In contrast to the total female sample, the impulsive-aggressive women responded to questions about illegal activity in a manner more similar to the total male sample described in Chapter 3, 33% of whom had been in trouble with the police while 58% reported engaging in undetected illegal acts. Twenty-two per cent and 56% of impulsive-aggressive women endorsed these factors respectively.

Participants were then asked about their experiences of violence, specifically if they had ever witnessed domestic violence, been a victim of domestic violence, a victim of abuse by someone other than a partner, or a victim of crime. Table 40 shows the percentage of participants who responded to these items.

Although being exposed to domestic violence to a greater degree than other groups, the impulsive-aggressive women were least likely to be a victim of domestic violence, a victim of abuse, or a victim of crime. In this regard impulsive-aggressive women again appear to have a similar history to the general male student population. It was reported in Chapter 3 that male participants were more likely than females to witness domestic violence, but less likely to be a victim of domestic violence or abuse. However, males were more likely to be a victim of crime.

Table 40.
Number and percentage of participants responding to items relating to experience of violence and other crime.

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp.-Agg. (n=18)	
	n	%	n	%	n	%	n	%
Witnessed dom. viol.	6	30.00	20	29.85	5	33.33	7	38.89
Victim of dom. viol.	6	30.00	9	13.43	2	13.33	2	11.11
Victim of abuse	5	25.00	13	19.40	4	26.67	1	5.56
Victim of crime	5	25.00	17	25.37	3	20.00	3	16.67

A quarter of the aggressive group reported having been a victim of crime and, as seen in Figure 7, 100% of these women reported having been a victim of theft. A quarter of controls also reported having been a victim of crime, but while this was mostly as a result of theft, small numbers of these women reported being victims of physical assault and sexual assault. No members of the impulsive-aggressive group or the aggressive group reported being the victim of a sexual assault.



Figure 7. Percentage of crime victims' who reported the most commonly cited crimes.

Participants were asked to choose from two lists of adjectives to describe (a) the discipline they received childhood and (b) childhood in general . These results are shown in Appendix E. The majority of participants describe discipline as fair, appropriate, firm, consistent, and effective. Almost 30% of the impulsive group also described discipline in their childhood as inconsistent and 13% of this group also

described this discipline as abusive. The majority of participants chose to describe their childhood in general as happy, stable, safe, nurturing, and supportive.

Negative adjectives were endorsed in very small percentages. Where these negative adjectives were endorsed, the aggressive group was more likely than other groups to describe their childhood discipline as violent and severe and childhood in general as traumatic, frightening, and deprived. Almost 30% of the impulsive-aggressive group described their childhood as being unpredictable. In addition, in comparison with other groups the impulsive-aggressive group was least likely to describe their childhood as stable, safe, carefree, nurturing, or supportive. These factors may indicate an influence on the development of the personality traits common to individuals with characteristic impulsive-aggression. These results are consistent with descriptions of the invalidating childhood environment common to individuals with borderline personality disorder, which is also characterised by impulsivity and aggression (APA, 2000). This warrants the comparison of the diagnostic criteria for borderline personality disorder against the profile of impulsive-aggressive women which will be outlined at the end of this chapter. In addition further investigation with greater participant numbers is required in order to draw firm conclusions with regard to the childhood experiences of impulsive-aggressive women.

Participants were asked to indicate whether or not they had good social support in the form of closeness to parents and a close-knit family in general, and a strong social network and trusting friendships. Table 41 shows the percentage of participants who responded to items relating to social support networks. The control group had the highest percentage of participants who reported being close to their parents and having a close-knit family. The highest percentage of participants reporting a large social network was in the impulsive group and the highest

percentage of participants reporting a special friend or confidante was in the impulsive group. To contrast, Figure 8 shows the percentages of participants within each group who denied having these social support structures in place.

Table 41.

Percentage of participants who responded to items relating to social support networks on the background questionnaire.

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp.-Agg. (n=18)	
	n	%	n	%	n	%	n	%
Close to parents	14	70.00	59	88.06	13	86.67	15	83.33
Close-knit family	14	70.00	52	77.61	11	73.33	10	55.56
Large social network	13	65.00	42	62.69	12	80.00	10	55.56
Special friend/confidante	18	90.00	59	88.06	14	93.33	14	77.78

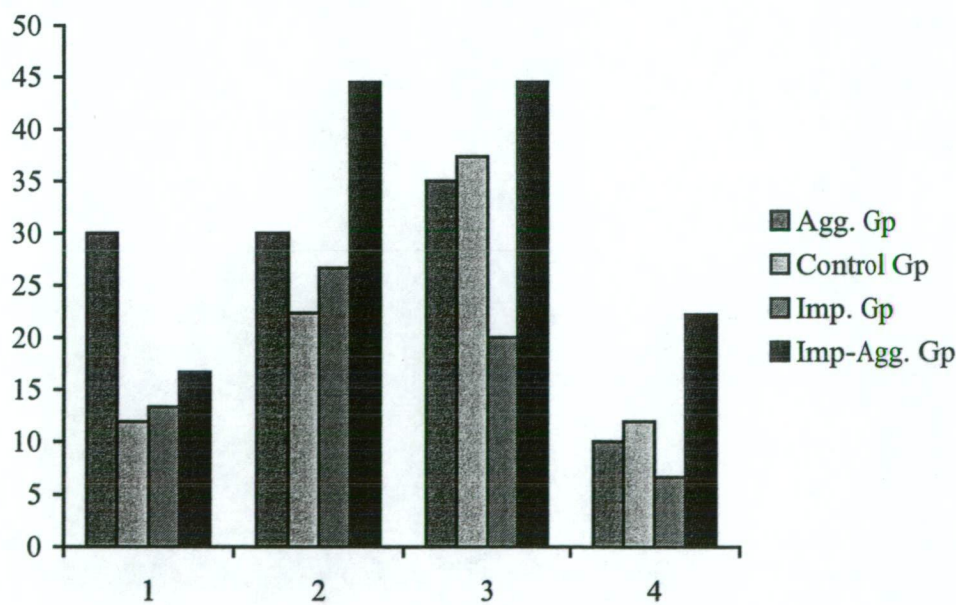


Figure 8. Percentage of participants who denied (1) being close to their parents, (2) having a close-knit family, (3) having a large social group, or (4) having a special friend or confidante.

The impulsive-aggressive group reported being close to their parents but few reported having a close-knit family. Similarly, they were least likely to report a large social network or a special friend or confidante. As shown earlier, the impulsive-aggressive group and the aggressive group endorsed suicidal risk factors to similarly high degrees, with the impulsive-aggressive group slightly higher on these factors. However, despite being less likely to be close to their parents than the impulsive-aggressive group, the aggressive group was more likely to have a number of other social supports in place. This suggests that perhaps the aggressive group may have better protective factors in place than the impulsive-aggressive group.

Results seem to indicate that it is neither impulsivity nor aggression *per se* that prevents the impulsive-aggressive group from having strong social supports. It may be that women high in impulsivity *and* aggressiveness are less likeable than other women (Forth et al., 1996), or it may be that they have more difficulty maintaining these close relationships. Individuals with psychopathic personality traits see relationships as instrumental and are able to form relationships easily (perhaps due to their superficial charm) but have difficulty maintaining these relationships (Blackburn & Maybury, 1985; Hare, 1999). It may be that impulsive-aggressive women also view relationships as instrumental and in so doing are perhaps predisposed to failure in the dual areas of likeableness and relationship maintenance. This is an area worthy of further research, especially in light of the relationship between impulsive-aggressiveness and the endorsing of suicide risk factors reported above and elsewhere (e.g., Coccaro, 1989; 1991). The exploration of psychopathic tendencies within impulsive-aggressive individuals may shed further light on these relational issues. It is noteworthy that the total male sample described in Chapter 3 were also less likely to report strong social supports compared with the total female sample. Comparisons

between impulsive-aggressive women and impulsive-aggressive men would also be a fruitful avenue for future research.

Participants were asked to respond to a number of questions relating to sexual activity. The impulsive-aggressive group yielded the highest percentage of participants who were sexually active (94%, $n=17$). This was contrary to the expectation of similar rates of sexual activity between this group and the impulsive group (67%, $n=10$). The control group (67%, $n=45$) and the aggressive group (65%, $n=13$) also showed lower rates of sexual activity than the impulsive-aggressive group. One-way ANOVAs showed that groups did not significantly differ in the average age at which they became sexually active (between 15 and 17 years of age) or number of sexual partners (between two and five; $ps>.01$).

The impulsive-aggressive group (72%, $n=13$) had the highest percentage of participants who reported that they were currently in a relationship, compared with the control group (61%, $n=41$), the aggressive group (50%, $n=10$), and the impulsive group (47%, $n=7$). More than 80% of participants in each group considered this relationship to be long-term. These relationship results are in contrast to the large percentage of impulsive-aggressive participants who reported a lack of social support networks, as shown in Figure 8, and warrant further investigation.

The impulsive-aggressive group was the only group with no participants reporting having any children. Of the three groups with children, one-way ANOVAs indicated that there were no significant differences in number of children (between two and three), or age when first child was born (between 25 and 29 years of age; $ps>.01$). Detailed results for sexual activity and childbirth rates for women in each group are presented in Appendix E. Overall these results are comparable to results for total male and female samples described in Chapter 3.

Summary profile of impulsive-aggressive female undergraduates

The results from this study provide a profile of the impulsive-aggressive female undergraduate. It is important to point out that this profile is based on subjective self-report measures and participant numbers are small.

Results suggest that impulsive-aggressive women responded appropriately to self-report measures. They were just as empathic as other women, but were more impulsive and less venturesome than impulsive women. They tended to be slightly more physically aggressive than aggressive women and were more likely to have verbally aggressive mothers. They tended to be more likely to smoke and to have a history of drug or alcohol problems. They also tended to be more likely to have a history of depression, suicidal thoughts and attempts, and to have experienced the suicide of a close other (although aggressive women showed similar suicide risk factors).

Impulsive-aggressive women were more likely than other women to have been suspended from school, to have a history of fighting as a child and to start these fights. As in adulthood, these fights tended to be mostly verbal. They were similar to other women who tended to fight as children in that they mostly fought with siblings and parents. However, impulsive-aggressive women were more than twice as likely as other women to continue to have a tendency to fight as an adult but were less likely to have started these fights than women who were aggressive but not impulsive. They were likely to have fought under the influence of alcohol or other drugs, but not as likely as controls who were neither aggressive nor impulsive. Impulsive-aggressive women were highly likely to have been a victim of bullying at school, but only slightly more likely than other aggressive women. When bullied, they were usually bullied simply about “anything” or for just “being different”.

Impulsive-aggressive women were more likely to have been in trouble with the police than other women, and when in such trouble there was a 50% likelihood that they faced criminal charges. They were also more likely than other women to have engaged in illegal activity that went undetected. They were more likely than other women to witness domestic violence but less likely to be a victim of domestic violence, and they were far less likely to be a victim of abuse. In these ways they were similar to a general male sample of undergraduates. Despite being more likely to commit crime, impulsive-aggressive women were slightly less likely than other women to be a victim of crime.

Impulsive-aggressive women were just as likely to report being close to their parents as women who were neither impulsive nor aggressive, but they were less likely than other women to report other social supports such as a close-knit family, a large social group, or a special friend or confidante. Finally, impulsive-aggressive women were more likely than other women to be sexually active and to be currently in a long-term relationship, but they were less likely than other women to have children.

Conclusion

A detailed profile of impulsive-aggressive women has been presented in this chapter, which not only illustrates the characteristics of these women but also partials out the differential impact of characteristic impulsivity and characteristic aggression. Of the total 414 women who initially completed both the I7 Impulsivity Questionnaire and the Aggression Questionnaire, 121 met the inclusion criteria for the impulsive-aggressive group. In other words, almost 30% of the female undergraduate population

potentially fit the above profile. This suggests that impulsive-aggressive women are distinct from other women but may not be a rare sub-group.

The profile presented is somewhat similar to that for antisocial personality disorder, but to a much smaller, sub-clinical scale. Therefore the next step in understanding impulsive-aggression in women is to assess the nature of these characteristics against the framework for antisocial personality disorder and psychopathy. This may be achieved through the use of individual interviews and a psychopathy rating scale such as the P-Scan (Hart et al., 1995). This will be the focus of the following chapter.

Chapter 5

Psychopathy Ratings for Impulsive-Aggressive Female Undergraduates

Rationale

Impulsivity and aggression are core features of a number of psychiatric conditions including personality disorders (APA, 1994; Swann & Hollander, 2002), most notably conduct disorder, antisocial personality disorder, and borderline personality disorder. Therefore, investigation of the relationship between impulsive-aggression and personality disorder symptoms in women is justified.

An examination of the diagnostic criteria for borderline personality disorder (see Appendix F) indicates that, based on the profile presented in Chapter 4, the predominant commonalities between this sample of impulsive-aggressive women and the borderline diagnosis are impulsivity, aggressiveness, and a history of suicidal behaviours. However, given the impulsive-aggressive women's pervasive pattern of verbal aggression and other antisocial behaviours it seems more fruitful to investigate similarities with antisocial personality disorder and psychopathy.

Antisocial personality disorder is characterised by a range of behaviours that include criminal activity, lying, impulsivity, and aggression. Table 42 compares the antisocial personality disorder diagnostic criteria (APA, 1994) with the profile of impulsive-aggressive women. As can be seen, there is some support for the presence of these characteristics, although this is not to say that impulsive-aggressive women individually meet the diagnostic criteria for antisocial personality disorder. However, given the similarities between this group of women and those with a diagnosis of antisocial personality disorder, further investigation is certainly warranted.

Table 42.

Comparison between diagnostic criteria for antisocial personality disorder (DSM-IV; APA, 1994) and demographic information for impulsive-aggressive participants.

DSM-IV antisocial personality disorder diagnostic criteria	Current evidence from findings for impulsive-aggressive females (see Chapter 4 profile)
Criterion A. Pervasive pattern of disregard for and violation of the rights of others since age 18 years, indicated by three (or more) of:	
1. Failure to conform to social norms by repeatedly performing acts that are grounds for arrest	• Yes, more criminal activity, more likely to have faced charges.
2. Deceitfulness (repeated lying, use of aliases, or conning others for personal profit/pleasure)	• Mixed evidence. Criminal activity, but more likely to respond 'honestly' as measured by the EPQ Lie Scale.
3. Impulsivity or failure to plan ahead	• Yes, more than other impulsive women.
4. Irritability and aggressiveness (repeated physical fights or assaults)	• Yes, but only slightly more than other aggressive women and predominantly verbal.
5. Reckless disregard for safety of self or others	• Yes, but less venturesome than other impulsive women.
6. Consistent irresponsibility (repeated failure to sustain consistent work behaviour or honour financial obligations)	• No available evidence.
7. Lack of remorse, as indicated by being indifferent to or rationalising having hurt, mistreated, or stolen from another	• No evidence, impulsive-aggressive women were as empathic as other women.
Criterion B. The individual is at least 18 years old	• Average age was around 20
Criterion C. Evidence of Conduct Disorder with onset before age 15 years.	• Perhaps, more childhood fighting and school suspensions. No school expulsions reported.
Criterion D. Antisocial behavior not exclusively during the course of Schizophrenia or Manic Episode.	• No evidence available at this time.

The major criticism of the diagnostic criteria for antisocial personality disorder is that it is a descriptive category which describes a range of behaviours and has little predictive power in relation to personality characteristics and criminal recidivism (Hare, 1996a). Hare and his colleagues have long been involved in the clarification of

this diagnostic category and have been advocates for the re-inclusion of psychopathic personality traits into the diagnostic criteria (Hare, 1996a; 1996b).

Cleckley's (1941) original description of the psychopathic personality included guiltlessness, impulsivity, emotional shallowness, superficial charm, insincerity, an incapacity for love, an inability to profit from experience (including punishment), and an absence of irrational or delusional thinking. Notably, Cleckley does not include criminality as a defining factor in psychopathy. Hare's (1996b) contemporary outline of psychopathic characteristics includes a sense of entitlement, lack of remorse and lack of concern for others, manipulateness and conning, cold affect, irresponsibility, minimal understanding of socially accepted behaviour and disregard for social norms and social obligations. While these characteristics include and are exemplified by the behaviours set out in the DSM-IV antisocial personality disorder diagnostic criteria, the diagnostic criteria for psychopathy go further to define the personality disordered antisocial individual. To illustrate the impact of this, it is estimated that around 80% of offenders meet the criteria for antisocial personality disorder but only around 15-20% meet the criteria for psychopathy (Hare, 1996b). This is due to the tighter inclusion criteria formed when personality is also assessed.

A small body of work has extended research in this realm to include investigations with female samples. As with the bulk of the literature in this area involving males, most of the female studies have focused on incarcerated offenders. This is important work as it focuses on arguably the most dangerous psychopaths. However, it could also be argued that the most dangerous psychopaths are those who evade detection and continue unchecked. Therefore there is an urgent need for greater understanding of the non-forensic psychopath (Forth et al., 1996). With this in mind,

the present study aims to combine two under-represented areas in psychopathy research by investigating a non-incarcerated sample of females.

The model of psychopathy which underpins the flagship measure of psychopathy, the PCL-R, comprises two factors (Forth et al., 1996; Hare et al., 1991; Harpur et al., 1989; Hart & Dempster, 1997). Factor 1 combines the affective and interpersonal components of psychopathy. This factor is personality-based, and typified by the psychopath's callous, remorseless use of others. Interpersonally, psychopaths tend to view relationships as instrumental, for example defining love as sex (Blackburn & Maybury, 1985). Affectively, psychopaths are glib, charming, insincere, lacking in remorse and empathy, and are less able to experience the full range of emotions other than in an egocentric, instrumental way (Hare, 1991; 1999). Evidence suggests that these personality factors are better able to differentiate between true psychopaths and non-psychopathic offenders than the DSM-IV criteria for antisocial personality disorder (Hare, 1996b). Revisions of the model of psychopathy identify that the affective component and the interpersonal component are in fact separate factors (Cooke & Michie, 2001). The P-Scan subsequently reflects this.

The revised model of the psychopathy construct does not particularly alter the intent of the PCL-R's behaviourally-based Factor 2, which embodies the lifestyle characteristics exemplified by the antisocial behaviours common to both antisocial personality and psychopathy. Psychopaths are likely to lead a lifestyle typified by itinerancy and by behaviours which endanger themselves or others (e.g., drug use, drink driving, etc.). It is the lifestyle factor of the psychopathy construct that is most similar to the behaviourally based antisocial personality disorder diagnosis (Verona et al., 2001).

Prevalence rates between male and female offenders seem to differ little within incarcerated samples, although male psychopaths tend to score higher than female psychopaths on psychopathy measures (Salekin et al., 1997). In community populations, prevalence is estimated at around one per cent (Hare, 1999), although sex differences in community samples are not yet clearly defined. Forth et al. (1996) found that three per cent of male university students met the criteria for psychopathy, but no females reached the diagnostic cutoff.

Warren and colleagues state that it is important to investigate personality pathology in order to evaluate the risk for violence among women (Warren et al., 2002). They cite the growing numbers of violent crimes being perpetrated by women and the high percentages of female offenders diagnosed with personality disorders, most commonly borderline personality disorder and/or antisocial personality disorder. In a later article they state:

... psychopathy, at least in women, begins with a basic antisocial personality orientation that is made more malignant by its combination with the grandiosity and lack of concern for others intrinsic to narcissistic states, as well as suspicious perceptions about the need to protect oneself from a dangerous and intrusive environment (Warren et al., 2003, p. 239).

Rutherford et al. (1999) investigated antisocial personality disorder and psychopathy among cocaine-dependent women. They found support for the notion that antisocial personality and psychopathy are discrete constructs. They also recommended that the behavioural criteria for antisocial personality disorder need to include specific antisocial behaviours associated with women to reduce a gender bias in the criteria (e.g., sexual promiscuity may be less common in females than in males

with this personality disorder). This issue may be addressed in the forthcoming PCL-R-2.

It was shown in Chapter 4 that impulsive-aggressive women were more impulsive than their peers, including women who were categorised as impulsive but not aggressive. Impulsive-aggressive women were also more likely to have engaged in verbal fights and criminal behaviours and were more likely to have witnessed domestic violence, but were less likely to have been a victim of domestic violence or abuse. In addition they came from backgrounds more prone to involve verbally aggressive mothers. While it is unlikely that many (if any) psychopaths will be identified within a sample of female university undergraduates, it could be expected (given their profile) that impulsive-aggressive women would score higher on a measure of psychopathy than the other groups of women mentioned above. This expectation is based on the similarities between their profile and antisocial personality disorder, which in turn is associated with the lifestyle factor of the psychopathy construct (Verona et al., 2001).

The investigation of psychopathy within university samples has received support within the literature (Forth et al., 1996; Lilienfeld & Andrews, 1996). These authors have suggested that when psychopaths are identified within a university population, they are more likely to be examples of the “successful” psychopath. These individuals have all the hallmarks of psychopathy but remain outside the criminal justice system by evading detection or by conducting activities at the fringes of legality. They are capable of living within the confines of the law, typically “getting away” with unethical, immoral, or dangerous behaviours, while having a devastating impact on those around them (Hare, 1999). Hare prefers to call these psychopaths

“sub-criminal” rather than successful. Hare suggests that sub-criminal psychopaths constitute the bulk of the iceberg, with serial killers representing the tip.

To elucidate the characteristics of a non-forensic sample of impulsive-aggressive women, Hare’s PCL:SV (Hart et al., 1995) or the P-Scan (Hare & Herve, 1999) may be employed to investigate similarities with psychopaths. These similarities are expected to manifest as psychopathic characteristics, traits, and/or behaviours, expressed as sub-clinical psychopathic tendencies rather than a full-blown psychopathy diagnosis.

Hare’s measures of psychopathy rely on information gained from a semi-structured clinical interview, as well as collateral information gathered from as wide a variety of sources as possible. The PCL-R and the PCL:SV have shown strong construct validity in offender samples of psychopaths (Forth et al., 1996; Hart et al., 1995). Total psychopathy scores on the PCL:SV, and the PCL-R have been shown to be strongly and positively correlated with each other (Forth et al., 1996; Hart & Dempster, 1997). The PCL:SV has been shown to be highly reliable and valid for use with undergraduate populations (Forth et al., 1996). The manual for the P-Scan (Hare & Herve, 1999) does not report reliability or validity data for either offender or non-forensic samples. However, a study by Elwood and her colleagues (in press) has provided preliminary evidence supporting the use of this tool as a measure of psychopathy in university samples. As there were some limitations to this study (small sample size, untrained raters), further investigation using this measure in studies involving undergraduate participants is warranted. It was for this reason that the P-Scan was chosen over the well-validated PCL:SV.

The aim of the present study was to compare impulsive-aggressive women with impulsive women, aggressive women, and controls on a measure of

psychopathy, the P-Scan. As the P-Scan does not have a dedicated interview format, the interview schedule from the PCL:SV was followed and participants were rated post-interview using the P-Scan rather than the PCL:SV. This procedure also serves to provide much needed data on the use of the P-Scan with an undergraduate sample.

As impulsive-aggressive women have been shown to share similarities with the criteria for antisocial personality disorder as a group, it could be expected that these women might show high scores on a measure of the behavioural aspects of psychopathy. It was therefore hypothesised that compared with other women, impulsive-aggressive women would show higher scores on the lifestyle facet of the P-Scan. Given the pervasive pattern of antisocial characteristics, impulsivity, and aggressiveness reported in Chapter 4, the impulsive-aggressive women were also hypothesised to show higher scores than other groups on the affective and interpersonal facets of the P-Scan. Finally, it was hypothesised that impulsive-aggressive women would receive higher total P-Scan scores than impulsive women, aggressive women, and controls.

Method

Participants

Participants were 38 female psychology undergraduates from the University of Tasmania. These women were a subset of the 199 participants described in the previous chapter (i.e., from the 2000 and 2001 first year student pool). Participants were selected and grouped according to the selection criteria detailed in Chapter 4. These groups were an aggressive group ($n=9$), an impulsive group ($n=7$), an impulsive-aggressive group ($n=11$), and a control group ($n=11$). Participants' ages ranged from 17-44 years, with a mean age of 21.32 years ($SD=6.70$ years). Mean ages

and age ranges for each group are presented in Table 43. The table shows that there was a wider age range for the aggressive and control groups than for the impulsive and impulsive-aggressive groups. A one-way ANOVA indicated that groups did not significantly differ in age, $F(3.34) = 0.57$, $MSE = 46.48$, $p = .64$, however the smaller standard deviations in the impulsive-aggressive group indicate that there was less variability around the mean for this group in comparison to others. Following the same rationale as that outlined in previous chapters (i.e., inclusion of mature age students in the definition of an undergraduate sample) age outliers were not excluded.

Materials

The Advanced Progressive Matrices (APM; Raven, 1962) was employed as a nonverbal estimate of intelligence. The interview format from the PCL:SV (Hart et al., 1995) was employed for interview structure and the P-Scan (Hare & Herve, 1999) was employed to rate psychopathy levels post-interview. The P-Scan rating scale contains 90 items, 30 in each of the three facets of psychopathy: interpersonal, affective, and lifestyle. Items are scored as follows: 2 = item definitely applies; 1 = item applies somewhat or insufficient information to rule item in or out; 0 = item does not apply. The P-Scan yields scores for each of the three facets, and also a total psychopathy score which is an average of the three facet scores. The highest maximum score per facet and for total psychopathy is 60. A tape recorder was used to record each interview.

Procedure

Participants were administered the APM (Raven, 1962) as an estimate of overall intelligence between groups. Raw data from two participants from the control group

(*n*=1) and the impulsive group (*n*=1) were excluded from analysis due to their unusually low scores. Mean APM scores are shown in Table 43. A one-way ANOVA conducted on APM scores indicated that groups did not significantly differ in intelligence as measured by the APM, $F(3,32) = .68$, $MSE = 26.01$, $p = .57$. This was true before and after exclusion of the outliers' scores.

Table 43.
Age Means (and standard deviations), age ranges, and APM raw scores.

Group	Mean Age	Age Range	APM (Max.=36)
Aggressive (<i>n</i> =9)	22.11 (8.25)	18-43	24.89 (5.64)
Control (<i>n</i> =11)	23.00 (9.41)	17-44	22.00 (3.62)
Impulsive (<i>n</i> =7)	19.14 (3.48)	17-27	21.83 (6.01)
Imp.-Agg. (<i>n</i> =11)	20.36 (2.77)	17-25	22.36 (5.28)
Total (<i>n</i> =38)	21.32 (6.70)	17-44	22.81 (5.03)

Participants took part in individual interviews which followed the interview format for the PCL:SV (Hart et al., 1995) and were then rated using the P-Scan (Hare & Herve, 1999). As mentioned above, the PCL:SV was only included for use of its interview schedule, as one is not provided with the P-Scan. A female clinical psychologist trained in the administration and scoring of the PCL-R and PCL:SV interviewed and rated participants on the P-Scan, semi-blind to group membership (i.e., this interviewer was responsible for participant selection, but due to the time delay between selection and interview the interviewer was not aware of group membership by the time interviews took place). Interviews were conducted in a quiet room within the School of Psychology at the University of Tasmania. Interviews took 60-90 minutes to administer. The P-Scan rating form took approximately five to ten minutes to complete. This was done immediately following each interview. Collateral

information was not gathered. Forth et al. (1996) report that a lack of supporting information does not significantly impact on scores for non-forensic populations. Alterman, Cacciola, and Rutherford (1993) state that PCL-R scores tend to be higher when collateral information is provided to raters, and reliability of scores is also greater when this is the case. However, they acknowledge that diagnostic reliability was also good when collateral information was not available to raters. As diagnosis is not the aim here, lack of collateral information is not deemed to be an undermining factor in this study. Participants received scores for each facet of the P-Scan and a total psychopathy score. Participants were advised that the study was investigating the relationship between personality characteristics and personal background.

Design & Data Analysis

This study used a 4 [group: aggressive/control/impulsive/impulsive-aggressive] x 3 (P-Scan facet: interpersonal/affective/lifestyle) mixed design. The dependent variable was mean scores on the P-Scan. As outlined above, scores derived were the facet scores (interpersonal, affective, and lifestyle) and the total psychopathy score.

Raw scores were collated for each participant to derive group means. Data were analysed via a 4 x 3 MANOVA. Total psychopathy scores (averages of the three facet scores) were analysed separately by a one-way ANOVA. Post hoc SNKs were conducted where appropriate. Alpha was set at $p < .05$.

Results

Ratings for each participant on each facet of the P-Scan were collated and means and standard deviations for each group were derived. These are presented in Table 44 and

show that the impulsive-aggressive women were rated higher on all facets of the P-Scan. Total psychopathy scores were also highest for this group.

Table 44.
Means (and standard deviations) for P-Scan ratings for the four groups.

Group	Interpersonal (max.=60)	Affective (max.=60)	Lifestyle (max.=60)	Psychopathy Total (max.=60)*
Aggressive (n=9)	2.11 (2.15)	0.89 (0.78)	0.89 (0.78)	1.30 (0.75)
Control (n=11)	1.91 (2.63)	0.73 (2.10)	1.27 (1.19)	1.30 (1.80)
Impulsive (n=7)	1.57 (2.07)	0.43 (1.33)	2.71 (3.04)	1.57 (1.57)
Imp.-Agg. (n=11)	5.73 (3.32)	5.18 (5.47)	8.10 (4.83)	6.33 (3.48)
Total (n=38)	3.00 (3.11)	2.00 (3.72)	3.42 (4.22)	2.81 (3.14)

* Total psychopathy scores are an average of the three facet scores.

Analysis of the total psychopathy scores by one-way ANOVA yielded a highly significant group main effect, $F(3,34) = 12.66$ MSE = 5.08, $p<.001$. Post hoc SNKs indicated that the impulsive-aggressive group was rated higher than the aggressive group, the control group, and the impulsive group ($ps<.001$). Raw total psychopathy scores for the aggressive group ranged from 0 to 2.33, for the control group 0 to 6.33, for the impulsive group 0 to 4.0, and for the impulsive-aggressive group 2.33 to 14.67. Apart from the one participant who scored 14.67 (which falls in the low level of concern range), all scores fell within the very low level of concern range on the P-Scan.

A 4 (group) x 3 (facet) MANOVA was conducted on raw facet scores, but failed to yield a significant interaction, Rao $R(6,66) = 1.12$, $p=.36$. However, a significant group main effect was found for facet scores, $F(3,34)=12.67$, MSE = 15.23, $p<.001$. Post hoc SNKs indicated that overall the impulsive-aggressive group was rated significantly higher on each of the P-Scan facets than all other groups

($p < .001$). A significant main effect for P-Scan facet was also found, Rao $R(2,33) = 5.40$, $p < .01$. Mean P-Scan facet scores for each group are shown in Figure 9.

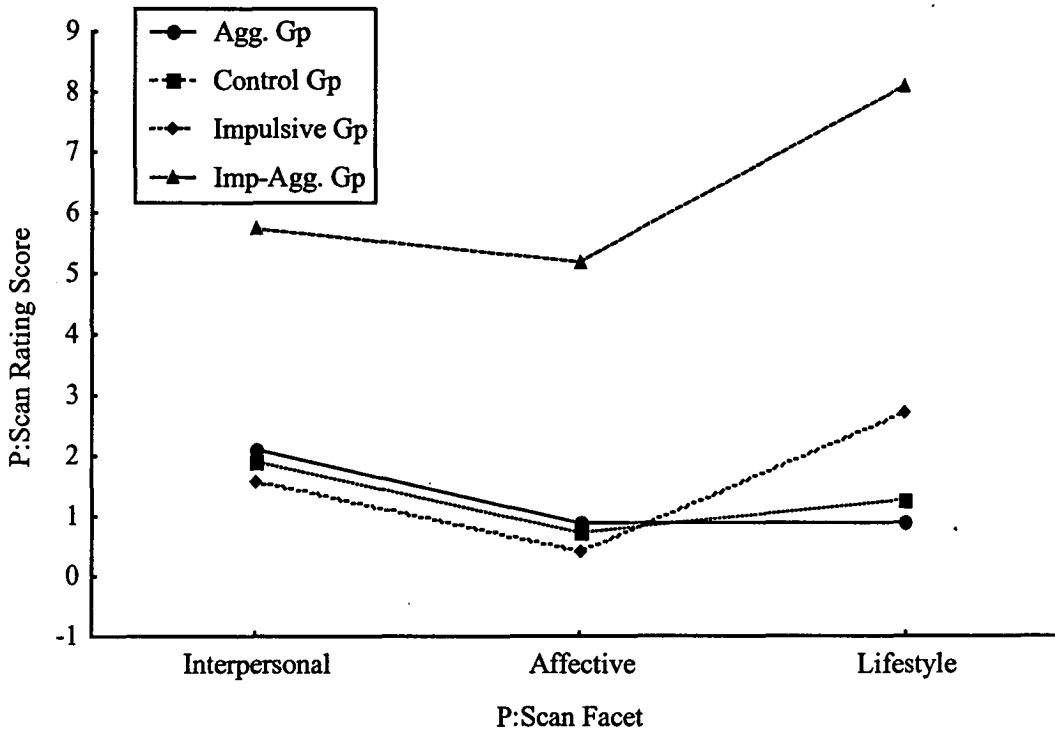


Figure 9. Mean P-Scan ratings for each facet of the P-Scan, for each group.

Post hoc SNKs showed that participants were rated significantly higher on the lifestyle facet ($p < .05$) and the interpersonal facet ($p = .07$) than on the affective facet. Inspection of Figure 9 suggests that the significant effect of the lifestyle facet was mostly attributable to the results from the impulsive-aggressive group and to a lesser extent the impulsive group, however the two-way interaction illustrated in Figure 9 was not significant, which may be a function of the relatively small participant numbers.

Discussion

It was hypothesised that impulsive-aggressive women would be rated higher than all other female groups on the P-Scan, a measure of psychopathy. This hypothesis was supported by results for total psychopathy scores. The hypotheses that the impulsive-aggressive group would have higher scores on the interpersonal and affective facets and on the lifestyle facet were also supported.

Impulsive-aggressive women's ratings on the lifestyle facet reflect the similarity between the profile of these women and sub-clinical levels of antisocial personality disorder, as these constructs are known to be related (Verona et al., 2001). In addition, their significantly higher results on the affective and interpersonal facets of the P-Scan compared with the other groups indicate that impulsive-aggressive women share personality characteristics in common with psychopaths, also at a sub-clinical level. In other words, impulsive-aggressive women differ from their peers, both in their behaviour and their personality style.

Scores for all groups fell within the very low level of concern range. In other words, although the impulsive-aggressive group showed a trend towards meeting some of the diagnostic criteria for antisocial personality disorder and was rated higher than other groups on a measure of psychopathy, it is not suggested here that they individually meet the criteria for either of these diagnoses.

Forth et al. (1996, p. 541) note that students with higher psychopathic traits are seen as 'cold, arrogant, callous, and dominant'. Similarly Salekin et al. (1997) reported a lack of warmth and sensitivity in women with high total scores for psychopathy. These reports suggest that women with psychopathic tendencies are not well liked, and this may explain the lack of social supports reported by the impulsive-aggressive women (as shown in Chapter 4).

Some similarities between impulsive-aggressive females and the general male undergraduate sample were reported in Chapter 4. It was shown that males (described in Chapter 3) and impulsive-aggressive females (unlike other female groups) were more likely to have witnessed domestic violence, but less likely to have been a victim of domestic violence or a victim of abuse. Males and impulsive-aggressive females were also shown to have similar prevalence rates for antisocial behaviour. Additional studies are required comparing impulsive-aggressive women with impulsive-aggressive men to further explore these issues, particularly in relation to sub-clinical psychopathic features.

Elwood and her colleagues found higher scores on facet and total scores of the P-Scan for a combined female sample (i.e., not differentially grouped) than was found for the impulsive-aggressive group in the present study (Elwood et al., in press). They found a mean total P-Scan score of 8.76 (SD=6.70) for female undergraduates and 14.45 (SD=9.50) for males. This suggests that perhaps their raters (friendship-dyads who rated each other without training in psychopathy) were being overly harsh on each other. Or it could mean that the friend-raters were able to give higher ratings due to the close relationship with their interviewees. It is noteworthy that there was a higher degree of variability around mean P-Scan scores in the study by Elwood et al. This could reflect the effect of multiple raters employed in their study, as opposed to the single rater involved in the current study. Alternatively, it could be that psychopathic tendencies exist to a higher degree of psychopathic tendencies in an American sample compared with an Australian sample (or more specifically a Tasmanian sample). Where cultural differences in scores on Hare's psychopathy measures have been reported, they tend to be linked to the interpersonal elements of psychopathy (Cooke & Michie, 2001).

Meloy and Gacono (1998) point out that institutionalised psychopaths (i.e., those in prison or in hospital care) represent psychopathic failures and are therefore not representative of the broader more successful psychopathic population. Forth et al. (1996) encourage the investigation of the 'successful' or 'sub-criminal' (Hare, 1999) psychopath and state that these are more likely to be found in undergraduate populations, as recruitment from community samples may attract recently released offenders. However, in the present study it was found at interview that a small percentage of the impulsive-aggressive women had been convicted of criminal offences and an even smaller percentage had been incarcerated. Thus ex-convicts, like psychopaths, are found in all walks of life (Hare, 1991; 1999). Regardless, the fact that they are now at university suggests that these impulsive-aggressive women are 'successful' despite their sub-clinical psychopathic personality characteristics and antisocial behaviours. It may be that there are factors specific to these women (compared with other offenders) that have influenced their life outcomes to date. Future longitudinal studies investigating younger women (e.g., mid to late high school) may elucidate the pathways taken by impulsive-aggressive women in terms of numbers who go on to university, jail, jobs, or unemployment, and what differentiates them from each other.

There are two primary limitations of this study. Firstly the small sample size suggests that generalisations to the greater female population should be made with great caution. The second limitation is the differential age ranges between the groups. Despite a lack of statistical differences between groups in mean age, there was a preponderance of younger participants in the impulsive and impulsive-aggressive groups. This is of concern as impulsivity, aggression, and psychopathy are negatively correlated with age (Hare, 1999; Barratt & Slaughter, 1998). However, the relative

difference between the impulsive group and the impulsive-aggressive group on P-Scan scores suggests that age is not the determining factor here.

As noted previously, Warren et al. (2003) suggest that psychopathic women may be reacting to what they perceive to be a hostile world. At the sub-clinical level of psychopathy, impulsive-aggressive women may also be prone to misattributions of hostile intent. There is a large body of literature which speaks to this issue with male populations (e.g., Copello & Tata, 1990; Dodge & Somberg, 1987; Flores, 1999; Zelli et al., 1999), but to date none addressing this attributional bias in impulsive-aggressive women. Copello and Tata (1990) report that interpretive bias is linked to hostile attribution bias, Serin (1991) found that psychopaths show misattributions of hostile intent in ambiguous situations, and Raine (1989) found that psychopaths selectively attend to salient unpleasant events. These findings suggest that investigations of attentional bias in individuals with psychopathic traits would be fruitful. To date, attentional bias has not been investigated with psychopaths or with impulsive-aggressive individuals. The following chapter will investigate whether impulsive-aggressive women show evidence of attentional bias when presented with aggressive stimuli, particularly in comparison to women who are aggressive but not impulsive. Results will be interpreted in light of research showing abnormal emotional reactivity associated with the personality factors of the psychopathy construct (Patrick et al., 1993; Sutton et al., 2002).

Chapter 6

Attentional Bias in Impulsive-Aggressive Women: Links with Sub-Clinical Psychopathy, Emotion Processing, and Hostile Attribution Bias

Rationale

In the previous chapter the profile of impulsive-aggressive female undergraduates was compared against the diagnostic criteria for antisocial personality disorder. Impulsive-aggressive women were also shown to score higher than other groups of female undergraduates on a measure of psychopathy. They scored higher total psychopathy ratings, and higher ratings on the interpersonal and affective facets and the lifestyle facet. The latter is associated with antisocial personality disorder (Sutton et al., 2002) and is also related to the personality constructs of lower constraint (i.e., higher impulsivity) and higher negative emotionality such as alienation/mistrust and aggressiveness (Verona et al., 2001). Thus it could be argued that psychopathic lifestyle features characterise this sample of impulsive-aggressive women (Patrick, 2003). However, these women were also rated higher than their peers on the affective and interpersonal facets of the P-Scan. These facets index the personality characteristics of psychopathy, which are related to the observed abnormal affective reactivity of psychopaths (Patrick, 1994). It is this link with psychopathy that forms the focus of the current chapter.

Psychopathy has been shown to be associated with selective attention to unpleasant events (Harpur & Hare, 1990; Raine, 1989), psychophysiological deficits in affective functioning (Patrick, Bradley, & Cuthbert, 1990; Patrick, Cuthbert, & Lang, 1994), and with abnormal processing of the emotional elements of language (Hare, Williamson, & Harpur, 1988; Williamson, Harpur, & Hare, 1991). Hare

(1996b) states that psychopaths are unable to process the deeper semantic meaning of affective language. He further states that psychopaths lack the ability to appreciate the emotional significance of events. This is in contrast with individuals diagnosed with antisocial personality who, Hare states, do not differ from controls. This presents an excellent marker of the distinction between antisocial personality and psychopathy.

Cleckley (1988) states that psychopaths lack normal concern or worry in response to stressful situations. In a review of the literature Steuerwald and Kosson (2000) report that psychopaths have been shown to be lacking in fear and anxiety. It has been argued that this underpins the lack of concern with and subsequent inability to learn from situations involving punishment (Herpertz et al., 2001). A number of physiological studies with this population have shown evidence for autonomic under-arousal in general (Raine, 1989) and hypo-emotionality in particular (Patrick et al., 1993; Patrick et al., 1994).

The majority of studies investigating abnormal reactivity to fearful stimuli with psychopaths have relied on the startle reflex paradigm with pleasant, neutral, and unpleasant pictorial or word stimuli (Steuerwald & Kosson, 2000). In the general population, participants modulate eyeblink startle response to affective pictures. That is, people generally tend to display a larger reflexive eyeblink response to startle probes during the display of unpleasant images, and a smaller response to probes during presentation of pleasant images (Cuthbert, Schupp, Bradley, McManis, & Lang, 1998). However, research indicates that psychopaths display smaller eyeblinks when presented with unpleasant or threatening stimuli, compared to non-psychopathic offenders and controls (Patrick, 1994; Patrick et al., 1993).

To illustrate, Figure 10 (adapted from Patrick et al., 1993) shows a typical pattern of startle modulation in psychopaths and non-psychopaths. As can be seen,

psychopaths (PCL-R ≥ 30) show a clear reduction in the magnitude of eyeblink when startle probes are presented with unpleasant stimuli compared to neutral stimuli. This is in contrast with the pattern of responses to these stimuli by non-psychopaths (PCL-R ≤ 20) and those with mixed psychopathic traits (i.e., do not reach the diagnostic cutoff; PCL-R = 20-30). This abnormal affective reactivity has been found for both male and female psychopaths (Sutton et al., 2002).

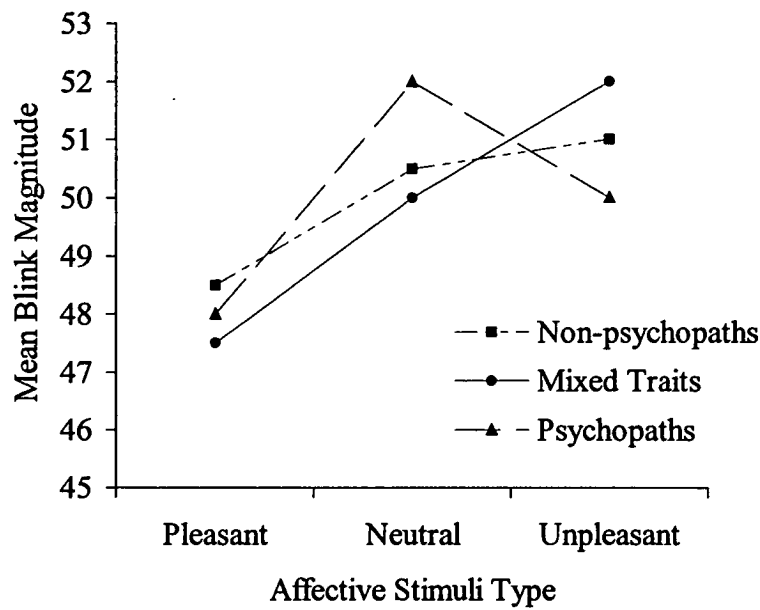


Figure 10. Mean blink magnitude for psychopaths, non-psychopaths, and those with mixed traits in response to affective stimuli (adapted from Patrick et al., 1993).

Figure 10 is based on the landmark work of Patrick et al. (1993) who presented white noise startle probes at 3500ms, 4500ms or 5500 ms during the 6000ms presentation of pleasant, neutral or unpleasant slides. From their article it is unclear if responses were averaged across the various startle onsets. However Sutton

et al. (2002) point out that with later onset of startle probes (4500ms) psychopaths do not differ from non-psychopaths. This suggests that emotional reactivity in psychopaths is delayed, not absent.

Further evidence for abnormal affective processing in psychopaths has been found in other areas. In a study involving event-related potentials (ERPs), Williamson et al. (1991) found that controls reacted faster to emotional words than to neutral words during a lexical decision task and showed larger ERPs (centro-frontal N500) in response to emotional words. Psychopaths did not show this effect for reaction time or for ERP magnitude. Kiehl, Hare, McDonald, and Brink (1999) found that the ERPs of control participants differentiated between positive and negative word stimuli, but this was not the case for psychopaths. They found that psychopaths presented a large centro-frontal N350 wave in each task regardless of affective valence of stimuli. This waveform was either absent or small in controls. The latter authors argue that results from both of these ERP studies are functionally similar to the N400 results found by Kutas and Hillyard in a number of studies in the 1980s. Kiehl et al. (1999) suggest that these findings indicate that psychopaths may differ in the availability of cognitive resources for language processing. Alternatively they suggest that these results are clouded by psychopathic participants' lack of a large P300 which is linked with cognitive resource availability (Barratt, Faulk, Brandt, & Bryant, 1986), but either way it appears that psychopathy has an adverse impact on cognition and language processes.

Single photon emission computerised tomography has shown that the pattern of relative cerebral blood flow (rCBF) during the processing of affective stimuli differs in psychopaths compared to controls (Intrator et al., 1997). Intrator et al. asked participants to complete a lexical decision task for negatively valenced emotional

words. Results showed increased rCBF in psychopaths. The cortical and sub-cortical areas associated with emotional lexical processing were active in psychopaths, but were inefficient. This provides added evidence to suggest that psychopaths may require additional resources to process emotional stimuli, while the emotional charge of words used may aid controls to process information with fewer resources required. It has been suggested elsewhere (Kiehl et al., 2001) that deficits in limbic structures may be responsible for the reduced affective reactivity of psychopaths and that these individuals may be forced to use alternate cognitive strategies to process affective material. Intrator et al. (1997, p.101) concluded that it is 'as if emotion is a second language for psychopaths'. Again, these various conclusions are consistent with the position advanced by Sutton et al. (2002), that affective reactivity is delayed in psychopaths, not absent.

In an investigation of the impact of abnormal affective responding in psychopaths, Christianson et al. (1996) found that memory for emotional stimuli was narrowed to more salient information in controls, but psychopaths did not show this effect. In their study, psychopathic individuals recalled information in emotional and neutral slides with no significant differences between salient and peripheral information. In a recent study, Blair and Coles (2000) investigated recognition of emotions in pictures of facial expressions with adolescent children. Children were later rated using the Psychopathy Screening Device, a two-factor measure of psychopathy similar to the PCL-R (Frick & Hare, 1996). They found an inverse relationship between the ability to recognise sad and fearful facial expressions and ratings on both factors of this psychopathy measure. No relationship was found for the ability to recognise happy, angry, disgusted, or surprised facial expressions. Elsewhere, these authors have shown that this relationship is most closely related to

the callous-unemotional factor of the Psychopathy Screening Device than to the antisocial behaviour factor (Blair, 1999).

The effects of abnormal affective responding in psychopaths do not necessarily extend to the self-report level. Herpertz et al. (2001) found that despite a lack of appropriate physiological responding to affective stimuli, psychopathic participants rated their reactions to these stimuli in the same emotion-appropriate way as controls. This suggests that although psychopathic individuals are not physiologically experiencing the emotional reactions that others feel in response to affective stimuli, they know what they should be feeling and are able to self-report accordingly.

Vanman, Mejia, Dawson, Schell, and Raine (in press) investigated the affective startle response in a community sample of high scorers on the PCL-R. Consistent with previous research, they found that participants who were rated highly on both factors of the PCL-R showed no modulation of the startle response. However, following a regression analysis they found that affective modulation of startle was negatively correlated with the personality driven Factor 1, but positively correlated with the behaviourally-driven Factor 2. In other words, those who have higher ratings for antisocial behaviour should show a modified startle reflex to unpleasant stimuli similar to controls and those with higher ratings on the psychopathic personality factors should show abnormal startle responses to unpleasant stimuli.

While physiological studies have focused on unpleasant stimuli, social cognition research relevant to this discussion has focused on ambiguous events. The majority of these studies have investigated misattributions of hostile intent in samples of either children or violent offenders, with few studies specifically addressing

psychopathy or antisocial personality disorder and to date none specifically target aggression in women.

Dodge and his colleagues have conducted a great deal of research investigating the misattribution of hostile intent in aggressive children (see Crick & Dodge, 1994). Their studies show that aggressive children are more likely to interpret socially ambiguous situations as hostile in nature, where no hostile threat actually exists. Copello and Tata (1990) used ambiguous sentences to investigate misattribution of hostile intent in violent and nonviolent adult offenders and non-offender adult controls. They found that both offender groups were more likely to misattribute hostile intent than were controls. Copello and Tata interpreted this result as supporting the notion that psychopaths selectively attend to salient aversive events, however the combined offender groups did not represent a psychopathic group *per se* and therefore this interpretation is tenuous. However, these results may at least indicate support for an attentional bias in antisocial individuals. To date, attentional bias has not been investigated with these populations.

Research with anxiety sufferers and other clinical groups has shown that vigilance for threat-related stimuli (i.e., specific to participants' particular psychopathology) is represented by attentional biases towards threat words or faces and avoidance is represented by attentional biases away from these stimuli (Bradley et al., 1999). Although impulsive-aggressive women did not report higher rates of anxiety symptoms than other groups (as detailed in Chapter 4), it is likely that the mistrustfulness associated with psychopathic personality traits may predict a tendency toward hostile attributional biases in these women (Patrick, 2003; Verona et al., 2001). This may manifest as an attentional bias for stimuli related to aggressiveness (Patrick, 2003).

The aim of this study was to investigate attentional bias for aggression-related stimuli in impulsive-aggressive women using a modified Stroop task and dot probe tasks. It has been shown that these tasks are sensitive to attentional biases in anxiety sufferers (Bradley et al., 1998; Bradley, Mogg, White, Groom & De Bono, 1999; Mogg et al., 2000). However these tasks are yet to be applied to aggression research in general and psychopathy research in particular. This is surprising given the degree of impaired functions relating to affective language processing, physiological responses to affective stimuli, and misinterpretations of ambiguous social cues associated with psychopathy, as outlined above (Verona et al., 2001).

It is necessary to understand whether psychopathic personality or antisocial behaviour is the primary influence in the presentation of impulsive-aggressive women. Although it was seen in Chapter 5 that impulsive-aggressive women showed higher scores for the lifestyle facet than other facets, the group x psychopathy facet interaction was not significant. Therefore it is not clear whether the lifestyle facet (i.e., behaviour) is the primary influence on psychopathy scores for these women. High scores for antisocial behaviour (e.g., Factor 2 on the PCL-R, the lifestyle facet of the P-Scan) are not associated with the abnormal emotional reactivity or impaired affective language processing common to individuals with high scores for psychopathic personality traits (Sutton et al., 2002). Therefore, if the impulsive-aggressive women's scores on the antisocial-lifestyle facet of the P-Scan represent an influential dominance of antisocial behaviour over psychopathic personality traits, then impulsive-aggressive women should not show evidence of abnormal responding to emotional stimuli in an attentional bias study. However, if this is not the case and impulsive-aggressive women are equally characterised by psychopathic personality traits and behaviours, an attentional bias for aggressive stimuli should be found.

Therefore, assuming that both personality and behavioural elements of psychopathy characterise impulsive-aggressive women, they are hypothesised to display emotional processing abnormalities similar to psychopaths. This is hypothesised to manifest as an absence of the usual interference effect of unpleasant (aggressive) stimuli on reaction times on the Stroop and dot probe tasks in comparison to the impulsive, aggressive, and control groups. It is also predicted that the impulsive-aggressive women alone will display attentional biases towards stimuli relating to impulsive-aggression on the dot probe tasks.

Modified Computerised Stroop

Rationale

The Stroop task has frequently been used to illustrate attentional biases towards threatening or emotional stimuli in clinical populations, most notably with anxiety disordered populations (Egloff & Hock, 2003). The interference caused by these stimuli (as opposed to neutral stimuli) affects attentional processes and results in less efficient colour naming. To date there appears to be no data on the sensitivity of the Stroop task in measuring attentional bias in impulsive-aggression, antisocial personality, or psychopathy. However, it could be assumed that if psychopaths do not normally react differentially between neutral and aversive stimuli, perhaps the Stroop effect will not be found.

The aim of the present study was to measure attentional bias in impulsive-aggressive women using a modified Stroop task. Due to their high scores on a measure of psychopathy, it was hypothesised that on this task impulsive-aggressive women would not show the typical Stroop interference effect (i.e., slower reaction

times or more errors) in comparison to the impulsive, aggressive, and control groups of women.

Method

Participants

Participants were the same as those described in Chapter 5. The Tasmanian Word Knowledge Test (TWKT, see Appendix G) was administered to participants to provide an estimate of verbal comprehension. Means and standard deviations for the TWKT are presented in Table 45. The impulsive-aggressive group received the highest score. However, a one-way ANOVA indicated that groups did not differ significantly in level of verbal comprehension as measured by the TWKT, $F(3,34)=.25$, $MSE = 150.45$, $p=.86$.

Table 45.

Means and standard deviations for TWKT scores in each group.

	Group				
TWKT (Max.=55)	Aggressive (n=9)	Control (n=11)	Impulsive (n=7)	Imp-Agg. (n=11)	Total (n=38)
Mean	25.89	27.91	24.86	23.45	25.58
SD	12.80	13.97	10.49	10.92	11.89

Materials/Apparatus

The modified Stroop was comprised of four experimental word types: 24 impulsive words (e.g., 'sudden'), 24 aggressive words (e.g., 'fight'), 24 impulsive-aggressive words (e.g., 'rape'), and 48 neutral words (e.g., 'cup'). Words were chosen from pilot studies in which individuals (n = 15) were asked to rate a list of words on their level of aggressiveness and then rate the same list of words on their level of impulsiveness from a 5-point scale ('not at all' to 'extremely'). Based on these ratings words were

chosen for the aggressive condition and the impulsive condition. Words rated highly for both impulsiveness and aggressiveness were selected as impulsive-aggressive words. Words scoring zero on levels of impulsiveness and aggressiveness were selected as neutral words.

Words were matched for frequency and length with additional neutral words from Kucera and Francis' (1967) norms. Word stimuli and corresponding word frequencies are presented in Appendix H. This task was presented on a Pentium 90 computer with a 15" monitor. Participants used the computer keyboard to indicate their responses.

Procedure

Participants were tested individually in a quiet room in the School of Psychology at the University of Tasmania. It was explained that this study was investigating the impact of personality characteristics on computer task performance. Participants were seated in front of a computer monitor, approximately 60cm from the screen. The Stroop task was explained and participants were instructed to respond as quickly as possible, making minimal errors.

The program specifications for the modified Stroop task were based on the methods of Mogg et al. (2000). Participants were required to respond to the colour of the block surrounding target words by pressing the 1 (blue), 2 (green) or 3 (red) keys on the number keypad. Practice time was allowed, with practice sessions consisting of 15 trials with audible feedback. Participants were permitted to repeat the practice session if necessary. Data was not collected for the practice trials. Experimental sessions consisted of three buffer trials and 96 test trials.

Trials began with a central fixation box (approximately 15mm x 35mm) presented for 500ms. The box was replaced by a word in white upper-case letters approximately 5mm high, on a background block of colour (red, green, or blue). Luminance of letters was seven cd/m^2 and background luminance was zero cd/m^2 . The word and background colour block appeared on-screen simultaneously but the colour block remained on-screen for only one screen refresh (approximately 14ms). Once the colour block disappeared, the word remained on-screen on a black background until the participant's response. Participants responded to indicate the colour of the background patch (red, green, or blue) by pressing one of three keys on the number keypad. New trials commenced with a spacebar press.

Design and Data Analysis

This experiment utilised a 4 x 4 mixed design. The between-groups independent variable was group (aggressive/control /impulsive/impulsive-aggressive). The repeated measures variable was word type (impulsive/aggressive/impulsive-aggressive/neutral). The dependent variables were reaction time and number correct.

Raw reaction times for correct responses were collated for each condition and means and standard deviations derived. Mean reaction times were analysed for all 48 neutral words, but the number of correct responses was divided by two prior to analysis to make all word type conditions equivalent in maximum number correct (i.e., 24). Data for one participant in the impulsive-aggressive group were excluded from analysis due to the large number of incorrect responses. Multivariate ANOVAs were utilised for data analysis, with post hoc analyses conducted where necessary using SNKs. Alpha was set at the .05 level of significance.

Results and Discussion

Mean reaction times for correct responses in each group are presented in Table 46. The two-way MANOVA conducted on reaction time data did not find a significant group x word type interaction, Rao R (9,70) = 1.47, $p=.18$. No significant main effects were found. As can be seen in the table, participants' slowest reaction times were recorded for impulsive words. Between groups, the slowest reaction times can be seen in the control group in response to impulsive words. These results were not significant.

Table 46.
Mean reaction times (and standard deviations) for correct responses on the Stroop for each group by each word type.

Group	Word Type			
	Impulsive Mean (SD)	Aggressive Mean (SD)	Imp.-Agg. Mean (SD)	Neutral Mean (SD)
Aggressive (n=9)	569.97 (123.27)	586.81 (129.05)	556.74 (95.19)	556.60 (115.31)
Control (n=8)	712.93 (266.01)	666.20 (191.04)	685.87 (210.24)	634.05 (224.74)
Impulsive (n=8)	536.00 (51.39)	551.02 (139.30)	505.69 (120.38)	516.44 (126.03)
Imp-Agg (n=10)	619.93 (197.65)	541.52 (164.20)	559.19 (151.71)	550.82 (135.96)
Total (n=35)	609.16 (182.38)	583.84 (157.93)	575.29 (156.50)	563.47 (153.11)

Means and standard deviations for the number of correct responses within each word type for each group are shown in Table 47. The two-way MANOVA conducted on the data did not yield a significant group by word type interaction (Rao R(9,70) = 0.92, $p=.51$) or any significant main effects. However, as can be seen in the table, participants made slightly more errors in the impulsive-aggressive and neutral word conditions. The high mean numbers of correct responses and the corresponding

standard deviations indicate that a proportion of participants may have had 100% accuracy on this task, which suggests a ceiling effect.

In summary, the speed and accuracy of impulsive-aggressive women did not significantly differ from those of other women on the Stroop task, as hypothesised. However, none of the groups displayed the typical Stroop interference effect for threatening stimuli. This was an unexpected result.

Table 47.
Means and standard deviations for the number of correct responses on the Stroop task for each group by each word type (max. = 24 in each condition).

Group	Word Type							
	Impulsive		Aggressive		Imp.-Agg.		Neutral	
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
Aggressive (n=9)	22.22	(0.97)	22.11	(1.17)	21.00	(2.60)	21.94	(2.24)
Control (n=8)	21.88	(1.46)	22.00	(2.27)	22.50	(0.76)	19.75	(7.70)
Impulsive (n=8)	21.5	(2.73)	20.00	(7.31)	19.50	(7.46)	18.06	(8.07)
Imp-Agg (n=10)	22.80	(0.92)	20.10	(6.54)	19.80	(6.36)	20.00	(6.75)
Total (n=35)	22.14	(1.63)	21.03	(4.97)	20.66	(5.02)	20.00	(6.38)

The fact that no significant effects for word type were found may indicate that there were too few participants in this study or that the words used were not sufficiently threatening. Alternatively it could be that the Stroop task does not have sufficient sensitivity for attentional bias for aggression in non-clinical samples.

Mogg et al. (2000) report that the Stroop does not equate to the dot probe task in its sensitivity to attentional bias. Therefore the following studies utilised dot probe tasks to further investigate attentional bias in impulsive-aggressive women.

Dot Probe Words

Rationale

An alternative measure for investigating attentional bias is the dot probe task. There is some debate as to whether the Stroop and the dot probe tasks are similar in terms of their ability to measure attentional bias (e.g., Egloff & Hock, 2003) or not (e.g., Mogg et al., 2002). It may be that the dot probe task is a more sensitive tool for investigating attentional bias.

The present study investigates attentional bias in impulsive-aggressive women using a dot probe task with verbal stimuli (written words). As psychopaths do not react in the typically differentiated manner between aversive and neutral stimuli (Sutton et al., 2002), impulsive-aggressive participants with mild psychopathic tendencies were hypothesised to show no significant differences between impulsive-aggressive and neutral words, which may manifest either in reaction times, attentional bias scores, or both. As psychopaths have been shown to selectively attend to unpleasant events (Raine, 1989) it was also hypothesised that impulsive-aggressive women would show an attentional bias towards impulsive-aggressive stimuli but participants in the impulsive, aggressive, and control groups would not.

Method

Participants

Participants were the same as those outlined for the Stroop task.

Materials/Apparatus

The dot probe words task was comprised of four experimental word types: 24 impulsive words (e.g., 'sudden'), 24 aggressive words (e.g., 'fight'), 24 impulsive-

aggressive words (e.g., 'rape'), and 24 neutral words (e.g., 'cup'). Words were the same as those chosen for the Stroop task (see Appendix H). Twenty-four additional pairs of neutral words were used as filler words. The task was presented on the same computer and monitor as described for the Stroop task. Participants used the computer keyboard to indicate their responses. A word recognition test and a word-rating task were administered post-test (see Appendix I).

Procedure

The dot probe task was explained and participants were instructed to respond to the probe as quickly as possible, making minimal errors. Participants were required to respond to the location of the probe (upper half of screen or lower half) by pressing the up or down arrow keys on the keyboard. Practice time was allowed. Data was not collected for the practice trials.

The specifications for this task were based on the methods of Mogg et al. (2000). The task consisted of three stimulus presentation durations: 100ms, 500ms, and 1500ms. These presentation times were randomised throughout the task. Trials began with a central fixation cross presented for 500ms followed by a word pair. One word appeared in the upper half of the screen, the other word appeared in the lower half. The words were approximately 30mm (20 pixels) apart, consisting of white upper-case letters approximately 8mm in height, presented on a black background. Luminance of letters was seven cd/m^2 , and background luminance was zero cd/m^2 . The probe appeared immediately following stimulus offset and consisted of a white dot approximately 2mm in diameter. The probe appeared in the location of either the upper word or the lower word and remained on the screen for a maximum of 3000ms or until participants responded (whichever was sooner). Probes and experimental

words appeared in the upper and lower half of the screen with equal probability. The 24 pairs of neutral filler words were not probed. Reaction time data was collected from probed trials only.

Participants were administered a post-test word recognition test and a ratings task for the words used in the Stroop and dot probe words tasks. These were included as additional methods of assessing the salience of aggressive stimuli. The recognition task assessed memory for words used in the Stroop and dot probe words tasks.

Participants were presented with impulsive words, neutral words, aggressive words, and impulsive-aggressive words. Anxiety-related threat words were also used as distractors. They were asked to circle any words that they recognised from the computer tasks. Following the word recognition test, participants were asked to rate the same list of words for level of aggressiveness on a 5-point Likert scale (1 = not at all aggressive, 5 = extremely aggressive).

Design and Data Analysis

A 4x3x4x2x2 mixed design was used for this experiment. The between-groups factor was group (impulsive, aggressive, impulsive-aggressive, and control). The repeated measures factors were stimulus duration (100ms, 500ms, and 1500ms), word type (impulsive, aggressive, impulsive-aggressive, and neutral), probe position (upper and lower), and word position (upper and lower). The dependent variables were mean reaction time on probed trials, mean number of words recognised, and mean aggressiveness ratings of words. Main effects and interactions were analysed using MANOVAs and ANOVAs as appropriate, with post hoc analyses conducted as necessary using ANOVAs and SNKs. Alpha was set at the .05 level of significance.

Results and Discussion

The dot probe program excluded any reaction times below 200ms (to avoid anticipation errors) and above 2000ms (to avoid effects of poor concentration). Due to a technical difficulty, incorrect responses were not excluded from the data files for each participant. Therefore analysis of the number of correct responses was not possible. To avoid undue influence from outliers (possibly incorrect and therefore slower), raw data were collated utilising median reaction times per participant for each of 48 conditions. Missing data were replaced by the condition average across all participants.

The five-way MANOVA for reaction time conducted for group x stimulus duration x word type x probe position x word position did not yield a significant five-way interaction. A significant two-way interaction was found for word position x probe position, $F(1,4) = 15.67$, $MSE = 1166.60$, $p < .05$. This interaction is shown in Figure 11.

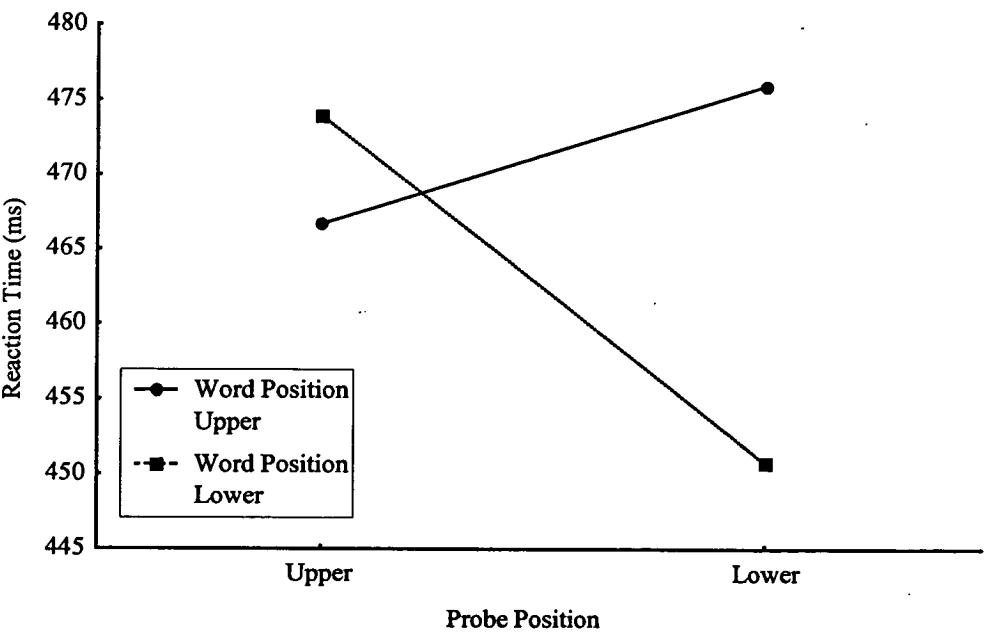


Figure 11. Mean reaction times for word position by probe position.

The significant word position x probe position interaction supports the later analysis of attentional bias. As shown in Figure 11, all participants responded faster when words and probes both appeared in the lower part of the screen ($ps < .05$). Mogg, Bradley, and Williams (1995) proposed a formula for evaluating attentional bias towards or away from experimental words depending on the position of the probe. In other words, the formula measures the impact on reaction times to probes appearing in the same position as experimental words, as opposed to probes appearing in the opposite position to experimental words. The formula is as follows:

$$\text{Attentional bias score} = [(WUPL + WLPU) - (WUPU + WLPL)]/2$$

(W = threat/experimental word, P = probe, U = upper position, and L = lower position).

Positive bias scores suggest attentional bias towards experimental words (i.e., vigilance) and negative bias scores are indicative of attentional bias away from experimental words (i.e., avoidance).

At each stimulus duration attentional bias scores were generated for each participant for each word type. Missing values were replaced with condition averages. A three-way MANOVA for group x stimulus duration x word type revealed a trend towards a significant three-way interaction, Rao $R(18, 74) = 1.60, p = .08$. Breakdown analyses were conducted at each stimulus duration.

A trend for a group x word-type interactions was found at the 100ms stimulus duration, Rao $R(9,70) = 2.00, p = .05$. This interaction is seen in Figure 12. A significant two-way interaction for group x word type was found at the 1500ms stimulus duration, Rao $R(9,70) = 2.48, p < .05$. This interaction is shown in Figure 13. Post hoc SNKs failed to show significant differences between pairs of mean bias scores at either stimulus duration.

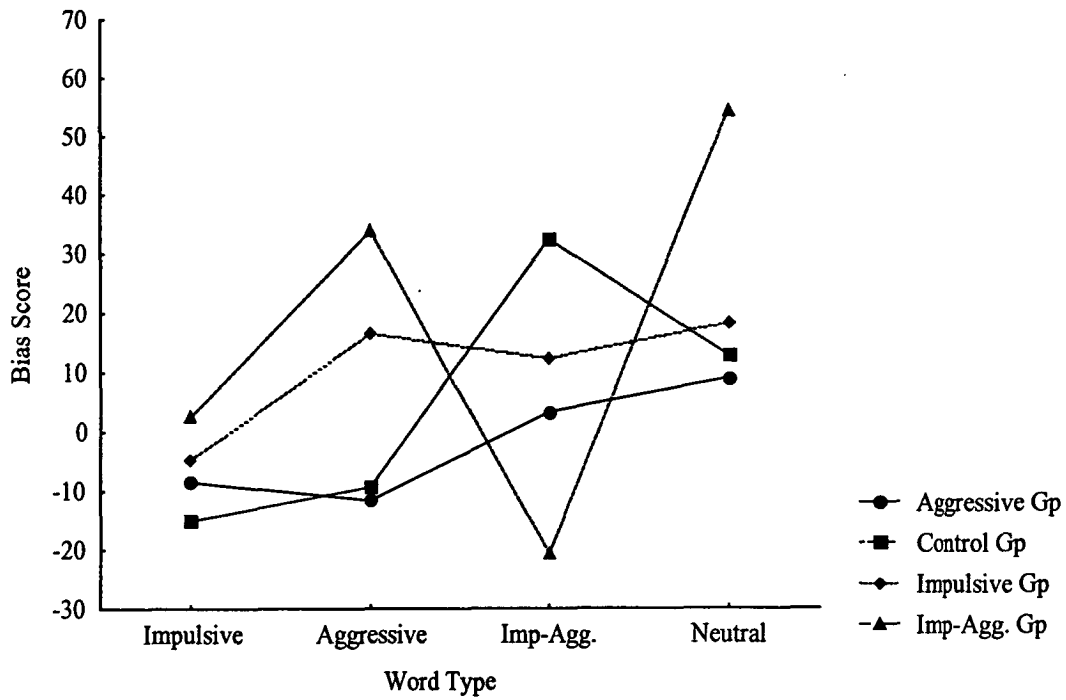


Figure 12. Attentional bias scores for each group by each word type at the 100ms stimulus duration.

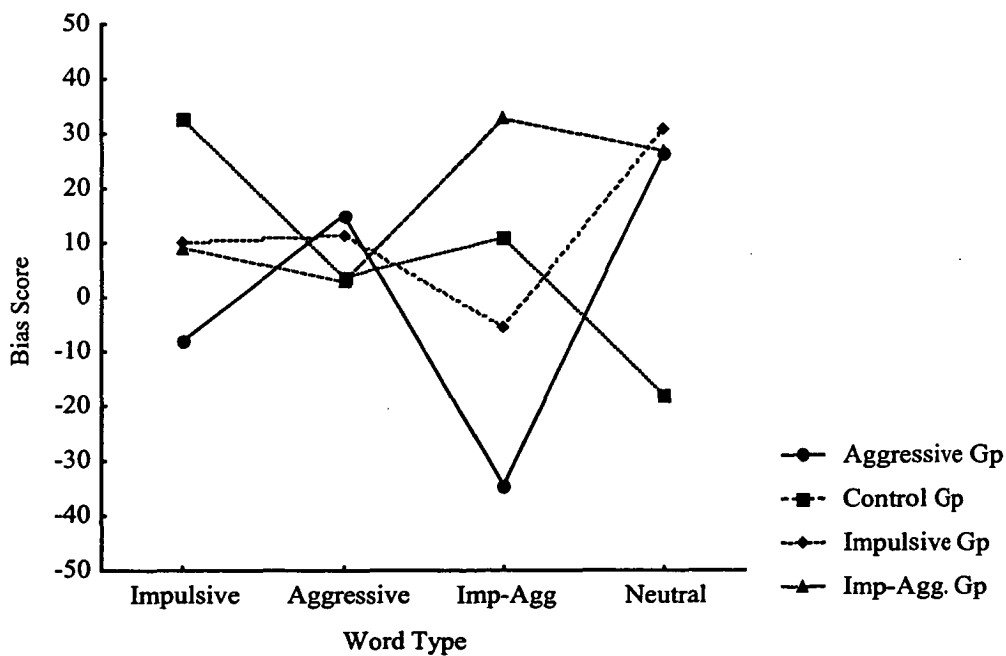


Figure 13. Attentional bias scores for each group by each word type at the 1500ms stimulus duration.

Figure 12 and Figure 13 highlight the contrasting responses by the impulsive-aggressive group to impulsive-aggressive words at the different stimulus durations. Although not significant, at the 100ms stimulus duration the impulsive-aggressive women tended to show an attentional bias away from impulsive-aggressive words, but a bias towards aggressive words and neutral words. Alternatively, at the 1500ms stimulus duration the impulsive-aggressive women tended to show a bias towards impulsive-aggressive words. In other words, impulsive-aggressive women may show vigilance for impulsive-aggressive words, as hypothesised, but only at 1500ms. At 100ms they seem to show avoidance. This may reflect shifting attention at the longer stimulus duration (Bradley, Mogg, & Millar, 2000). Further research is needed to clarify whether this is associated with previous findings that psychopaths (specifically, high scorers on Factor 1 of the PCL-R) require additional resources to process emotional stimuli (Hare, 1996b; Intrator et al., 1997; Kiehl et al., 1999; 2001).

In Figure 13 it is seen that at the 1500ms stimulus duration the impulsive-aggressive group's bias towards impulsive-aggressive words was of a similar magnitude to their bias scores for neutral words. This shows preliminary support for the non-differentiation between unpleasant stimuli (in this case impulsive-aggressive words such as 'rape') and neutral stimuli common to individuals with psychopathic traits and behaviours (Patrick et al., 1993; Sutton et al., 2002). This effect was not found at the shorter stimulus duration (100ms). This is in contrast with the findings of Sutton et al. (2002) who showed that abnormal emotional reactivity was not found at longer stimulus durations. However the longest stimulus duration in the present study (1500ms) was not as long as the longest duration used by Sutton and his colleagues (4500ms). There could be an 'optimal timeframe' within which these effects occur.

It is also seen in Figure 13 that the aggressive group may show an attentional bias towards neutral words, which they perhaps misinterpret as aggressive due to misattribution processes. They also show a tendency towards an attentional bias away from impulsive-aggressive words at the 1500ms stimulus duration. These results suggest that aggressive individuals not only misinterpret neutral social cues, but are vulnerable to real threats. This finding warrants further investigation.

Present findings suggest that if impulsive-aggressive women show attentional bias for impulsive-aggressive stimuli it does not appear to be specifically related to either impulsivity or aggressiveness. It may be that there is something unique which occurs when impulsivity and aggressiveness coexist. An alternative explanation is that attentional bias is perhaps linked to sub-clinical psychopathic tendencies as evidenced by impulsive-aggressive women's affective and interpersonal facet results on the P-Scan. Further research with a larger sample is required in order to clarify this conclusion.

Attentional bias is a possible factor in the cognitive and emotional characteristics of psychopaths and might relate to research showing that aggressive individuals tend to misattribute hostile intent where none is present (Dodge & Schwartz, 1997). Psychopathic individuals selectively attend to unpleasant events in their environment (Harpur & Hare, 1990; Raine, 1989). Based on the present attentional bias results it is possible that impulsive-aggressive individuals find impulsive-aggressive stimuli and misinterpreted neutral stimuli more salient than impulsive stimuli or aggressive stimuli. This could be tested by assessing memory for these word types. On the other hand, aggressive individuals are known to misattribute or misinterpret social cues as aggressive (Dodge & Schwartz). This combination of findings suggests a snowball effect for psychopathic individuals. Firstly, individuals

with psychopathic traits are more likely to experience aggressive social cues (through misinterpretation of ambiguous cues) and may be more likely to notice these cues (through attentional bias towards both impulsive-aggressive and neutral cues at longer exposure). Secondly, they are less likely to respond in an affectively differentiated manner to aggressive versus neutral cues (through emotional hypo-reactivity). Finally, individuals with psychopathic traits are then more likely to respond in a proactive or self-defensive manner (through impulsive-aggression). This would be most noticeable in their seemingly unprovoked attacks (i.e., impulsive-aggressive acts in response to impulsive-aggressive cues or ambiguous social cues erroneously interpreted as hostile). The need for further investigation of the links between impulsive-aggression and psychopathy is evident.

To test whether impulsive-aggressive women find impulsive-aggressive words more salient than other words a recognition test was administered. Raw recognition scores were converted to percentages to accommodate the different numbers of words in each category. Missing values were replaced with mean percentages for each condition. Anxiety-related threat words used as distractors were not included in analyses. Mean percentages of words recognised in the impulsive, neutral, aggressive, and impulsive-aggressive word conditions are presented in Figure 14. As can be seen, the impulsive-aggressive group recognised the highest mean percentage of impulsive-aggressive words and the aggressive group recognised the least. However, the two-way MANOVA conducted on the data did not reveal a significant interaction for group (aggressive, control, impulsive, impulsive-aggressive) x word type (impulsive, neutral, aggressive, impulsive-aggressive) or a significant main effect for group ($p > .05$).

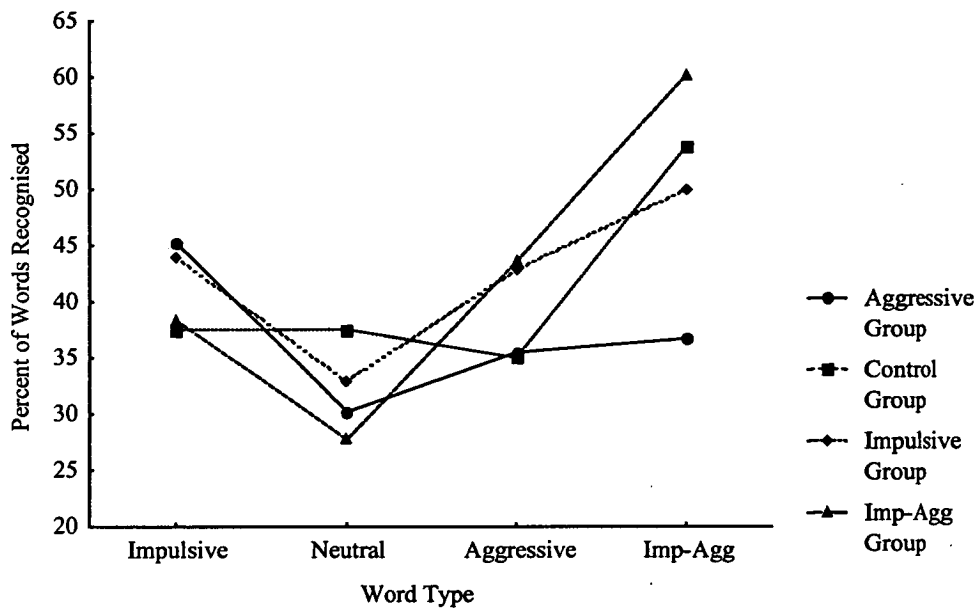


Figure 14. Percentage of words recognised by each group for each word type.

A significant main effect for word type was found (Rao R (3,29)=11.39; $p<.001$), and post hoc SNKs confirmed that participants recognised significantly more impulsive-aggressive words than any other word type ($ps<.01$) and fewer neutral words than other word types ($ps<.05$). This suggests that the impulsive-aggressive words were more salient and therefore more easily recognised by all participants. In other words this recognition test was not able to confirm that impulsive-aggressive individuals find impulsive-aggressive and neutral words to be more salient and more easily recognised than impulsive or aggressive stimuli.

Raw aggressiveness ratings were collated and analysed using a two-way MANOVA for group (aggressive, control, impulsive, impulsive-aggressive) x word type (impulsive, neutral, aggressive, impulsive-aggressive). The interaction and group main effect did not reach significance ($ps>.05$). A significant main effect was found for word type, Rao R (3,29) = 584.77, $p<.001$. Post hoc SNKs confirmed that

aggressive words ($M=3.97$, $SD=0.52$) and impulsive-aggressive words ($M=3.83$, $SD=0.52$) were rated as more aggressive than impulsive ($M=1.17$, $SD=0.63$) and neutral words ($M=1.06$, $SD=0.98$) ($p<.001$). Neutral words were rated as less aggressive than impulsive words ($p<.001$). These results also validate the use of these stimuli in this study. Participants regardless of group did not differentiate between aggressive words and impulsive-aggressive words in terms of aggressiveness content.

To summarise, at the 1500ms stimulus duration impulsive-aggressive participants showed preliminary evidence of an attentional bias for impulsive-aggressive words and failed to respond differentially between impulsive-aggressive and neutral words. As the group-specific attentional bias result was not significant it was in the hypothesised direction and may be confirmed with a larger sample. The impulsive-aggressive group of women did not differ significantly from the other groups of women in reaction times on the dot probe words task, rates of recognition of impulsive-aggressive words, or aggressiveness ratings of words.

The sample size in this study was small and therefore the dot probe results are not conclusive. However, the suggestion of an attentional bias for impulsive-aggressive words in impulsive-aggressive women with psychopathic tendencies warrants further investigation.

Dot Probe Faces

Rationale

Results from the previous experiment suggested that impulsive-aggressive women may show an attentional bias towards impulsive-aggressive words. This was in contrast to aggressive women who may show an attentional bias away from impulsive-aggressive words. Mogg and her colleagues have argued that the increased

salience of facial stimuli should produce greater attentional bias and reaction time effects than written words (see Bradley et al., 1998; 1999). In comparison to controls, it was hypothesised that impulsive-aggressive women would show no difference in reaction times between aggressive and happy faces. It was also expected that impulsive-aggressive women would show an attentional bias towards aggressive faces where other participants were expected to show a bias away from them.

Method

Participants

Participants were the same as those involved in the above experiments.

Materials/Apparatus

Stimuli for the facial dot probe task comprised three experimental face types: 18 happy faces, 19 aggressive faces, and 14 neutral faces. Faces were black and white photographs sourced from Ekman and Friesen's (1976) slides, which were digitised for computer presentation. Faces were selected from the Ekman and Friesen pool based on piloting studies in which individuals ($n=15$) were asked to rate a range of faces on their level of aggressiveness and then rate the same faces on their level of happiness from a 5-point Likert scale ('not at all' to 'extremely'). Faces rated highly on aggressiveness were chosen for the aggressive condition, and faces rated as extremely happy were chosen for the happy condition (see Appendix J for facial stimuli). Faces scoring zero on both categories were selected as neutral faces. All face pairs were probed. This task was presented on a Topstar Pentium 4 computer with a 17" Auriga monitor. Participants used the computer keyboard to indicate their responses.

Following the dot probe task, a recognition test and a face-rating task were administered (see Appendix K). For the recognition test participants were presented with 12 female faces and 12 male faces. Female stimuli consisted of three aggressive faces, three happy faces, three neutral faces, and three sad faces used as distractors. Male stimuli consisted of four aggressive faces, three happy faces, three neutral faces, one sad distractor and one happy distractor (i.e., a happy face not used in the computer tasks). The same faces were then used for the aggressiveness rating task.

Procedure

This version of the dot probe was based on the methods of Bradley et al. (1999) and Bradley et al. (1998). The facial dot probe task was explained and participants were instructed to respond to the probe as quickly as possible, making minimal errors. Participants were required to respond to the type of probe by pressing the left shift key or the right shift key on the keyboard. Practice sessions contained 24 trials, and participants were permitted to repeat the practice session if necessary. Data was not collected for the practice trials and faces used in the practice trials were not present in the experimental trials. Experimental sessions consisted of two buffer trials (data not collected) and 128 test trials.

The task consisted of two stimulus presentation durations: 500ms and 1500ms. These presentation times were randomised throughout the task. Trials began with a central fixation cross presented for 500ms followed by a face pair. Face pairs consisted of a neutral face and either a happy face or an aggressive face. One face appeared in the upper half of the screen, the other face appeared in the lower half. The faces were approximately 55mm apart, and were approximately 54mm in height and 36mm wide, presented on a white background. The faces were replaced by a probe in

the location of one of the faces (i.e., either in the upper or lower half of the screen).

The probe consisted of either two vertical (:) dots, or two horizontal (..) dots.

Participants were required to indicate the type of probe (: or ..) by pressing the left shift key (:) or the right shift key (..). The probe remained visible until a response was made or for a maximum of 1000ms. The inter-trial interval randomly varied between 500ms and 1500ms. Each face pair was presented twice in a new random order per participant. Allocation of face pairs to exposure duration was fully counterbalanced.

Participants were administered a face recognition test post-test. The recognition test assessed memory for faces used in the dot probe faces task. Participants were asked to circle any faces that they recognised from the computer task. Secondly, participants were asked to rate male and female faces of varying types (aggressive, happy, and neutral) for level of aggressiveness on a 5-point Likert scale (1 = not at all aggressive, 5 = extremely aggressive).

Design and Data Analysis

A 4x2x2x2x2x2 mixed design was used for this experiment. The between-groups factor was group (aggressive, control, impulsive, impulsive-aggressive). The repeated measures factors were stimulus duration (500ms, 1500ms), target face type (happy, aggressive), target face position (upper, lower), probe position (upper, lower), and sex of facial stimuli (male, female). The dependent variables were mean reaction time, mean number of faces recognised, and mean aggressiveness ratings of faces. The dot probe faces program excluded reaction times less than 200ms and greater than 2000ms. Missing data were replaced with condition averages. Data were analysed using ANOVAs and post hoc SNKs appropriate. Alpha was set at $p < .05$.

Results and Discussion

The six-way ANOVA conducted on the reaction time data failed to yield a significant group x stimulus duration x target face type x target face position x probe position x sex of facial stimuli interaction, $F(3,29) = 0.24$, $MSE = 8688.10$, $p = .87$. A significant two-way interaction was found for target face type x sex of facial stimuli, $F(1,29) = 21.48$, $MSE = 5989.90$, $p < .001$. This interaction is shown in Figure 15. As can be seen in the figure, and confirmed by post hoc SNKs, participants responded faster to aggressive male target faces than to happy male target faces and aggressive female target faces ($ps < .05$).

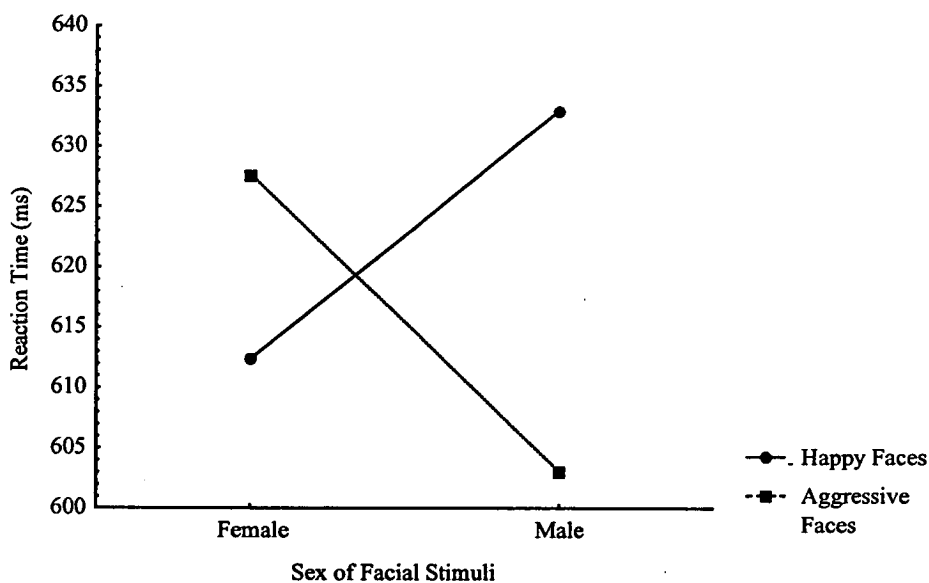


Figure 15. Mean reaction times for male and female happy and aggressive faces.

A significant group x sex of facial stimuli interaction was found, $F(3,29) = 3.25$, $MSE = 3831.40$, $p < .05$. This interaction is shown in Figure 16. Post hoc SNKs confirmed that the impulsive-aggressive group responded faster to female target faces than did all other groups ($ps < .05$). In response to male faces, the control group and the

impulsive-aggressive group had significantly faster reaction times than the aggressive group and the impulsive group ($p < .05$).

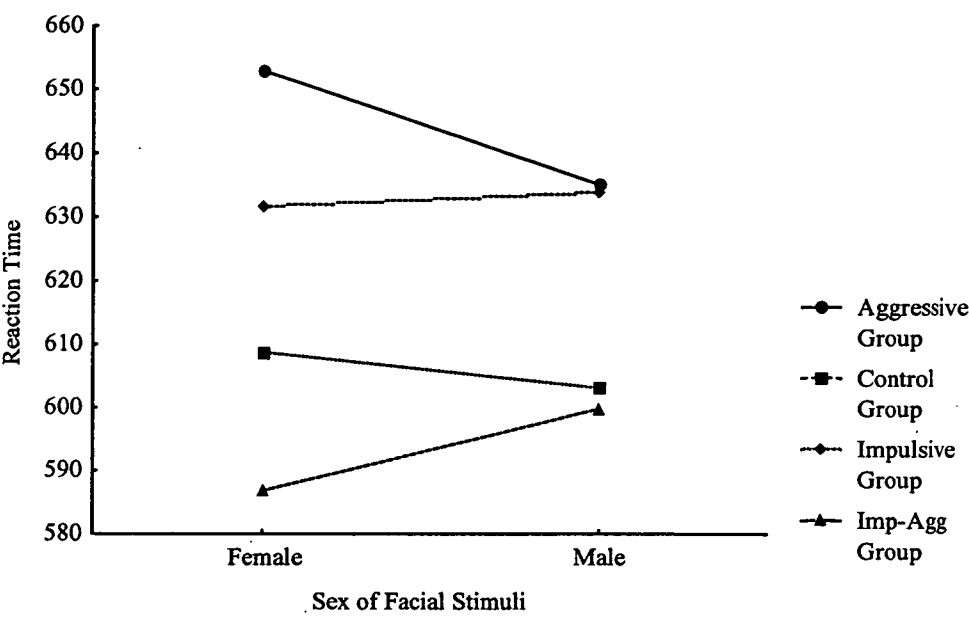


Figure 16. Mean reaction times for each group for female and male facial stimuli.

A significant interaction was found for group x stimulus duration x target face type, $F(3,29) = 6.00$, $MSE = 4589.80$, $p < .01$. This interaction is presented in Figure 17. Breakdown ANOVAs showed a trend for a group x target face type interaction at the 500ms stimulus duration, $F(3,29) = 2.80$, $MSE = 4813.81$, $p = .06$. As can be seen, the impulsive-aggressive women showed no difference in reaction times between aggressive and happy faces at the 500ms stimulus duration. They also showed faster reaction times to aggressive faces than other groups, although this only reached significance in comparison to the aggressive group ($p < .01$). At the 1500ms stimulus duration the group x target face type interaction failed to reach significance, $F(3,29) = 2.04$, $MSE = 7487.30$, $p = .13$. However impulsive-aggressive women appeared to show a response pattern similar to that for women in the control group and the

impulsive group, i.e., faster to aggressive faces in comparison to happy faces. This is in line with the delayed (rather than absent) emotional reactivity hypothesis proposed by Sutton et al. (2002).

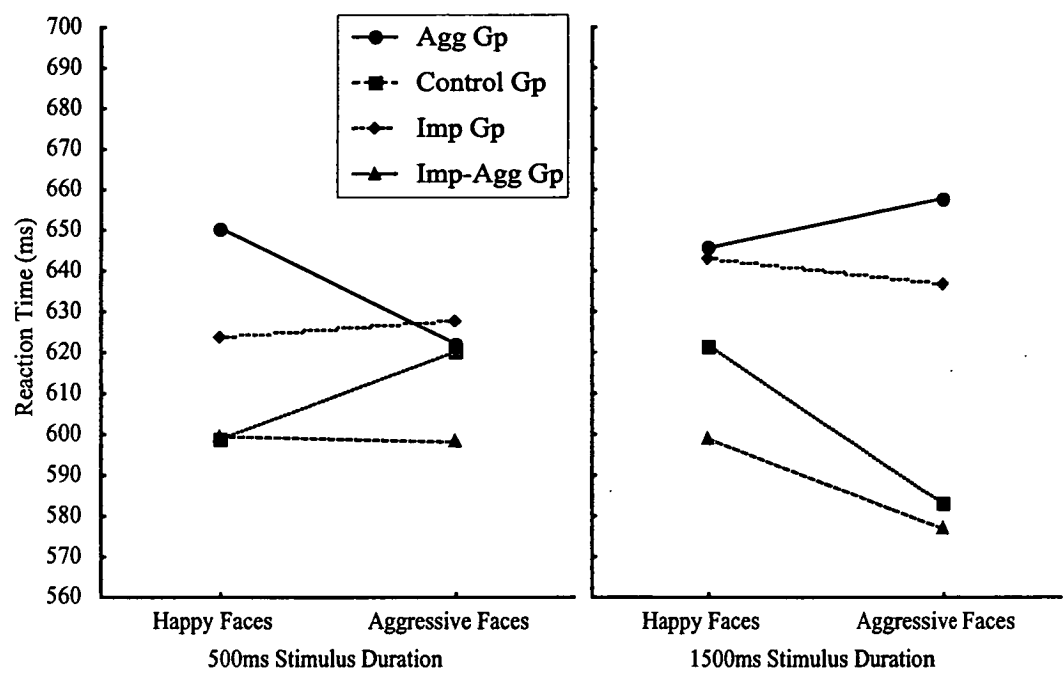


Figure 17. Mean reaction times for each group in response to happy and aggressive faces at the 500ms and 1500ms stimulus durations.

A significant two-way interaction for group x sex of facial stimuli was found at the 1500ms stimulus duration, $F(3,29) = 3.47$, $MSE = 8315.05$, $p < .05$. This interaction is shown in Figure 18. As can be seen, women in the aggressive group had the slowest reaction times for female facial stimuli compared to male facial stimuli ($p < .05$), and their reaction times to female facial stimuli were also slower than those of all other groups ($ps < .05$) at the 1500ms stimulus duration.

Attentional bias analyses were not justified for the facial dot probe task as the target face position x probe position interaction was not significant at either the 500ms or the 1500ms stimulus durations.

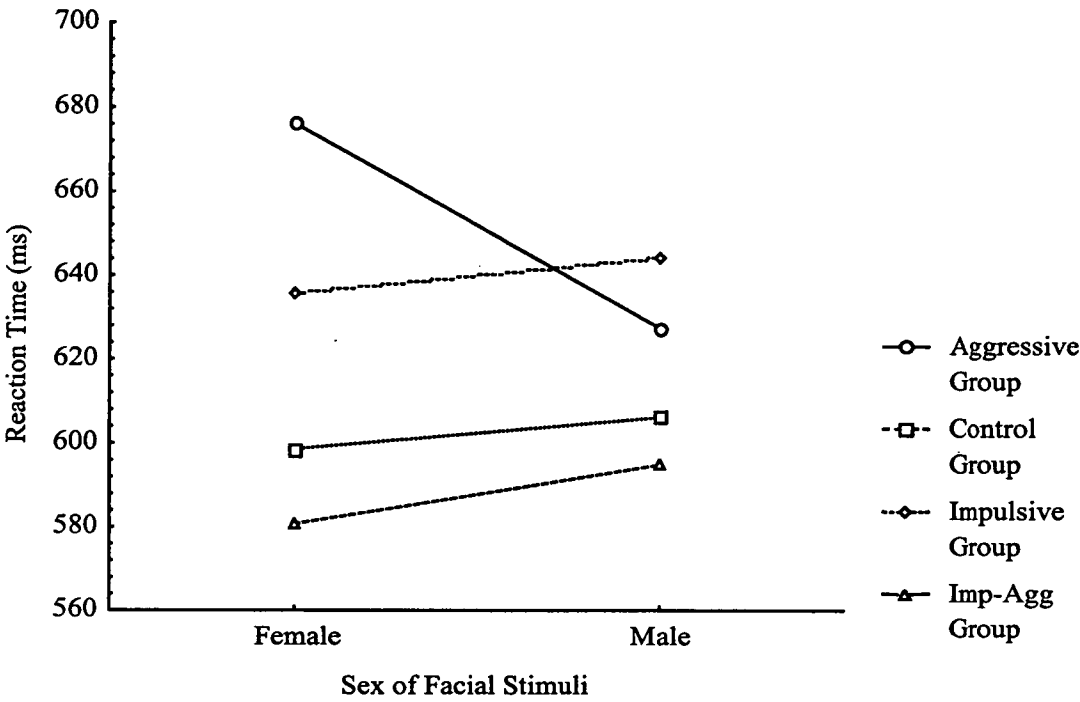


Figure 18. Mean reaction times for each group in response to male and female faces at the 1500ms stimulus duration.

Participants completed a recognition test and an aggressiveness rating task for facial stimuli used in this study. Raw scores for the face recognition test were converted to percentages. The mean percentages of faces recognised by each group are presented in Table 48. As can be seen, the highest percentage of faces recognised was by the control group for aggressive faces. The two-way MANOVA conducted on the percentage data did not yield a significant group x face type interaction, however a significant main effect for face type was found, Rao R (2,26) = 4.53; $p < .05$. As can be

seen in the table and confirmed by post hoc SNKs, participants recognised a higher percentage of aggressive faces than other face types ($ps < .05$). No other significant differences were found for face recognition scores.

Table 48. Mean (%) recognition scores for each group for each face type.

Group	Face Type		
	Happy (max = 6)	Neutral (max = 6)	Aggressive (max = 7)
Aggressive (n=9)	15.13% (5.93)	13.82% (6.25)	15.13% (7.14)
Control (n=8)	12.78% (5.14)	18.80% (9.04)	21.05% (10.53)
Impulsive (n=7)	15.04% (9.33)	17.29% (8.44)	18.80% (5.97)
Imp-Agg. (n=11)	10.43% (6.44)	17.54% (11.16)	16.37% (3.16)
Total Sample (n=35)	13.24% (6.78)	16.81% (8.75)	17.66% (7.00)

Raw aggressiveness ratings were collated and analysed using a three-way MANOVA for group (aggressive, control, impulsive, impulsive-aggressive) x face type (aggressive, happy, neutral) x sex of facial stimuli (female, male). The two-way interaction for face type x sex of facial stimuli was significant, Rao $R(2,30) = 72.50$, $p < .001$. The interaction is shown in Figure 19. As can be seen, participants clearly rated aggressive faces as more aggressive than happy or neutral faces.

Main effects for target face type (Rao $R(2,30) = 248.89$, $p < .001$) and sex of target face ($F(1,31) = 25.13$, $MSE = .07$, $p < .001$) were also significant. Post hoc SNKs indicated that participants rated aggressive female faces as more aggressive than all other faces including aggressive male faces, and aggressive male faces were rated as significantly more aggressive than all remaining faces ($ps < .001$). Neutral male faces were rated as significantly more aggressive than neutral female faces ($p < .01$).

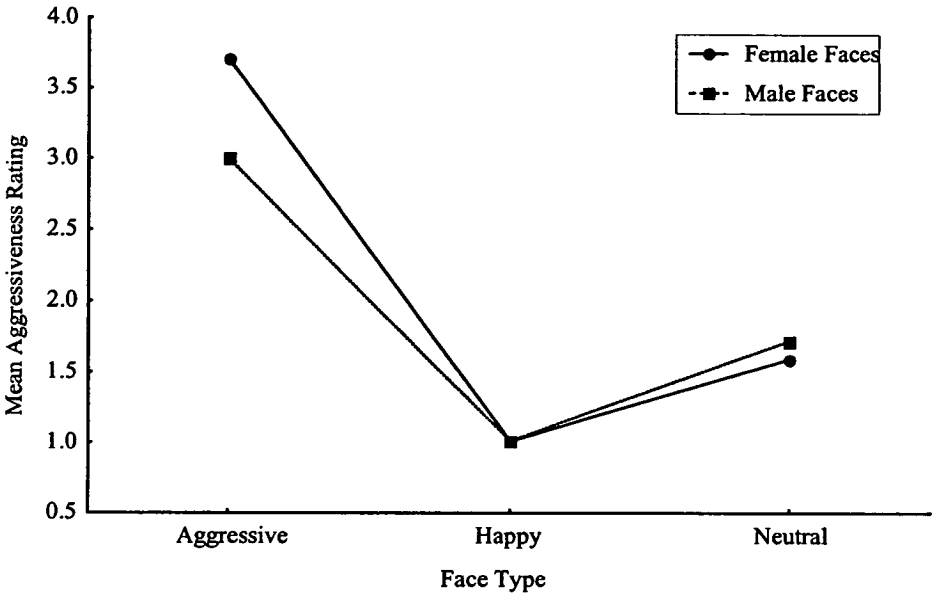


Figure 19. Mean aggressiveness ratings for male and female faces within each of three face types: aggressive, happy, and neutral.

Results for face recognition and aggressiveness ratings of facial stimuli were consistent with results for recognition of impulsive-aggressive words and ratings for aggressive and impressive-aggressive words. In short, these results provide support for the use of these stimuli in these tasks, but do not illustrate any evidence for differential rates of recognition or degree of aggressiveness ratings by impulsive-aggressive women.

In summary, the most notable result for the dot probe faces task was shown at the 500ms stimulus duration where impulsive-aggressive women’s reaction times were seen to show no differential response between aggressive faces and happy faces, in contrast to the aggressive women and controls. In other words, the impulsive-aggressive women were not showing differential reactions to unpleasant stimuli (aggressive faces) in comparison to pleasant stimuli (happy faces). This is in line with

the previous findings of Patrick and his colleagues (e.g., Patrick et al., 1993) who consistently report that psychopaths do not show the normal emotional reactivity to emotional or threatening stimuli. Further, this result shown by impulsive-aggressive women at the 500ms stimulus duration was not replicated at the 1500ms stimulus duration. At this longer stimulus duration impulsive-aggressive women showed a similar pattern of reactivity to aggressive versus happy faces to that shown by controls. This is consistent with previous emotional reactivity findings with psychopathic individuals. Sutton et al. (2002) found psychopaths showed the typical affective under-reactivity at short stimulus durations but showed a normal level of reactivity at a longer stimulus duration. The dot probe faces results replicated the findings of Sutton and his colleagues even at 1500ms compared with their longer duration of 4500ms. These results were not found for verbal stimuli (written words) and therefore the added salience of social stimuli (faces) as proposed by Bradley et al. (1999) may well be the key. The lack of attentional bias analyses for the dot probe faces task limits conclusions, however further investigations using dot probe paradigms with impulsive-aggressive women and individuals with psychopathic tendencies is warranted.

Conclusion

Impulsive-aggressive women show some evidence of attentional bias for impulsive-aggressive words. In addition, they do not show differential responding between pleasant and unpleasant facial stimuli at a short stimulus duration but at a longer stimulus duration respond in a manner similar to controls.

An attentional bias towards impulsive-aggressive words may be linked with high levels of antisocial behaviour (Patrick, 2003) and the lack of reaction time

differences between aggressive and happy faces is possibly related to high scores on subscales measuring psychopathic personality traits (Sutton et al., 2002). It is also possible that the absence of a differential reaction between aggressive and happy faces indicates abnormal emotional reactivity in impulsive-aggressive women. These results, while speculative in nature, suggest that both the behavioural and trait characteristics of psychopathy may have an equal influence at a sub-clinical level in the personality and behavioural characteristics of impulsive-aggressive women. This is important because it suggests that at sub-clinical levels impulsive-aggressive women have more in common with a diagnosis of psychopathy than a diagnosis of antisocial personality disorder. However, before this conclusion can be made further investigation of attentional bias, emotional reactivity, and psychopathic tendencies with impulsive-aggressive women is required.

Impulsive-aggressive women's psychopathy scores were very low in comparison to clinical psychopaths. Given these low scores, the range of characteristics that they nonetheless share with psychopathic individuals supports a dimensional approach to the diagnosis of psychopathy (e.g., Clark, 1999; Hare, 1998). The current conclusions are limited by the small sample size, however future investigations with larger samples may replicate the current findings and may also offer factor analytical information relating to the psychopathy construct within a non-forensic sample of impulsive-aggressive women.

Chapter 7

General Discussion

The main aim of this investigation was to provide a functional profile of impulsive-aggressive women. This profile was intended to provide insight into the extent of antisocial behaviour in impulsive-aggressive women in order to facilitate further investigation of sub-clinical levels of antisocial personality disorder and psychopathy. Additional aims were to contribute to the debate regarding diagnostic criteria for antisocial personality and psychopathy, provide evidence of the dimensional nature of the psychopathic personality, and specifically to address these issues with a female non-forensic sample. It was hoped that evidence would be provided to indicate self-report measures of impulsivity and aggression could be useful for the screening of psychopathic tendencies. In order to achieve these outcomes impulsive-aggressive women were compared with women who were impulsive but not aggressive, women who were aggressive but not impulsive, and women who were neither impulsive nor aggressive. Details of the analyses conducted on the data presented in each chapter are provided in Appendix L.

Base-rate comparisons of male and female undergraduates were reported in Chapter 3, followed by comparison of female groups in Chapter 4, resulting in a detailed profile of impulsive-aggressive women. In summary, compared to their peers impulsive-aggressive women displayed higher levels of antisocial behaviour with serious consequences (e.g., suspension from school, criminal charges), and were more likely to engage in fighting behaviours (predominantly verbal) as children and adults. They were more likely to have been bullied at school and were quite possibly bullies themselves (given their tendency to start fights as a child). In contrast to other women, impulsive-aggressive women were most likely to come from a family environment

characterised by verbally aggressive mothers, where they regularly fought with parents and siblings and were witness to domestic violence. On a number of factors impulsive-aggressive women were more similar to the general male sample than they were to other groups of female undergraduates. Like males, they were more physically aggressive, more likely to endorse a range of suicide risk factors, and more likely to witness domestic violence but less likely to be a victim of domestic violence or abuse. Future research is needed comparing impulsive-aggressive women with impulsive-aggressive men in order to clarify these similarities.

The high rates of endorsement of suicide risk factors in impulsive-aggressive women was consistent with previous research by Coccaro et al. (1989; 1991) which shows a strong link between suicidality and impulsive-aggression, however these findings are not consistent with Cleckley's (1941) proposition that psychopaths are immune to suicide. In contrast, Verona et al. (2002) have shown that psychopaths are just as likely to engage in self-harm behaviours in prison, but that this is specifically associated with high levels of antisocial behaviour rather than psychopathic personality traits. Further investigation is required in order to clarify the relationship between completed suicide and psychopathy to elucidate Cleckley's original statement. For example it may be that clinical levels of psychopathy are self-protective as opposed to sub-clinical psychopathic tendencies.

The profile presented in Chapter 4 showed that impulsive-aggressive women showed some sub-clinical tendencies for antisocial personality disorder. Hare (1996a) contends that the DSM-IV diagnostic criteria for antisocial personality disorder are behaviourally based rather than personality driven. As this diagnosis is related to high levels of antisocial behaviour rather than psychopathic personality traits (Sutton et al., 2002), it was necessary to identify whether impulsive-aggressive women were more

than behaviourally distinct from their peers. As reported in Chapter 5, follow-up investigations revealed that impulsive-aggressive women had significantly higher psychopathy scores than all other groups of women. This was evidenced by higher total psychopathy scores and higher scores on all three facets of the P-Scan (Hare & Herve, 1999), which reflects comparatively higher levels of the affective, interpersonal, and lifestyle (behavioural) components of psychopathy. Compared to the impulsive-aggressive women, neither the aggressive women nor the impulsive women received high scores on any facet of the P-Scan. This indicates that sub-clinical psychopathic tendencies are not simply a function of the overlap between trait impulsivity and trait aggressiveness. Specifically, impulsive-aggression appears to be a more reliable indicator of sub-clinical psychopathic tendencies than aggressiveness alone.

Even though impulsive-aggressive women showed significantly higher levels of psychopathic personality traits and antisocial behaviours than other groups, psychopathy scores did not approach clinical levels. This coupled with the lack of a significant interaction meant that it was not possible to indicate from P-Scan facet scores whether antisocial behaviour or the affective and interpersonal elements of the psychopathic personality were the primary influence on presentation of impulsive-aggressive women. Therefore further investigation was conducted.

Preliminary studies assessing attentional bias showed distinct patterns of responding similar to the abnormal emotional reactivity associated with high levels of psychopathic personality traits (e.g., Patrick, 1994; Sutton et al., 2002). It was reported in Chapter 6 that impulsive-aggressive women showed some evidence of an attentional bias towards impulsive-aggressive words. Groups did not significantly differ in bias scores however results were in the predicted direction and were

remarkable for two main reasons. Firstly, a tendency for an attentional bias towards impulsive-aggressive words by impulsive-aggressive women was contrasted by the aggressive group's bias away from these words. This indicated that impulsive-aggressive women tended to be vigilant for impulsive-aggressive cues whereas aggressive women were prone to avoid these cues. This may be related to the impulsive-aggressive group's high lifestyle facet scores on the P-Scan (Patrick, 2003). Secondly, impulsive-aggressive women's bias scores for impulsive-aggressive words were not distinct from their bias scores for neutral words. In addition, the reaction times of impulsive-aggressive women did not differentiate between pleasant (happy) and unpleasant (aggressive) faces at a short stimulus duration (500ms). However, impulsive-aggressive women responded more similarly to control participants when facial stimuli were presented for a longer duration (1500ms). These findings are consistent with what might be expected of psychopaths with high scores on personality-related subscales of psychopathy measures (Sutton et al., 2002). In other words, impulsive-aggressive women responded in ways that would be predicted for psychopathic individuals.

Overall, findings suggest that both the behavioural and personality elements of psychopathy may exert equivalent influence over the behavioural and personality characteristics of impulsive-aggressive women. The implication of this conclusion is that impulsive-aggressive women show a sub-clinical level of psychopathy that is consistent with clinical levels of the disorder on a dimensional scale, as opposed to sub-clinical levels of antisocial personality disorder as it is currently defined. Conclusions are limited due to the small sample sizes, however further investigation of attentional bias, emotion processing, and psychopathic tendencies in impulsive-aggressive women is warranted.

Very recently researchers at the University of Leeds have investigated attentional bias for aggressive stimuli in aggressive participants. Smith and Waterman (2003) employed the Stroop and dot probe paradigms with offenders and undergraduates and concluded that attentional bias for aggressive stimuli and high levels of trait anger were predictive of aggressiveness. In the present study impulsive-aggressive female undergraduates were not shown to have higher anger scores on the Aggression Questionnaire than the other groups of women, which contrasts with Smith and Waterman's (2003) finding with offenders and undergraduates. In an additional study with an offender sample (Smith & Waterman, in press [a]), it was shown that violent offenders have an attentional bias towards aggressive words and sex offenders have an attentional bias towards sex-related words. Evidence of content-specific attentional bias may explain the current impulsive-aggressive sample's bias towards impulsive-aggressive words (but not aggressive words), but does not explain why the aggressive women tended to show a bias away from impulsive-aggressive words (and failed to show a bias towards aggressive words). In further studies with forensic and non-forensic samples, Smith and Waterman (in press [b]) found that past experience of aggression was associated with attentional bias for aggressive stimuli. This is consistent with the current findings relating to the family backgrounds of impulsive-aggressive women but again conflicts with the lack of attentional bias shown by the aggressive group.

There are some concerns about the selection methods used by Smith and Waterman for recruitment of aggressive participants, such as classifying undergraduate participants as aggressive on the basis of anger scores on the Aggression Questionnaire. Unfortunately, the anger subscale alone does not provide as robust a measure of aggressiveness as total aggression scores from this

questionnaire (Buss & Perry, 1992). In addition, offender samples were classified as violent or not (and therefore aggressive or not) on the basis of the primary offence for which they were incarcerated. Scores on measures of aggressiveness (Copello & Tata, 1990) or psychopathic personality pathology (Hare, 1991) are more robust than is a history of or conviction for violence. As has been shown in the current research, impulsive-aggressive and aggressive individuals are quite distinct populations. Future aggression research needs to take this into consideration.

Despite consistent evidence for the validity of separate behavioural and personality factors in psychopathy, the wider research community continues to ignore the relevance of this construct to the development of valid and reliable diagnostic criteria for antisocial personality disorder (Hare, 1998). For example, in their proposal for changes to personality disorder diagnostic criteria in the research agenda for DSM-V, First et al. (2002) refer to Patrick's numerous investigations of emotional reactivity in *antisocial personality disorder*. As mentioned previously, abnormal emotional reactivity is associated with scores for *psychopathic personality*, not antisocial behaviour (and therefore not the current definition of antisocial personality disorder; Patrick, 1994; Patrick & Lang, 1999; Verona & Carbonell, 2000; Verona et al., 2001). A general acceptance of the difference psychopathy and antisocial personality disorder (as they currently stand diagnostically), the dimensional nature of psychopathy, and a subsequent reintegration of psychopathic personality traits into the diagnostic criteria for antisocial personality disorder is required. The result would be tightened inclusion criteria for the diagnosis of a true disorder of personality that is linked with dangerous and antisocial behaviours. This will serve to better protect society from severe psychopaths and will also protect the human rights of non-psychopathic offenders (Hare, 1996a; 1996b, 1999). This latter point is of particular

relevance to jurisdictions that maintain the death penalty. Further research and continued publication is required in order to ensure such practical changes in the future.

It is pertinent to point out that results from the studies of attentional bias are speculative in nature, particularly as P-Scan scores were not directly analysed in conjunction with data from the computer tasks. Future research needs to address this issue before firm conclusions can be reached. Tasmania offers a small population from which to draw impulsive-aggressive undergraduate female students. Larger samples would also be required to extend the current research in order to provide alternatives to the current experimental design and data analysis techniques. For example, alternatives to the pre-selection of discrete groups may permit the use of regression analysis, cluster analysis, or path analysis techniques in order to identify whether psychopathic tendencies mediate impulsivity, aggressiveness, attentional bias, suicidal risk factors, and other factors of interest identified in the current studies. The current project has provided a thought-provoking beginning to future avenues of research investigating psychopathy. The forthcoming PCL-R-2 will no doubt add to the options for future research in this area, including investigation of new models of psychopathy in a variety of populations.

In conclusion, self-reported impulsive-aggression has been shown to be relevant in understanding the presentation of sub-clinical psychopathic tendencies in a non-forensic female sample. Women categorised as impulsive-aggressive by their own self-report on measures of impulsivity and aggressiveness show sub-clinical levels of the personality traits and abnormal emotional reactivity associated with the psychopathy construct. They also show the antisocial and other behaviours associated with psychopathy and antisocial personality disorder. Overall, these results provide

evidence for the dimensional nature of the psychopathic personality and show the value of considering the multi-factor model of psychopathy when assessing the impact of impulsivity, aggressiveness, and antisocial behaviours. Finally, impulsive-aggressive women are distinct from other women. Their risk to society and criminogenic needs will be better understood through awareness of this distinctive subgroup.

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Appendix A

Abbreviated Anger Expression Scale (Spielberger, Krasner, & Solomon, 1988)

How often do you *generally* react or behave in the manner described when you feel *angry* or *furious*?

0 = Almost Never

1 = Sometimes

2 = Often

3 = Almost Always

- | | | | | |
|--|---|---|---|---|
| 1. When I feel angry or furious, I try to control my angry feelings | 0 | 1 | 2 | 3 |
| 2. When I feel angry or furious, I argue with others | 0 | 1 | 2 | 3 |
| 3. When I feel angry or furious, I boil up inside but I don't show it | 0 | 1 | 2 | 3 |
| 4. When I feel angry or furious, I control my behaviour | 0 | 1 | 2 | 3 |
| 5. When I feel angry or furious, I say nasty things | 0 | 1 | 2 | 3 |
| 6. When I feel angry or furious, I become irritated more than other people are aware | 0 | 1 | 2 | 3 |
| 7. When I feel angry or furious, I remain tolerant and understanding | 0 | 1 | 2 | 3 |
| 8. When I feel angry or furious, I lose my temper | 0 | 1 | 2 | 3 |
| 9. When I feel angry or furious, I withdraw from people | 0 | 1 | 2 | 3 |
| 10. When I feel angry or furious, I am patient with others | 0 | 1 | 2 | 3 |
| 11. When I feel angry or furious, I strike out at whatever (or whoever) angers me | 0 | 1 | 2 | 3 |
| 12. When I feel angry or furious, I keep things bottled up inside | 0 | 1 | 2 | 3 |

Appendix B

Background Questionnaire

It is a formal requirement of the Human Ethics Committee of the University of Tasmania that the information provided on this questionnaire be held under security to comply with confidentiality regulations to protect your privacy. You can be assured that information will be available only to the researcher and not to any other party. Your answers to this questionnaire are identifiable only by a code which will not be accessed by anyone other than the researcher. This questionnaire and all code information will be destroyed at the completion of this research project.

**** Important note:** This questionnaire aims to cast as wide a net as possible to capture as much information as possible about the backgrounds of people with different personality types within a university sample. Questions cover topics such as medical, family, school and work history, drug use, and sexual activity. It is not expected that all questions will apply to all people ... but please be patient and as honest as you can and try to answer all questions. If however you find a particular question too confronting, simply leave it blank.

Thank you for your participation in this project, it is greatly appreciated.

1. **Have you ever experienced**
 - a. concussion? _____ Yes/No
 - b. severe head injury? _____ Yes/No
 - c. loss of consciousness? _____ Yes/No
 - d. memory loss following head injury? _____ Yes/No
2. **Do you suffer from epilepsy?** _____ Yes/No
3. **Do you have a learning disability?** _____ Yes/No
4. **Have you ever been hospitalised?** _____ Yes/No
 If Yes, what for: _____

5. **Are you taking any medications at present** _____ Yes/No
 ... If yes, which medications are you taking? _____

6. **Have you ever deliberately misused/abused prescription medications?** Yes/No
7. **As far as you know, did you suffer any injury or trauma at birth?** ____ Yes/No
8. **As far as you know, did your mother drink while pregnant with you?** Yes/No
9. **Do you smoke cigarettes?** _____ Yes/No
 ... If yes, do you smoke everyday _____ Yes/No
 ... On average how many do you smoke per week? _____
10. **Do you drink alcohol?** _____ Yes/No
 ... If yes, do you drink everyday _____ Yes/No
 ... If yes, how much per day? _____
 ... On average how much do you drink per week? _____
11. **Do you smoke marijuana?** _____ Yes/No

- ... If yes, do you smoke everyday _____ Yes/No
- ... If yes, how much per day? _____
- ... On average how much do you smoke per week? _____
12. Do you use other recreational drugs (eg cocaine, ecstasy) _____ Yes/No
- ... If yes, how often and how much _____
13. Have you ever lost consciousness from drug/alcohol use? _____ Yes/No
14. Have you ever been so drunk or stoned that you have little/no recollection of what you did? _____ Yes/No
15. Have you ever been frightened by how drunk or stoned you've been? Yes/No
16. Have you ever suffered from problems such as:
- a. depression _____ Yes/No
 - b. anxiety _____ Yes/No
 - c. mood swings _____ Yes/No
 - d. sleep difficulties _____ Yes/No
 - e. memory lapses _____ Yes/No
 - f. nightmares _____ Yes/No
 - g. temper/anger management _____ Yes/No
 - h. violent behaviour _____ Yes/No
 - i. alcohol or other drug issues _____ Yes/No
 - j. relationship difficulties _____ Yes/No
 - k. any other psychological/social problem _____ Yes/No
17. Have you ever been prescribed medications for any of the above psychological, behavioural or social problems? _____ Yes/No
18. Has anyone else in your family suffered from any of the above psychological, behavioural or social problems (if so, please put an asterisk next to each appropriate item on the above list) _____ Yes/No
19. Have you ever had suicidal thoughts? _____ Yes/No
20. Have you ever attempted suicide? _____ Yes/No
21. Has anyone close to you ever attempted or committed suicide? _____ Yes/No
22. Did you often get into trouble at school? _____ Yes/No
- ... If yes, what for? _____
23. Were you ever suspended from school? _____ Yes/No
24. Were you ever expelled from school? _____ Yes/No
25. Did you tend to get into fights (either physical fights or shouting matches) as a child? _____ Yes/No
- ... If yes, did you tend to be the one who started them? _____ Yes/No
- ... Who were the fights mostly with (and what about)?
- a. sibling _____
 - b. parent/s _____
 - c. teacher/s _____

- d. friend/s _____
- e. other: _____

... How often did you tend to fight?

- a. at least once a week
- b. at least once a fortnight
- c. at least once a month
- d. other: _____

26. Do you tend to get into fights now (either physical fights or shouting matches)?

_____ Yes/No

... If Yes, how long ago was your last fight? _____

... Did you start the fight? _____ Yes/No

... Who was the fight with (and what about)?

- a. sibling _____
- b. spouse _____
- c. friend _____
- d. other family member _____
- e. stranger _____

... How often do you tend to get into fights?

- a. at least once a week
- b. at least once a fortnight
- c. at least once a month
- d. other: _____

... Are most of your fights mainly (circle one): _____ Physical/Verbal

... Is alcohol (or another drug) usually involved? _____ Yes/No

27. Have you ever used a weapon in a fight or argument? _____ Yes/No

28. Have you ever been in trouble with the police? _____ Yes/No

.... If Yes, what for: _____

.... Have you ever been brought up on charges _____ Yes/No

29. Have you ever knowingly engaged in illegal acts (eg stealing) for which you were never caught? _____ Yes/No

... If yes, what kind of acts? _____

30. Have you ever been witness to domestic violence (including physical violence, verbal abuse, social/financial abuse)? _____ Yes/No

31. Have you ever been the victim of domestic violence (including aspects listed above), ie by a partner? _____ Yes/No

32. Have you ever been the victim of abuse (sexual or other) by someone other than a partner _____ Yes/No

33. Have you ever been a victim of crime _____ Yes/No

... If yes, what type of crime? _____

34. How many primary schools did you go to? _____

35. How many high schools (incl college) did you go to? _____
36. Were you victimised or bullied at school? _____ Yes/No
 ... If yes, how often were you bullied:
- a. daily
 - b. at least once a week
 - c. at least once a fortnight
 - d. at least once a month
 - e. other: _____
- ... What were you usually bullied about? _____
- ... Did you suffer physical attacks as a result of bullying? _____ Yes/No
- ... Did you ever change schools as a result of bullying? _____ Yes/No
37. Did your school/s have a policy to stop bullying? _____ Yes/No/Don't Know
38. What was the highest level of secondary education you completed? _____
39. In what year did you finish your secondary education (eg 2000) _____
40. How many full-time jobs have you had? _____
41. How many part-time jobs have you had? _____
42. What's the longest time you've spent in the same job? _____
43. Is this the first time you've attended university? _____ Yes/No
 ... If no, when did you last attend university? _____
44. Do you have any other post-secondary qualifications? (please specify)

45. How are you supporting yourself through university:
- a. Austudy
 - b. Pension
 - c. Part-time work
 - d. Part-time study and full or part-time work
 - e. Spouse
 - f. Parents
 - g. Other _____
46. Did your father attend university? _____ Yes/No
47. What is/was your father's occupation? _____
48. Did your mother attend university? _____ Yes/No
49. What is/was your mother's occupation? _____
50. When you were growing up, who did you primarily live with (if you spent fairly equal time in more than one living arrangement, please circle as many as appropriate):
- a. both parents
 - b. one parent
 - c. equally between two separated parents
 - d. one parent and a step-parent/stepfamily
 - e. grandparent/s

- f. other family member
- g. foster parents
- h. adopted parents
- i. other _____

51. While you were growing up, how many residences did you live in? _____

52. How old were you when you left home? _____

53. Since leaving home, how many residences have you lived in? _____

54. When you were growing up, how would you describe the methods used to discipline you (circle as many as is appropriate):

- | | |
|-----------------|----------------|
| a. fair | h. severe |
| b. violent | i. useless |
| c. unfair | j. cruel |
| d. inconsistent | k. appropriate |
| e. harsh | l. abusive |
| f. ineffectual | m. firm |
| g. consistent | n. effective |
| | o. other _____ |

55. Would you describe your childhood as being mostly (circle all that apply):

- | | |
|------------------|-----------------|
| a. happy | g. frightening |
| b. stable | h. perfect |
| c. unpredictable | i. non-descript |
| d. safe | j. traumatic |
| e. deprived | k. carefree |
| f. nurturing | l. supportive |
| | m. other _____ |

56. Are you close to your parents? _____ Yes/No

57. Do you have a close-knit family? _____ Yes/No

58. How many siblings do you have?

- a. brothers _____
- b. sisters _____
- c. step-siblings (please specify male/female) _____
- d. other (please specify) _____

59. Do you have a large social network? _____ Yes/No

60. Do you have a special friend (other than a partner) who you can talk to about absolutely anything? _____ Yes/No

61. Are both your parents still alive? _____ Yes/No

... If no, how old were you when your parent/s died (please specify which parent, or both)? _____

62. Are/were your parents divorced or no longer living together? _____ Yes/No

... If yes, how old were you when this happened? _____

- ... Has your father had any other long-term relationships since? _____Yes/No
- ... If yes, how many? _____
- ... Has your mother had any other long-term relationships since? _____Yes/No
- ... If yes, how many? _____
- 63. Are you sexually active? _____Yes/No
- ... If yes, at what age did you become sexually active? _____
- ... How many sexual partners have you had? _____
- 64. How many long-term relationships have you had? _____
- ... What was the longest period of time you've spent in one relationship _____
- 65. Are you in a relationship at present? _____Yes/No
- ... If yes, do you consider this a long-term relationship? _____Yes/No
- ... How long have you been in this relationship? _____
- 66. Do you have any children? _____Yes/No
- ... If yes, how many and what ages are they? _____
- ... Do they live with you? _____Yes/No
- ... How old were you when your first child was born? _____

Follow Up:

- a. Have you found answering this questionnaire upsetting in any way? _____Yes/No
- ... If yes, in what way? _____
- b. Would you like to talk to someone about any of the issues brought up by this questionnaire?
- _____Yes/No
- c. Please feel free to add any additional comments:
- _____
- _____
- _____
- _____
- _____

Availability for Continued Participation in this Project:

- a. Will you be available during swotvac? _____Yes/No/Maybe
- b. Will you be available during the mid-year vacation? _____Yes/No/Maybe
- c. Will you be available during second semester? _____Yes/No/Maybe

Thank you for you participation.

Appendix C

Participant Information Sheet and Consent Form

Research Project on Personality and Individual Differences Detailed Information for Participants

This research project is investigating the similarities and differences between people with different personality characteristics and lifestyle patterns.

The project involves some very simple procedures. Firstly, you are asked to complete a series of questionnaires about your approach to life, your interests, and your personal history. There are some quite personal questions asked of you, however please be assured that your responses will be kept completely confidential. Questionnaires are identifiable by code only, your name and your responses will not be stored together.

Following this stage of the project, you may be invited to return to complete a one-to-one interview, a simple computer task, and a task assessing verbal ability. The latter is to ensure that participants in this study are of similar verbal ability.

The tasks involved in this study are not anticipated to result in any distress or adverse reactions, however there are opportunities for follow-up with student counselling if such an unexpected outcome should result.

If you have any questions about the nature of the study, please feel free to ask at any stage. Participation is completely voluntary, and you may withdraw at any time without penalty.

This research project has the approval of the University of Tasmania Ethics Committee and the School of Psychology. If you have any concerns of an ethical nature or complaints about the manner in which the project is conducted, please contact the Chair or Executive Officer of the University Ethics Committee (Human Experimentation). The Chair is Dr Margaret Otlowski (6226 7569), and the Executive Officer is Ms Chris Hooper (6226 2763). Or if you prefer, a referral can be arranged for you to discuss any concerns confidentially with a University Student Counsellor.

This project is conducted by registered psychologist Tess Crawley as a component of her PhD in clinical psychology, and is supervised by Dr Frances Martin who lectures within the School of Psychology.

Please keep this information sheet, and if you have further queries please call Tess Crawley (0417 394454) or Frances Martin (6226 2262) during business hours.

Thank you for your participation,

Dr Frances Martin

Tess Crawley B.A.Hons, (PhD student)

Research Project on Personality and Individual Differences
Statement of Informed Consent

Participants: Please read, sign and date this form.

I have read and understood the information sheet for this research. The nature and possible effects of the research, and the activities that I will be involved in have been explained. I understand that my initial participation in this project will involve completing a series of questionnaires, and I may also be asked to complete a task measuring verbal abilities, a computer task, and a one-to-one interview. I understand that these tasks should not be distressing in any way, that the tasks will be explained in a way that I can understand, and that my privacy will be guarded at all times. Any questions that I have asked have been answered to my satisfaction, and I am aware that I may contact the researchers if I have further queries or concerns. I also understand that I can withdraw from the research at any time without prejudice, and that I will have access to a copy of the research report on its completion if I so wish.

I,(your name), hereby consent to take part in this research and agree that data gathered for the research may be published, provided that my identity is not revealed.

.....

(Signature of Participant)

Date _____

To be filled in by researcher:

This research project has been explained to
(participant's name). I believe the consent is informed and that he/she understands the implications of participation and that he/she may withdraw at any time without prejudice.

.....

(Researcher's Signature)

Date _____

Appendix D
Undergraduate Males and Females Responses Per Item on the Background Questionnaire
(Chapter 3)

Male (M): (n=75) 22.31 (8.82)

Female (F): (n=241) 21.83 (7.35)

1. Have you ever experienced
 - e. concussion? M 50.67%, F 23.24%
 - f. severe head injury? M 12%, F 1.66
 - g. loss of consciousness? M 44%, F 27.39
 - h. memory loss following head injury? M 6.67%, F 3.32%
2. Do you suffer from epilepsy? M 1.33%, F 0.83%
3. Do you have a learning disability? M 2.67%, F 2.07%
4. Have you ever been hospitalised? M 64%, F 54.36%

Medical reason? M 97.92%, F 80.15%

Dental Reason? M 4.17%, F 9.92

Psych reason? M 4.17%, F 3.05

Childbirth? F 16.03%
5. Are you taking any medications at present? M 22.67%, F 28.22%

Contraceptive: F 41.18% (11.62% of total female sample)

Psychiatric Meds: M 35.29%, F 26.47%

Medical Meds: M 76.47%, F 38.24%
6. Have you ever deliberately misused/abused prescription medications?
 M 14.67%, F 9.54%
7. As far as you know, did you suffer any injury or trauma at birth?
 M 8%, F 7.47%
8. As far as you know, did your mother drink while pregnant with you?
 M 6.67%, F 7.88%
9. Do you smoke cigarettes? M 18.67%, F 22.82%

If yes, do you smoke everyday? M 78.57%, F 67.27%

On average how many do you smoke per week?

M 73.33 (67.94), F 50.97 (54.74)
10. Do you drink alcohol? M 84%, F 85.06%

If yes, do you drink everyday? M 2.67%, F 2.44%

On average how much do you drink per week (in standard drinks):

M 7.61 (6.20), F 5.13 (6.49)
11. Do you smoke marijuana? M 24%, 18.67%

If yes, do you smoke everyday M 4%, F 6.67%

On average how much do you smoke per week (number of cones):

M 6.25 (2.47), F 1.25 (1.06)

12. Do you use other recreational drugs (eg cocaine, ecstasy)? M 12%, F 5.39%
 Every month or two: M 22.22%, F 30.77%
 a few times a year: M 44.44%, F 7.69%
 rarely: M 33.33%, F 69.23%
13. Have you ever lost consciousness from drug/alcohol use? M 32%, F 25.31%
14. Have you ever been so drunk/stoned that you have little recollection of what you did?
 M 57.33%, F 55.19%
15. Have you ever been frightened by how drunk/stoned you've been? M 38.67%, F 41.49%
16. Have you ever suffered from:
 Depression: M 40%, F 45.64%
 Anxiety: M 38.67%, F 44.81%
 mood swings: M 38.67%, F 50.62%
 sleep difficulties: M 53.33%, F 50.62%
 memory lapses: M 20%, F 19.50%
 nightmares: M 42.67%, F 37.76%
 temper/anger management: M 24%, F 17.01%
 violent behaviour: M 17.33%, F 5.81%
 alcohol or other drug issues: M 14.67%, F 7.47%
 relationship difficulties M 44%, F 42.32%
 any other psychological/social problem: M 14.67%, F 13.69%
17. Have you ever been prescribed medications for any of the above psychological, behavioural or social problems? M 18.67%, F 16.60%
18. Has anyone in your family suffered from any of the above problems: M 49.33%, F 42.32%
 Depression: M 51.35%, F 72.55%
 Anxiety: M 35.14%, F 33.33%
 mood swings: M 35.14%, F 39.22%
 sleep difficulties: M 35.14%, F 38.24%
 memory lapses: M 16.22%, F 16.67%
 nightmares: M 10.81%, F 10.78%
 temper/anger management: M 32.43%, F 32.35%
 violent behaviour: M 24.32%, F 20.59%
 alcohol or other drug issues: M 40.54%, F 32.35%
 relationship difficulties: M 40.54%, F 35.29%
19. Have you ever had suicidal thoughts? M 54.67%, F 40.25%
19. Have you ever attempted suicide? M 5.33%, F 8.30%
20. Has anyone close to you ever attempted or committed suicide? M 29.33%, F 39.42%
21. Did you often get into trouble at school? M 34.67%, F 9.13%
 For Talking: M 30.77%, F 31.82%
 For your Behaviour: M 53.85%, F 59.09%
 For poor Work: M 30.77%, F 13.64%

For Aggression: M 3.85%, F 4.55%

22. Were you ever suspended from school? M 9.33%, F 5.39%

23. Were you ever expelled from school? M 2.67%, F 0.83%

24. Did you tend to get into fights (either physical fights or shouting matches) as a child?

M 41.33%, F 35.68%

If yes, did you tend to be the one who started them?

M 25.81%, F 27.91%

Who were the fights mostly with (and what about)?

f. sibling

Anything: M 41.94%, F 46.51%

Possessions: M 6.45%, F 17.44%

Chores: M (-), F 4.65%

Privacy: M 3.23%, F 4.65%

Power Struggles: M 9.68%, F 16.28%

g. parent/s

Anything: M 25.81%, F 23.26%

Getting own way: M 6.45%, F 17.44%

Discipline: M 3.23%, F 16.28%

Attention: F 2.33%

Personality Clash: M 3.23%, F 2.33%

h. teacher/s

Personality Clash: M 12.90%,

Behaviour: F 4.65%

Authority/Rules: F 1.16%

i. friend/s

Being Annoying: M 19.35%, F 8.14%

Possessions: M 3.23%, F 1.16%

Anything: M 3.23%, F 2.33%

Dishonesty: F 3.49%

Jealousy: F 1.16%

j. other:

Defending friends: M 9.68%, F 2.33%

Bullying: M 12.90%, F 4.65%

Sports/Games: M 6.45%,

Personality Clash: F 1.16%

How often did you tend to fight?

at least once a week: M 45.16%, F 55.81%

at least once a fortnight: M 12.90%, F 13.95%

at least once a month: 29.03%, F 18.60%

Daily: M 12.90%, F 3.49%

Rarely: M 3.23%, F 11.63%

25. Do you tend to get into fights now (either physical fights or shouting matches)? M 16%, F 19.92%

If Yes, how long ago was your last fight?

Within last 2 days: M 33.33%, F 35.42%

Within last 2 weeks: M 16.67%, F 37.50%

Within a month: M 25%, F 22.92%

Within a year: M 25%, F 4.17%

Did you start the fight? M 8.33%, F 39.58%

Who was the fight with (and what about)?

f. sibling

Behaviour: M 8.33%, F 18.75%

Possessions: M 8.33%, F 10.42%

Relationships: F 4.17%

Petty Stuff: M 25%, F 2.08%

g. spouse

AOD issues: M 8.33%, F 12.50%

Chores: F 4.17%

Relationship: M 8.33%, F 8.33%

Behaviour: M 8.33%,

Children: F 2.08%

h. friend

Relationships: F 10.48%

Jealousy: F 4.17%

i. other family member

Privacy/Study: M 8.33%, F 18.75%

Parents: M 16.67%, F 4.17%

Independence: F 4.17%

j. stranger: M 16.67%, F 8.33%

How often do you tend to get into fights?

Average per year: M 15.41 (16.90), F 25.15 (19.86)

Are most of your fights mainly (total sample):

Physical: M 4% (or 33.33% of subsample of fighters)

F 0.41% (or 2.08% of subsample of fighters)

Verbal: M 28% (or 175% of subsample of fighters)

F 26.97% (or 135.42% of subsample of fighters)

Is alcohol (or another drug) usually involved? M 25%, F 14.58%

26. Have you ever used a weapon in a fight or argument? M 58.33% (9.33% of total male sample), F 12.5% (2.49% of total female sample)

27. Have you ever been in trouble with the police? M 33.33%, 9.13%
 Driving (eg speeding): M 12%, F 18.18%
 DUI: M 16%, F 13.64%
 Delinquency: M 12%,
 Theft: M 16%, F 27.27%
 AOD issues: M 40%, F 27.27%
 Violence: F 4.55%
 Ever brought up on charges? M 44% (14.67% of total male sample), F 31.82% (2.90% of total female sample)
28. Have you ever knowingly engaged in illegal acts (eg stealing) for which you were never caught? M 58.67%, F 37.34%
 AOD: M 13.64%, F 23.33%
 Driving/DUI: M 2.27%, F 6.67%
 Delinquency: M 6.82%,
 Theft: M 63.64%, F 64.44
 Prostitution: M 2.27%, F 1.11%
 Multiple serious offences: M 2.27%, F 1.11%
29. Have you ever been witness to domestic violence (including physical violence, verbal abuse, social/financial abuse)? M 56%, F 39.42%
30. Have you ever been the victim of domestic violence (including aspects listed above), ie by a partner? M 12%, F 16.18%
31. Have you ever been the victim of abuse (sexual or other) by someone other than a partner? M 14.67%, F 19.92%
32. Have you ever been a victim of crime? M 40%, F 25.73%
 Theft: M 80%, F 67.74%
 Physical assault: M 23.33%, F 20.97%
 Sexual assault: M 3.33%, F 11.29%
33. How many primary schools did you go to? M 1.95 (1.18), F 1.60 (1.03)
34. How many high schools (incl college) did you go to? M 1.81 (0.73), F 1.81 (0.88)
35. Were you victimised or bullied at school? M 52%, F 26.97%
 If yes, how often were you bullied:
 Daily: M 25.64%, F 20%
 at least once a week: M 38.46%, F 36.92%
 at least once a fortnight: M 7.69%, F 12.31%
 at least once a month: M 23.08%, F 12.31%
 occasionally: M 12.82%, F 18.46%
 What were you usually bullied about?
 Appearance: M 20.51%, F 21.54%

Race: M 5.13%, F 7.69%

Family: M 2.56%, F 4.62%

Weight: M 12.82%, F 10.77%

Being different: M 7.69%, F 9.23%

Anything: M 15.38%, F 18.46%

Ability/IQ: M 2.56%, F 9.23%

Being shy: M 10.26%, F 1.54%

Being a goody-goody: F 4.62%

Sexuality: M 5.13%,

Did you suffer physical attacks as a result of bullying? M 61.54%, F 23.08%

Did you ever change schools as a result of bullying? M 12.82%, F 12.31%

36. Did your school/s have a policy to stop bullying?

YES: M 48%, F 56.85

NO: M 16%, F 8.30%

37. What was the highest level of secondary education you completed?

M 11.69 (0.80), F 11.73 (0.78)

38. In what year did you finish your secondary education (eg 2000) ??

39. How many full-time jobs have you had? M 3.70 (2.91), F 3.39 (4.21)

40. How many part-time jobs have you had? M 3.88 (4.82), F 2.86 (2.69)

41. What's the longest time you've spent in the same job (in months)?

M 35.62 (51.29), F 32.99 (31.35)

42. Is this the first time you've attended university? M 84%, F 87.97%

If no, when last at uni? M 1994.50 (8.75), F 1995.64 (7.71)

43. Do you have any other post-secondary qualifications? M 22.67% F 18.67%

44. How are you supporting yourself through university:

Austudy: M 44%, F 33.61%

Pension: M 4%, F 7.47%

Part-time work: M 41.33%, F 51.04%

Part-time study and full or part-time work: M 2.67%, F 5.39%

Spouse: M 4%, F 4.98

Parents: M 41.33%, F 46.89%

45. Did your father attend university? M 26.67%, F 33.61%

46. What is/was your father's occupation?

Professional (eg lawyer): M 21.33%, F 15.35%

Retail: M 10.67%, F 6.22%

Trade: M 20%, F 22.82%

Semi-professional (eg teacher): M 9.33%, F 17.84%

Unskilled labour: M 8%, F 10.79%

Self-employed: M 5.33%, F 4.98%

Farmer: M 6.67%, F 2.49%

Skilled labour (eg clerical): M 10.67%, F 14.94%

Unemployed/Pensioner: M 1.33%, F 0.41%

Student: M 1.33%, F 0.41%

47. Did your mother attend university? M 37.33%, F 33.61%

48. What is/was your mother's occupation?

Professional: M 10.67%, F 8.71%

Retail: M 4%, F 3.73%

Trade (eg hairdresser): F 0.83%

Semi-professional: M 34.67%, F 30.71%

Unskilled labour: M 9.33%, F 7.47%

Self-employed: F 2.07%

Farmer: F 0.83%

Skilled labour (eg nurse's aide): M 22.67%, F 25.73 %

Home duties: M 9.33%, F 14.94%

Student: M 1.33%, F 1.66%

49. When you were growing up, who did you primarily live with:

both parents: M 73.33%, F 82.16%

one parent: M 22.67%, F 13.28%

equally between two separated parents: M 4%, F 1.24%

one parent and a step-parent/stepfamily: M 4%, 5.39%

grandparent/s: M 2.67%, F 3.73%

other family member: M 2.67%, F 1.24%

adopted parents: F 0.83%

50. While you were growing up, how many residences did you live in?

M 3.68 (3.02), F 3.32 (3.41)

51. How old were you when you left home? M 18.29 (2.26), F 17.66 (1.94)

52. Since leaving home, how many residences have you lived in?

M 5.50 (5.22), F 5.18 (5.91)

53. When you were growing up, how would you describe the methods used to discipline you (circle as many as is appropriate):

Fair: M 68%, F 73.03%

severe: m 12%, F 4.98

Violent: M 8%, F 6.22%

Useless: M 5.33%, F 7.05

Unfair: M 9.33%, F 8.71

cruel: M 2.67%, F 3.73

Inconsistent: M 21.33%, F 15.77

appropriate: M 34.67%, F 43.98

Harsh: M 12%, F 9.96

abusive: M 6.67%, F 6.64

Ineffectual: M 12%, F 9.54

firm: M 34.67%, F 42.32

Consistent: M 24%, F 36.10

effective: M 36%, F 48.55

54. Would you describe your childhood as being mostly (circle all that apply):

Happy: M 60%, F 78.01

frightening: M 5.33%, F 9.13

Stable: M 46.67%, F 58.09

perfect: M 2.67%, F 12.45

Unpredictable: M 28%, F 16.60

non-descript: M 12%, F 5.39

Safe: M 48%, F 63.07

traumatic: M 12%, F 12.45

Deprived: M 8%, F 6.64

carefree: M 14.67, F 21.16

Nurturing: M 25.33%, F 45.64

supportive: M 40%, F 50.62

55. Are you close to your parents? M 68%, F 83.82%

56. Do you have a close-knit family? M 52%, F 70.54%

57. How many siblings do you have?

Brothers: M 1.41 (0.91), F 1.51 (0.91)

Sisters: M 1.66 (1.35), F 1.48 (0.71)

step-siblings: M 2.07 (1.03), F 2.83 (1.81)

58. Do you have a large social network? M 56%, F 65.98%

59. Do you have a special friend (other than a partner) who you can talk to about absolutely anything? M 72%, F 85.89%

60. Are both your parents still alive? M 88%, F 90.46%

If no, how old were you when your parent/s died (please

specify which parent, or both)? M 25.50 (12.47), F 24.23 (14.91)

61. Are/were your parents divorced or no longer living together? M 37.33%, F 24.90%

If yes, how old were you when this happened? M 9.41 (9.63), F 9.93 (7.10)

Has your father had any other long-term relationships since? M 46.43%, F 71.67%

If yes, how many? M 1.50 (0.67), F 2.07 (2.28)

Has your mother had any other long-term relationships since? M 67.86%, F 56.67%

If yes, how many? M 2.12 (2.69), F 1.45 (0.83)

62. Are you sexually active? M 70.67%, F 68.05%

If yes, at what age did you become sexually active? M 16.51 (2.29), F 16.61 (1.77)

How many sexual partners have you had? M 4.47 (5.26), F 4.54 (8.39)

63. How many long-term relationships have you had? M 1.73 (1.01), F 1.71 (0.98)
What was the longest period of time you've spent in one relationship (in months): M 22.93 (33.78), F 41.20 (58.87)
64. Are you in a relationship at present? M 30.67%, F 55.19%
If yes, do you consider this a long-term relationship? M 24%, F 46.06%
How long have you been in this relationship (in months)? M 17.77 (18.52), F 41.33 (87.92)
65. Do you have any children? M 12%, F 14.11%
how many M 2.00 (1.32), F 2.73 (2.79)
Do they live with you? M 55.56%, F 79.41%
How old were you when your first child was born? M 25.11 (4.96), F 24.39 (3.39)

Appendix E

Female Groups' Responses Per Item on the Background Questionnaire (Chapter 4)

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg (n=18)	
	n	%	n	%	n	%	n	%
Concussion	1	5.00	16	23.88	5	33.33	4	22.22
Severe head injury	0	0.00	2	2.99	1	6.67	0	0.00
Loss of consciousness	5	25.00	21	31.34	4	26.67	4	22.22
Memory loss after head injury	0	0.00	6	8.96	0	0.00	1	5.56
Learning disability	0	0.00	3	4.48	0	0.00	0	0.00
Hospitalised	10	50.00	32	47.76	8	53.33	11	61.11
Medical reason	8	80.00	25	78.13	8	100.00	8	72.73
Dental reason	0	0.00	2	6.25	1	12.50	3	27.27
Psychiatric reason	0	0.00	1	3.13	0	0.00	0	0.00
Childbirth	4	40.00	8	25.00	1	12.50	1	5.56
Current medications	4	20.00	17	25.37	5	33.33	7	38.89
Contraceptive	3	75.00	7	41.18	2	40.00	3	42.86
Psychiatric medication	1	25.00	3	17.65	2	40.00	2	28.97
Medical medication	0	0.00	9	52.94	1	20.00	2	28.57
Ever misused prescription drugs	3	15.00	4	5.97	1	6.67	3	16.67
Suffered birth injury/trauma	0	0.00	4	5.97	0	0.00	3	16.67
Mother drank while pregnant	3	15.00	2	2.99	1	6.67	0	0.00

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg (n=18)	
	n	%	n	%	n	%	n	%
Smoke cigarettes	4	20.00	14	20.90	4	26.67	8	44.44
Smoke everyday	4	100.00	8	57.14	3	75.00	6	75.00
Drink alcohol	19	95.00	50	74.63	15	100.00	17	94.44
Drink everyday	0	0.00	2	4.00	1	6.67	0	0.00
Smoke marijuana	3	15.00	10	14.93	5	33.33	3	16.67
Smoke everyday	1	33.33	0	0.00	1	20.00	0	0.00
Recreational drugs (eg cocaine/ecstasy)	1	5.00	3	4.48	1	6.67	1	5.56
Every month or two	0	0.00	2	66.67	1	100.00	0	0.00
Rarely	1	100.00	1	33.33	0	0.00	1	100.00
Ever lost consciousness from alcohol/drugs	8	40.00	11	16.42	5	33.33	10	55.56
Loss of memory from alcohol/drugs	11	55.00	31	46.27	12	80.00	13	72.22
Ever frightened by level of intoxication	9	45.00	24	35.82	10	66.67	8	44.44

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg (n=18)	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Number cigarettes per week	4	93.75 (81.59)	14	42.29 (49.86)	4	22.63 (20.43)	7	75.21 (58.49)
Number standard drinks per week	13	3.27 (3.39)	31	3.04 (2.31)	9	7.61 (7.15)	11	5.64 (6.66)
Number cones per week	0	-	0	-	0	-	0	-

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg (n=18)	
	n	%	n	%	n	%	n	%
Depression	11	55.00	26	38.81	6	40.00	11	61.11
Anxiety	8	40.00	30	44.78	5	33.33	7	38.89
Mood swings	13	65.00	30	44.78	8	53.33	13	72.22
Sleep difficulties	14	70.00	29	43.28	5	33.33	12	66.67
Memory lapses	4	20.00	10	14.93	3	20.00	5	27.78
Nightmares	7	35.00	17	25.37	6	40.00	7	38.89
Temper/anger management	7	35.00	6	8.96	3	20.00	7	38.89
Violent behaviour	3	15.00	2	2.99	1	6.67	3	16.67
Alcohol/other drug issues	1	5.00	3	4.48	1	6.67	4	22.22
Relationship difficulties	10	50.00	19	28.36	7	46.67	12	66.67
Other psycho-social problems	2	10.00	6	8.96	5	33.33	4	22.22
Prescribed medication for above	3	15.00	9	13.43	2	13.33	3	16.67
Family history of above	10	50.00	25	37.31	6	40.00	8	44.44
Depression	6	60.00	20	80.00	4	66.67	6	75.00
Anxiety	2	20.00	9	36.00	3	50.00	4	50.00
Mood swings	4	40.00	7	28.00	4	66.67	3	37.50
Sleep difficulties	4	40.00	10	40.00	2	33.33	4	50.00
Memory lapses	1	10.00	5	20.00	0	0.00	1	12.50
Nightmares	1	10.00	1	4.00	1	16.67	2	25.00
Temper/anger management	4	40.00	7	28.00	3	50.00	3	37.50
Violent behaviour	1	10.00	3	12.00	2	33.33	1	12.50
Alcohol/other drug issues	2	20.00	7	28.00	3	50.00	3	37.50
Relationship difficulties	3	30.00	6	24.00	4	66.67	4	50.00
Suicidal thoughts	11	55.00	23	34.33	5	33.33	11	61.11
Attempted suicide	2	10.00	4	5.97	1	6.67	2	11.11
Close other attempted/committed suicide	9	45.00	23	34.33	6	40.00	9	50.00

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg (n=18)	
	n	%	n	%	n	%	n	%
Tend to get into trouble at school	2	10.00	3	4.48	3	20.00	5	27.78
Talking	2	100.00	1	33.33	0	0.00	0	0.00
Behaviour	1	50.00	2	66.67	3	100.00	2	40.00
Work	1	50.00	1	33.33	0	0.00	0	0.00
Aggression	0	0.00	0	0.00	0	0.00	1	20.00
Ever suspended from school	1	5.00	1	1.49	1	6.67	4	22.22
Ever expelled from school	0	0.00	0	0.00	0	0.00	1	5.56

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg (n=18)	
	n	%	n	%	n	%	n	%
Tended to get into fights/arguments as a child	10	50.00	13	19.40	5	33.33	11	61.11
Did you tend to start them	2	20.00	2	15.38	2	40.00	7	63.64
Who with/what about:								
Sibling/Anything	6	60.00	9	69.23	1	20.00	6	54.55
Sibling/Possessions	3	30.00	0	0.00	2	40.00	2	18.18
Sibling/Chores	0	0.00	1	7.69	0	0.00	0	0.00
Sibling/Privacy	0	0.00	0	0.00	1	20.00	1	9.09
Sibling/Power struggles	1	10.00	1	7.69	1	20.00	0	0.00
Parents/Anything	4	40.00	4	30.77	1	20.00	1	9.09
Parents/Getting own way	1	10.00	1	7.69	1	20.00	2	18.18
Parents/Discipline	3	30.00	2	15.38	2	40.00	1	9.09
Parents/Attention	1	10.00	0	0.00	0	0.00	0	0.00
Parents/Personality clash	0	0.00	0	0.00	0	0.00	1	9.09
Teachers/Behaviour	0	0.00	0	0.00	0	0.00	0	0.00
Teachers/Authority/rules	0	0.00	0	0.00	0	0.00	1	9.09
Friends/Being annoying	0	0.00	3	23.08	1	20.00	1	9.09
Friends/Possessions	0	0.00	0	0.00	0	0.00	1	9.09
Friends/Anything	0	0.00	0	0.00	0	0.00	1	9.09
Other/Defending friends	0	0.00	0	0.00	0	0.00	1	9.09
Other/Bullying	0	0.00	1	7.69	1	20.00	0	0.00
Frequency of fighting:								
Daily	1	10.00	0	0.00	0	0.00	0	0.00
Weekly	5	50.00	4	30.77	3	60.00	6	54.55
Fortnightly	3	30.00	4	30.77	0	0.00	1	9.09
Monthly	2	20.00	2	15.38	1	20.00	3	27.27
Rarely	0	0.00	4	30.77	0	0.00	1	9.09
Do you tend to fight/argue now	5	25.00	8	11.94	3	20.00	11	61.11
Alcohol/drugs usually involved	0	0.00	4	50.00	0	0.00	2	18.18
Ever used a weapon	1	20.00	1	12.50	1	33.33	2	18.18
How long ago last fight:								
Within last 2 days	2	40.00	2	25.00	1	33.33	4	36.36
Within last 2 weeks	1	20.00	5	62.50	2	66.67	5	45.45
Within last month	1	20.00	2	25.00	0	0.00	1	9.09
Within last year	0	0.00	0	0.00	0	0.00	1	9.09
Did you start the fight	3	60.00	3	37.50	0	0.00	5	45.45

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg (n=18)	
	n	%	n	%	n	%	n	%
Who with/what about:								
Sibling/Behaviour	0	0.00	0	0.00	1	33.33	1	9.09
Sibling/Possessions	1	20.00	2	25.00	0	0.00	1	9.09
Sibling/Relationships	0	0.00	0	0.00	0	0.00	1	9.09
Sibling/Petty issues	0	0.00	1	12.50	0	0.00	0	0.00
Spouse/Alcohol,drug issues	1	20.00	3	37.50	0	0.00	1	0.00
Spouse/Chores	0	0.00	0	0.00	0	0.00	0	9.09
Spouse/Relationship	0	0.00	0	0.00	1	33.33	1	9.09
Friend/Relationships	1	20.00	0	0.00	0	0.00	2	18.18
Other family member/Privacy,study	0	0.00	0	0.00	2	66.67	3	27.27
Other family member/Parents	0	0.00	1	12.50	0	0.00	1	9.09
Other family member/Independence	0	0.00	2	25.00	0	0.00	0	0.00
Stranger	0	0.00	0	0.00	1	33.33	0	0.00
Fights mostly physical	0	0.00	0	0.00	0	0.00	0	0.00
Fights mostly verbal	6	30.00	13	19.40	5	33.33	11	61.11
		Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)
Average number of fights per year	5	33.60 (17.74)	10	18.15 (19.13)	4	16.50 (24.23)	11	32.00 (21.05)
Ever been in trouble with the police	3	15.00	4	5.97	0	0.00	4	22.22
Driving	1	33.33	0	0.00	0	0.00	0	0.00
DUI	0	0.00	1	25.00	0	0.00	0	0.00
Theft	1	33.33	1	25.00	0	0.00	0	0.00
Alcohol/drugs	1	33.33	1	25.00	0	0.00	3	75.00
Violence	0	0.00	0	0.00	0	0.00	0	0.00
Ever brought up on charges	0	0.00	1	25.00	0	0.00	2	50.00
Engaged in illegal acts but not caught	8	40.00	20	29.85	4	26.67	10	55.56
Alcohol/drugs	3	37.50	6	30.00	2	50.00	2	20.00
Driving/DUI	1	12.50	0	0.00	1	25.00	1	10.00
Theft	6	75.00	14	70.00	1	25.00	7	70.00
Prostitution	0	0.00	0	0.00	1	25.00	0	0.00
Witnessed domestic violence	6	30.00	20	29.85	5	33.33	7	38.89
Victim of domestic violence by a partner	6	30.00	9	13.43	2	13.33	2	11.11
Victim of abuse by other than partner	5	25.00	13	19.40	4	26.67	1	5.56
Victim of crime	5	25.00	17	25.37	3	20.00	3	16.67
Theft	5	100.00	11	64.71	1	33.33	2	66.67
Physical assault	0	0.00	3	17.65	1	33.33	1	33.33
Sexual assault	0	0.00	2	11.76	1	33.33	0	0.00
Victimised/bullied at school	8	40.00	12	17.91	3	20.00	6	33.33
Daily	2	25.00	2	16.67	0	0.00	2	33.33
Weekly	1	12.50	7	58.33	3	100.00	1	16.67
Fortnightly	1	12.50	0	0.00	0	0.00	0	0.00
Monthly	2	25.00	0	0.00	0	0.00	2	33.33
Occasionally	1	12.50	2	16.67	0	0.00	1	16.67
Appearance	1	12.50	2	16.67	1	33.33	0	0.00
Race	1	25.00	1	8.33	0	0.00	0	0.00
Family	2	12.50	1	8.33	0	0.00	0	0.00
Weight	1	12.50	0	0.00	1	33.33	1	16.67
Being different	1	25.00	1	8.33	0	0.00	1	16.67
Anything	2	12.50	3	25.00	0	0.00	1	16.67
Ability/IQ	1	0.00	2	16.67	0	0.00	0	0.00
Being a goody-goody	0	0.00	0	0.00	0	0.00	1	16.67
Physically attacked	3	37.50	2	16.67	0	0.00	0	0.00
Changed schools	0	0.00	1	8.33	1	33.33	2	33.33

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg (n=18)	
	n	%	n	%	n	%	n	%
School policy against bullying:								
Yes	9	45.00	39	58.21	9	60.00	9	50.00
No	2	10.00	3	4.48	0	0.00	5	27.78
Father attended university	5	25.00	26	38.81	6	40.00	2	11.11
Father's occupation:								
Professional (eg lawyer)	3	15.00	13	19.40	2	13.33	1	5.56
Retail	1	5.00	6	8.96	0	0.00	3	16.67
Trade	7	35.00	11	16.42	3	20.00	5	27.78
Semi-professional (eg teacher)	3	15.00	12	17.91	3	20.00	4	22.22
Unskilled labour (eg factory hand)	0	0.00	5	7.46	3	20.00	2	16.67
Self-employed	1	5.00	4	5.97	0	0.00	0	0.00
Farmer	0	0.00	2	2.99	0	0.00	0	0.00
Skilled labour (eg clerical)	4	20.00	10	14.93	3	20.00	3	16.67
Unemployed/Pensioner	0	0.00	1	1.49	0	0.00	0	0.00
Student	1	5.00	0	0.00	0	0.00	0	0.00
Mother attended university	7	35.00	20	29.85	10	66.67	5	27.78
Mother's occupation:								
Professional (eg lawyer)	3	15.00	8	11.94	2	13.33	1	5.56
Retail	0	0.00	1	1.49	0	0.00	1	5.56
Trade (eg hairdresser)	0	0.00	1	1.49	0	0.00	0	0.00
Semi-professional (eg teacher)	4	20.00	19	28.36	7	46.67	6	33.33
Unskilled labour (eg factory hand)	1	5.00	5	7.46	0	0.00	4	22.22
Self-employed	0	0.00	1	1.49	0	0.00	0	0.00
Farmer	0	0.00	1	1.49	0	0.00	0	0.00
Skilled labour (eg nurses' aide)	10	50.00	18	26.87	2	13.33	3	16.67
Home duties	0	0.00	10	14.93	4	26.67	2	11.11
Student	0	0.00	1	1.49	0	0.00	0	0.00
Who primarily raised by:								
Both parents	18	90.00	54	80.60	11	73.33	14	77.78
One parent	1	5.00	8	11.94	4	26.67	2	11.11
Equally between sep. parents	0	0.00	0	0.00	0	0.00	2	11.11
Parent & step-parent	1	5.00	4	5.97	1	6.67	0	0.00
Grandparents	2	10.00	1	1.49	0	0.00	1	5.56
Other family member	1	5.00	0	0.00	0	0.00	1	5.56
Adopted parents	0	0.00	1	1.49	0	0.00	1	5.56
Number of residences growing up	20	2.10 (1.65)	66	3.20 (3.86)	14	3.93 (3.79)	18	3.11 (2.35)
Age when left home	12	18.58 (2.64)	31	17.58 (2.35)	8	17.88 (2.80)	7	18.14 (1.46)
Number of residences since	12	3.25 (3.55)	30	5.80 (5.28)	7	3.29 (3.35)	7	3.29 (3.30)
Describe discipline as:								
Fair	13	65.00	55	82.09	11	73.33	11	61.11
Severe	1	5.00	3	4.48	0	0.00	1	5.56
Violent	2	10.00	1	1.49	0	0.00	1	5.56
Useless	3	15.00	4	5.97	0	0.00	1	5.56
Unfair	3	15.00	4	5.97	0	0.00	0	0.00
Cruel	1	5.00	1	1.49	0	0.00	0	0.00
Inconsistent	3	15.00	10	14.93	4	26.67	3	16.67
Appropriate	11	55.00	26	38.81	6	40.00	8	44.44
Harsh	2	10.00	4	5.97	1	6.67	2	11.11
Abusive	1	5.00	2	2.99	2	13.33	1	5.56
Ineffectual	2	10.00	7	10.45	1	6.67	1	5.56
Firm	12	60.00	21	31.34	7	46.67	8	44.44
Consistent	7	35.00	27	40.30	4	26.67	6	33.33
Effective	7	35.00	32	47.76	9	60.00	9	50.00

	Aggressive (n=20)		Control (n=67)		Impulsive (n=15)		Imp-Agg (n=18)	
	n	%	n	%	n	%	n	%
Describe childhood as:								
Happy	14	70.00	54	80.60	12	80.00	15	83.33
Frightening	2	10.00	5	7.46	1	6.67	1	5.56
Stable	13	65.00	40	59.70	9	60.00	7	38.89
Perfect	2	10.00	9	13.43	1	6.67	1	5.56
Unpredictable	3	15.00	9	13.43	1	6.67	5	27.78
Non-descript	2	10.00	2	2.99	1	6.67	3	16.67
Safe	13	65.00	46	68.66	10	66.67	9	50.00
Traumatic	3	15.00	6	8.96	1	6.67	2	11.11
Deprived	2	10.00	4	5.97	2	13.33	0	0.00
Carefree	5	25.00	14	20.90	4	26.67	3	16.67
Nurturing	8	40.00	36	53.73	10	66.67	5	27.78
Supportive	10	50.00	38	56.72	10	66.67	8	44.44
Close to parents	14	70.00	59	88.06	13	86.67	15	83.33
Close-knit family	14	70.00	52	77.61	11	73.33	10	55.56
Large social network	13	65.00	42	62.69	12	80.00	10	55.56
Special friend/confidante	18	90.00	59	88.06	14	93.33	14	77.78

	Aggressive (n=20)			Control (n=67)			Impulsive (n=15)			Imp-Agg (n=18)		
	n	%	Mean (SD)	n	%	Mean (SD)	n	%	Mean (SD)	n	%	Mean (SD)
Both parents still alive	20	100	-	61	91.04	-	13	86.67	-	16	88.89	-
Age parent died	0	-	-	7	-	24.50 (16.24)	2	-	29.00 (11.31)	2	-	18.50 (0.71)
Parents divorced/separated	4	20	-	12	17.91	-	5	33.33	-	6	33.33	-
Age when this happened	4	-	14.50 (2.52)	10	-	5.15 (3.80)	5	-	5.40 (4.83)	6	-	10.25 (7.81)
Father in long-term relationship since	3	75	-	10	83.33	-	4	80	-	6	100	-
How many	3	-	5.67 (8.08)	9	-	1.56 (1.01)	4	-	1.50 (1.00)	6	-	2.17 (1.33)
Mother in long-term relationship since	1	25	-	9	75.00	-	4	80	-	4	66.67	-
How many	1	-	-	9	-	1.11 (0.33)	4	-	1.25 (0.50)	4	-	(2.00 (1.41)
Sexually active	13	65	-	45	67.16	-	10	66.67	-	17	94.44	-
Age became sexually active	10	-	16.50 (0.53)	41	-	16.51 (1.66)	9	-	15.89 (1.05)	17	-	16.47 (1.07)
Number of sexual partners	10	-	4.65 (4.78)	39	-	4.15 (4.27)	9	-	2.33 (1.00)	14	-	3.43 (3.55)
Number of long-term relationships	12	-	2.08 (1.00)	50	-	1.90 (1.23)	11	-	2.09 (0.83)	16	-	1.31 (0.60)
Longest time in one relationship (months)	13	-	31.38 (33.31)	52	-	41.71 (53.12)	14	-	36.75 (63.66)	18	-	18.69 (14.77)
In a relationship now	10	50	-	41	61.19	-	7	46.67	-	13	72.22	-
Consider it long-term	9	90	-	34	82.93	-	6	85.71	-	11	84.62	-
Time in this relationship (months)	10	-	36.30 (37.00)	40	-	38.38 (55.10)	8	-	37.09 (82.36)	12	-	85.13 (227.38)
Any children	3	15	-	12	17.91	-	2	13.33	-	0	0	-
How many children	3	-	2.33 (0.58)	11	-	2.18 (1.33)	2	-	3.00 (1.41)	0	-	-
Live with you	3	100	-	8	66.67	-	2	100	-	0	-	-
Age when first child born	3	-	24.67 (2.52)	11	-	25.00 (3.87)	2	-	28.50 (0.71)	0	-	-

Appendix F

DSM-IV (APA, 1994) Borderline Personality Disorder Diagnostic Criteria

-
- A pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:
-
1. Frantic efforts to avoid real or imagined abandonment. (Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.)
 2. A pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation
 3. Identity disturbance (markedly and persistently unstable self-image or sense of self)
 4. Impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating). (Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.)
 5. Recurrent suicidal behavior, gestures, or threats, or self-mutilating behaviour
 6. Affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days)
 7. Chronic feelings of emptiness
 8. Inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights)
 9. Transient, stress-related paranoid ideation or severe dissociative symptoms
-

Appendix G**Tasmanian Word Knowledge Test**

TASMANIAN WORD KNOWLEDGE TEST

FORM R

Name

INSTRUCTIONS

This is a test to see how many words you know. Each word in heavy black type is followed by five other words. Choose the word which has the same or most nearly the same meaning as the word in heavy black type, and write its number in the brackets at the end of the line. In the first example, happy is the correct answer so 3 is written in the brackets at the end.

Try to do as many items as you can and guess if you are not sure of the right answer.

Do the other practice examples on this page.

PRACTICE EXAMPLES

glad:	1 wise	2 silly	3 happy	4 sad	5 old	(
fall:	1 sit	2 dry	3 spring	4 eat	5 drop	(
over:	1 near	2 under	3 above	4 good	5 right	(
sadness: ...	1 anger	2 joy	3 sorrow	4 hope	5 surprise	(
little dog..	1 cat	2 bear	3 kitten	4 pup	5 horse	(

TIME LIMIT

Items 51-105

8 minutes

(DO NOT TURN OVER UNTIL TOLD TO DO SO)

51 illusion	1 propaganda	2 eloquence ...	3 malice	4 interference	5 deception	(
52 lapse	1 subside	2 afflict	3 bequeath	4 mar	5 overhear	(
53 larva	1 ferry	2 mute	3 grub	4 plight	5 wasp	(
54 kingly	1 buoyant	2 philosophical	3 creative	4 chaste	5 regal	(
55 govern	1 preach	2 direct	3 summon	4 assemble	5 submit	(
56 charitable	1 benevolent ..	2 incessant	3 influential ...	4 odious	5 imperious	(
57 hilarious ..	1 mirthful	2 salient	3 expansive	4 dormant	5 livid	(
58 dwindle ...	1 coax	2 degenerate ...	3 orbit	4 muster	5 ridicule	(
59 apperture	1 lyric	2 opening	3 fraud	4 epitaph	5 fiend	(
60 sparse	1 prodigious ..	2 protective....	3 magnetic	4 meagre	5 monotonous....	(
61 proficiency	1 sociology	2 elaboration..	3 competency	4 sufficiency ..	5 fecundity	(
62 frolicsome	1 blatant	2 sportive	3 brimful	4 solicitous	5 meddlesome	(
63 jaunty	1 scaly	2 sprightly	3 avid	4 dreamy	5 lithe	(
64 melodramatic	1 callous	2 quadrilateral	3 seditious	4 aseptic	5 sensational	(
65 gait	1 query	2 faction	3 letter	4 chasm	5 walk	(
66 assert	1 declare	2 renew	3 inspire	4 permit	5 capture	(
67 vigilance ..	1 visionary	2 watchfulness	3 scrutiny	4 persistence ..	5 stealth	(
68 disdain	1 grievance	2 exultation ...	3 contempt	4 indulgence ..	5 negotiation	(
69 usurp	1 smuggle	2 wring	3 untie	4 spar	5 encroach	(
70 taint	1 terminate	2 infect	3 writhe	4 sweeten	5 subordinate	(

(GO ON TO NEXT PAGE)

71 barrenness	1 sterility	2 hominy	3 carcase	4 genealogy	5 dissonance	()
72 brigand....	1 prevalence ...	2 bandit	3 alibi	4 parable	5 sloop	()
73 impartiality	1 partisan	2 infusion	3 congruence..	4 sociability...	5 fairness.....	()
74 reciprocate	1 rejuvenate ...	2 retaliate	3 confess.....	4 federate	5 publicize	()
75 simulate ..	1 circulate	2 comprehend	3 mutilate	4 imitate	5 verbalize	()
76 congruent	1 baroque	2 dispassionate	3 fractional	4 accordant	5 cavernous	()
77 odoriferous	1 sinful	2 resentful	3 aromatic	4 questionable	5 thorny	()
78 abate	1 beguile	2 trample	3 migrate	4 weaken	5 partake.....	()
79 allegation	1 consummation	2 pretension ...	3 signification.	4 interrogation	5 assertion	()
80 chide	1 reprimand ..	2 exorcise	3 placate	4 muddle	5 sanctify	()
81 laminate ..	1 stratify	2 hanker	3 unbalance....	4 vend	5 tattle	()
82 humiliate	1 appease	2 bawl	3 intrude	4 promenade..	5 mortify	()
83 naive	1 suave	2 stoic	3 artless	4 deferential ..	5 musty	()
84 furtive	1 sleepless	2 stealthy	3 woeful	4 sinful	5 abject	()
85 purge	1 smelt	2 recoil	3 taunt	4 emit	5 cleanse.....	()
86 transgress	1 arbitrate	2 infringe	3 translate	4 terminate	5 infer.....	()
87 placate	1 rehabilitate..	2 materialize ..	3 divulge	4 guarantee	5 appease	()
88 veneration	1 solicitude	2 uselessness ..	3 reverence	4 pursuance ...	5 provocation	()
89 espousal ..	1 portrayal	2 betrothal	3 simulation ...	4 versification	5 warranty	()
90 fallacious	1 inconsiderate	2 hysteric.....	3 deceptive	4 horny	5 punctilious	()
91 valorous ..	1 intrepid	2 intrinsic	3 commodious	4 momentous	5 rapturous	()
92 languorous	1 kaleidoscopic	2 wearisome ...	3 logarithmic..	4 elegiac	5 licentious	()
93 castigate ..	1 falsify	2 effectuate....	3 subtend	4 chastise	5 befuddle	()
94 cherubic..	1 penurious....	2 generic	3 demoniac	4 cantankerous	5 seraphic	()
95 malign	1 combine	2 malform	3 connect	4 slander	5 unite	()
96 decapitate	1 castigate.....	2 confute	3 interject	4 truncate	5 cogitate	()
97 chary	1 insecure	2 saline	3 cautious	4 rowdy.....	5 becalm	()
98 obesity	1 omnipresence	2 ignoramus ...	3 corpulence ..	4 iridescence ..	5 deportment	()
99 pedantic..	1 excitable	2 guileless	3 abstruse	4 nonchalant..	5 prejudicial.....	()
100 garrulous	1 harmonic	2 boastful	3 resourceful..	4 sinuous.....	5 talkative	()
101 ineffaceable	1 inanimate	2 inarticulate..	3 incandescent	4 indecent	5 indelible	()
102 eschew	1 solicit	2 invigorate	3 renounce	4 masticate	5 deliver	()
103 exonerate	1 exculpate	2 fulminate	3 uncouple	4 reprehend....	5 vivify	()
104 presentiment	1 pronouncement	2 foreboding ..	3 predominance	4 formulation	5 sinecure	()
105 perspicacity	1 innuendo	2 metaphor	3 necromancy	4 utilitarianism	5 discernment	()

Appendix H
Word Stimuli (and Word Frequencies) for the Stroop and Dot Probe Words
Tasks

Neutral Words	Word Freq	Neutral Match	Impulsive Words	Word Freq	Neutral Match	Aggressive Words	Word Freq	Neutral Match	Imp-Agg Words	Word Freq	Neutral Match
buttoned	1	poppies	impulsive	1	worktable	assailant	2	resembling	abusive	1	stopover
fishes	2	riddles	venturesome	1	rubbery	malicious	2	overflow	enraged	1	tunic
hobbies	3	shortest	unpredictable	2	thermodynamic	bloodshed	3	railing	homicidal	1	waterskiing
oceans	3	cricket	erratic	3	coconuts	murderous	4	overlook	massacre	1	violins
hobby	4	toilets	gamble	3	padding	punch	5	Match	rape	5	skip
button	10	luggage	impetuous	3	overlapping	revenge	7	youngster	explode	6	shaded
warmed	10	thumb	adventurous	5	monumental	vulgar	7	sprinkle	homicide	6	oranges
populated	12	illustrations	risks	5	cans	fierce	8	knot	hostility	6	eternity
averaged	13	youngest	fearless	7	watered	forceful	8	traded	brutal	7	apron
cups	14	shoe	careless	8	ankle	offensive	8	borrowing	reckless	9	settings
reliable	22	ambassador	irresponsible	9	similarity	slaughter	10	tunnel	aggression	10	reviewing
lonely	25	saddle	compulsive	10	gigantic	kick	16	tile	assault	15	picnic
powder	28	textile	impatient	10	descriptions	kill	16	jar	rage	16	soup
meal	30	dreams	daring	12	yearly	explosive	17	corridor	aggressive	17	performing
ocean	34	pencil	restless	13	tissues	vicious	17	wagons	hostile	19	slender
calm	35	roll	spontaneous	17	anonymous	murderer	19	documents	destructive	25	recommend
fish	35	knee	impulse	20	package	killer	21	dishes	argue	29	glasses
cup	45	sheet	urge	21	skirt	savage	22	adding	angry	45	calling
mile	48	suit	unexpected	23	registration	harm	25	cents	anger	48	liquid
plain	48	hopes	sudden	38	voices	violent	33	symphony	destroy	48	poem
Mean Freq	21.1		Mean Freq	10.6		Mean Freq	12.5		Mean Freq	15.8	
sd	16		sd	9.37		sd	8.62		sd	15.6	

Appendix I

Word Recognition Test and Word Rating Task

You have just completed two tasks which involved the presentation of words on a computer screen. From the words listed below, please circle any words that you recognise from the computer tasks.

CANCER	ASSAILANT	POWDERY	DOOR	RAPE
ANYTHING	CRASH	CHAIR	BUTTONING	GARDEN
STROKE	BLOODSHED	ANGRY	ASSAULT	PREDICTABLE
EARTHQUAKE	ABUSIVE	ANOTHER	LIKABLE	CUPS
DAREDEVIL	CARNAGE	AVERAGED	AVALANCHE	TORNADO
DERAILMENT	BOOK	AVERAGE	WARM	WELCOME
FEARLESS	BUSHWALK	YOURSELF	HOMICIDAL	ARE
GAMBLE	FIGHT	WONDER	TELEVISION	CAREFULLY
STORM	TASK	BRUTALISE	ANGER	RAGE
IMPETUOUS	BUSHFIRE	RELIABLE	ARGUE	POPULATION
MORNING	HIT	IRRESPONSIBLE	KICK	PUNCH
IRRITATED	BOMB	POSTER	KILLER	FRIENDLY
RISKS	MAIM	SPONTANEOUS	LANGUAGE	SEX
WEATHER	DESTROY	DESK	MURDER	FROST

Please indicate how much the following words relate to aggressive people or behaviour by placing a tick in the appropriate column.

	not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
buttoned					
fishes					
assailant					
rape					
explode					
homicide					
erratic					
gamble					
impetuous					
adventurous					
hobbies					
oceans					
abusive					
enraged					
impulsive					
venturesome					
unpredictable					
malicious					
bloodshed					
murderous					
punch					
revenge					
homicidal					
massacre					
risks					
fearless					
careless					
vulgar					
fierce					
hobby					
button					
hostility					
brutal					
reckless					
warmed					
populated					

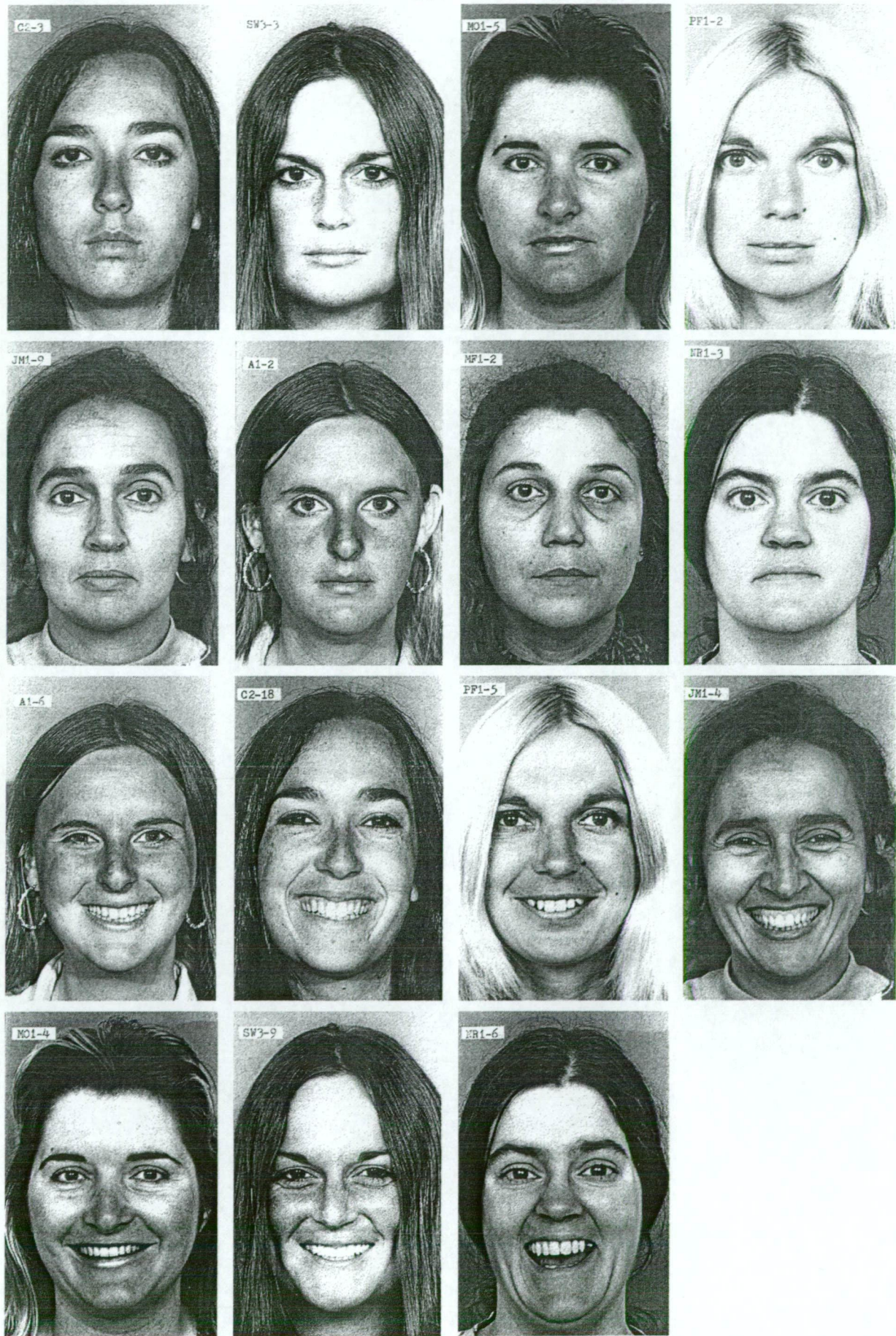
	not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
forceful					
offensive					
slaughter					
aggression					
averaged					
cups					
reliable					
irresponsible					
compulsive					
impatient					
assault					
rage					
aggressive					
kick					
daring					
lonely					
hostile					
destructive					
kill					
explosive					
powder					
meal					
vicious					
murderer					
killer					
argue					
restless					
spontaneous					
ocean					
killer					
anger					
violent					
unexpected					
mile					
argue					
fish					
savage					
harm					

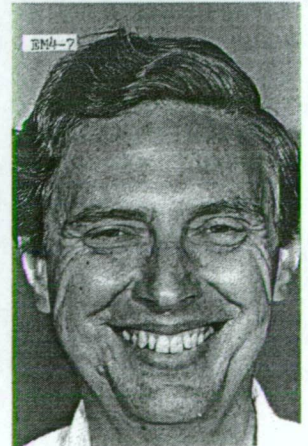
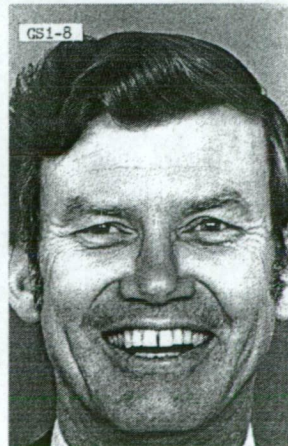
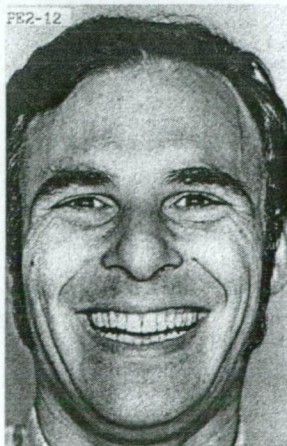
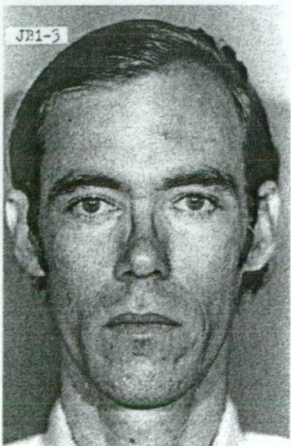
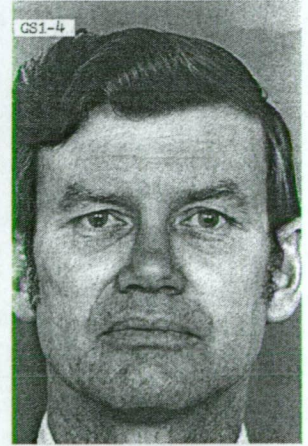
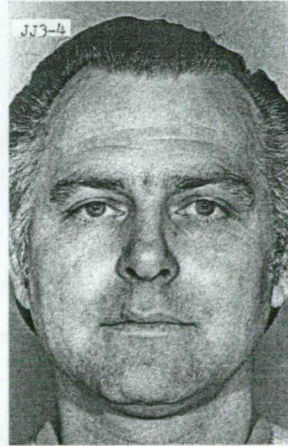
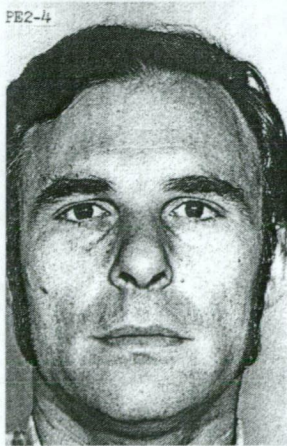
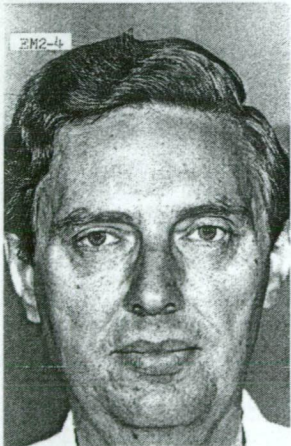
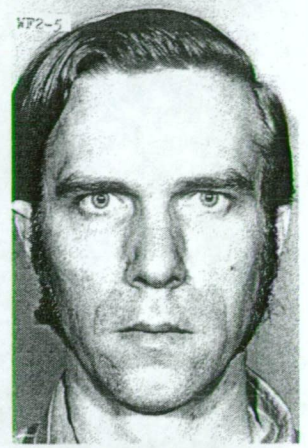
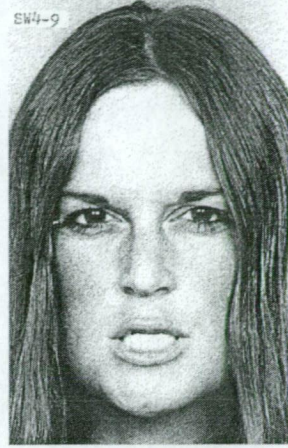
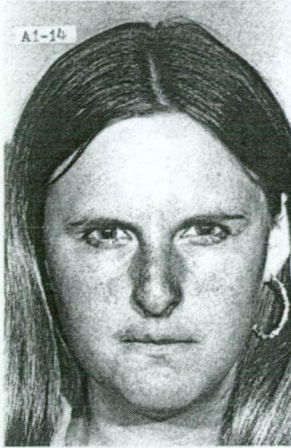
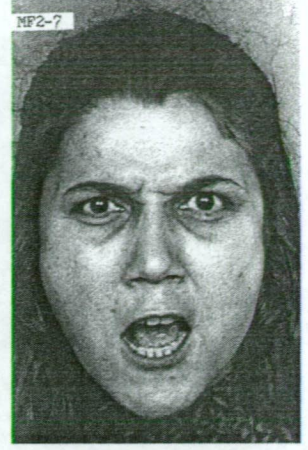
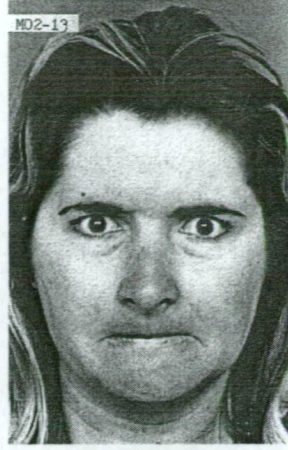
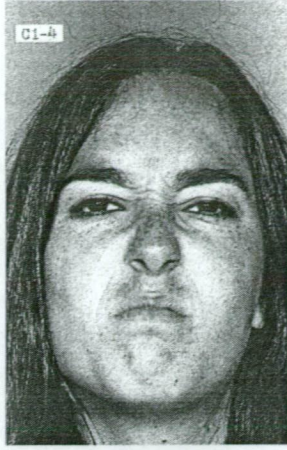
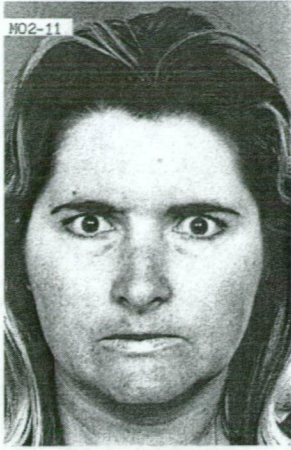
	not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
cup					
destroy					
urge					
plain					
angry					
calm					
impulse					
sudden					

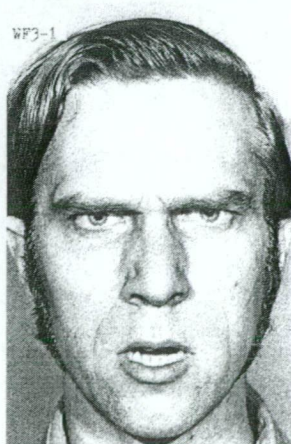
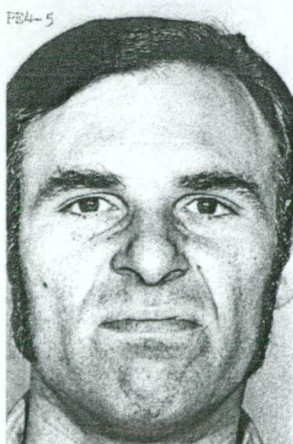
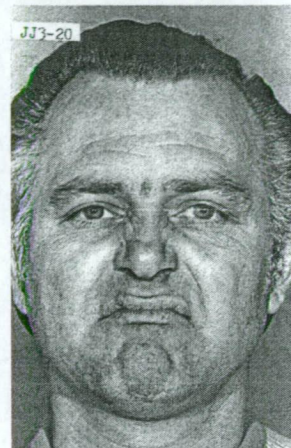
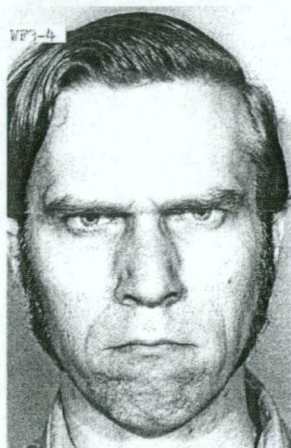
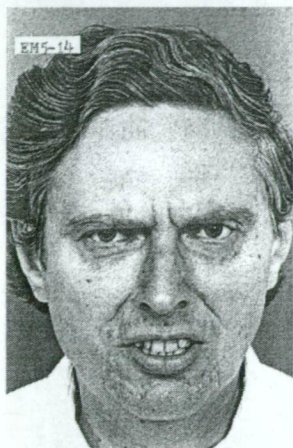
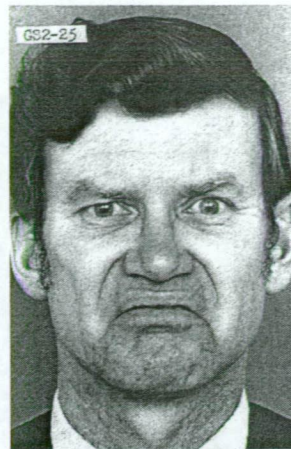
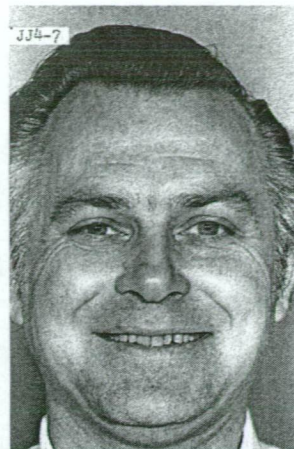
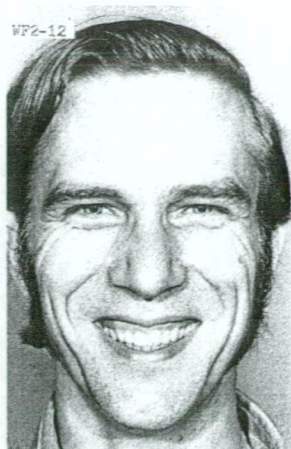
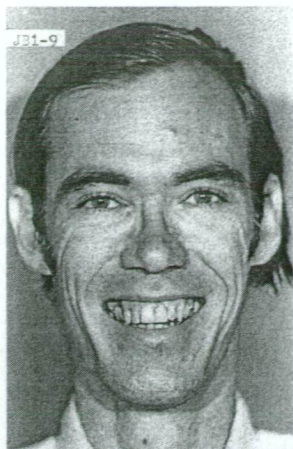
Appendix J

Facial Stimuli for the Dot Probe Faces Task (Neutral Female, Happy Female,

Aggressive Female, Neutral Male, Happy Male, Aggressive Male)



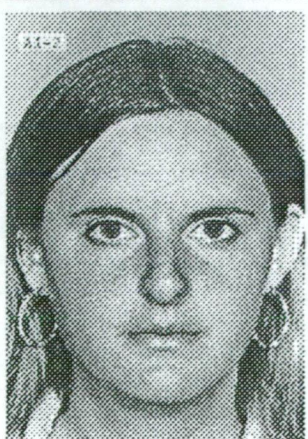
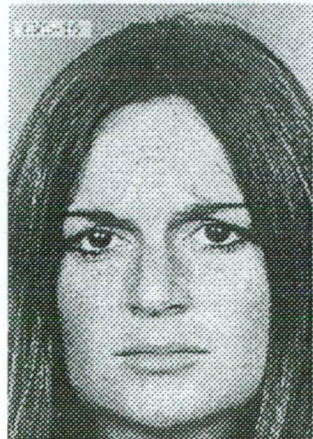
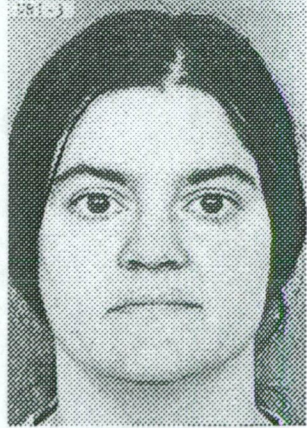
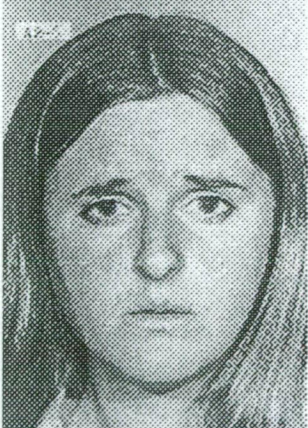
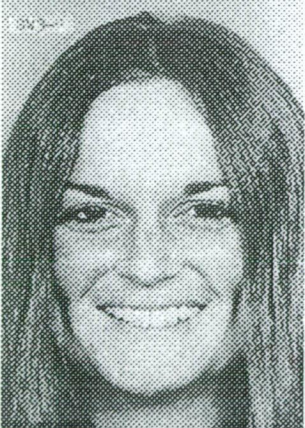
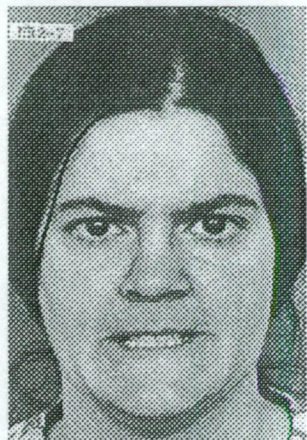
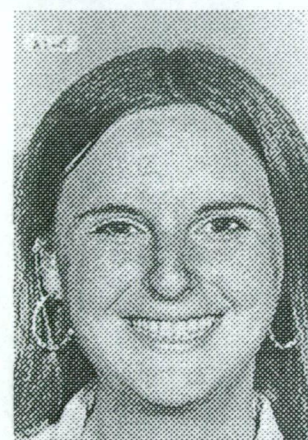
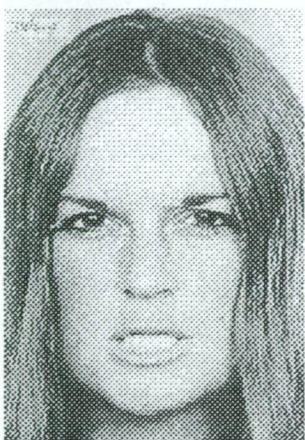
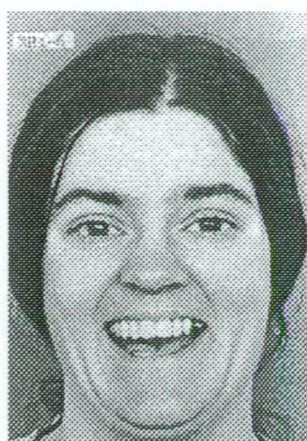
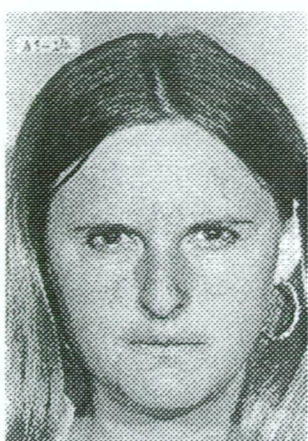




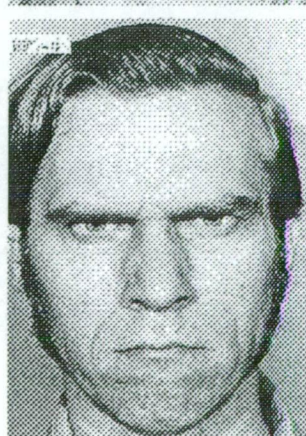
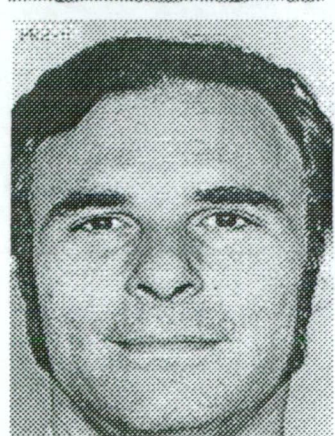
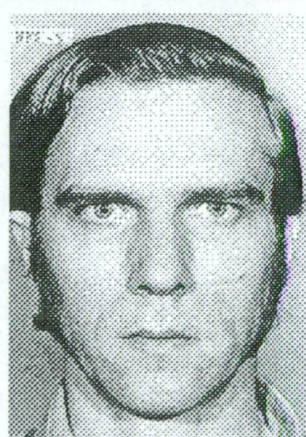
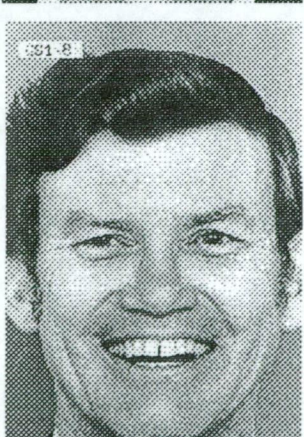
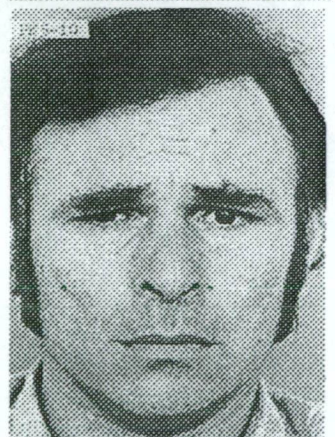
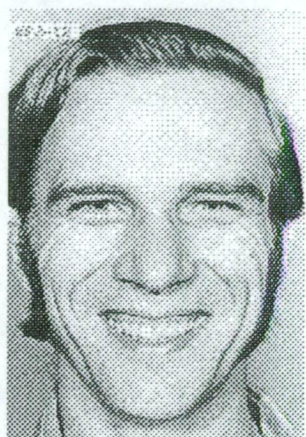
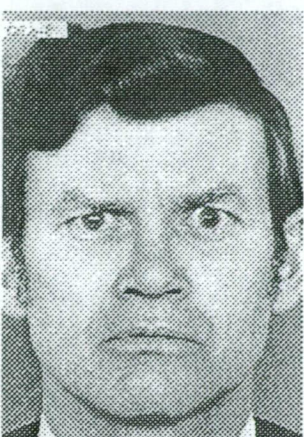
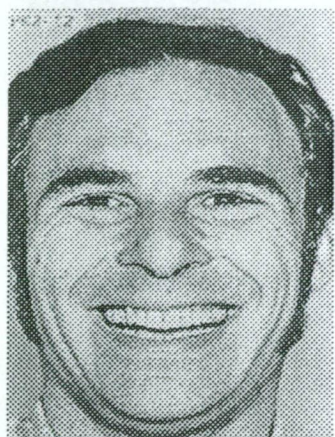
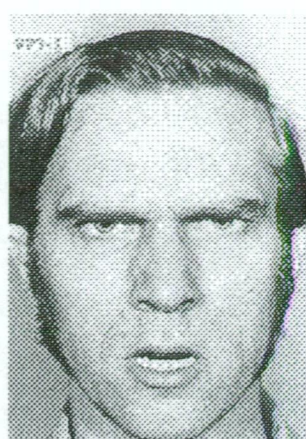
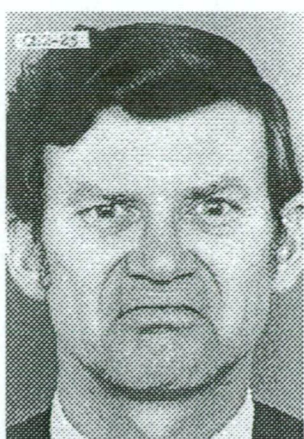
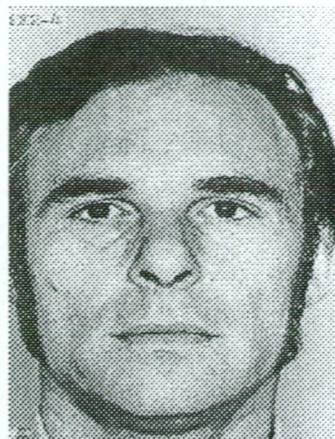
Appendix K

Face Recognition Test and Facial Rating Task

Please circle any facial expressions you recognise from the computer task



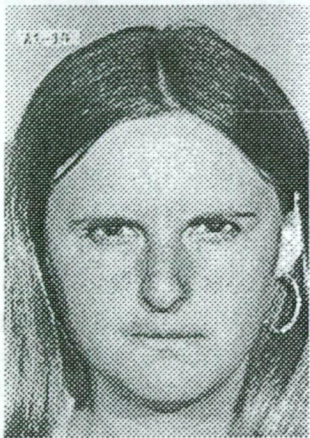
Please circle any facial expressions you recognise from the computer task



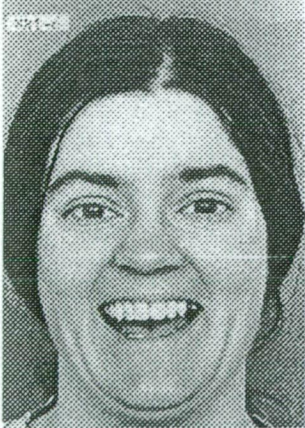
Please indicate how much the following faces relate to aggression by circling the appropriate response.



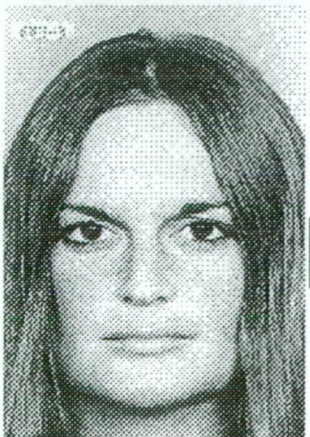
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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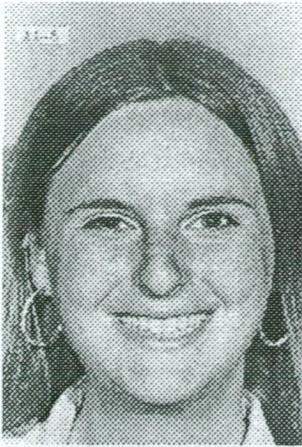
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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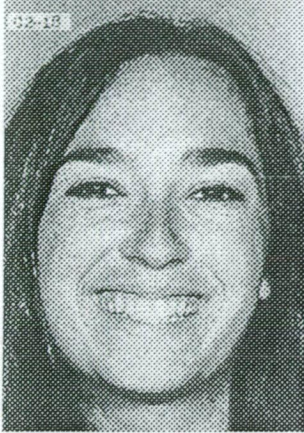
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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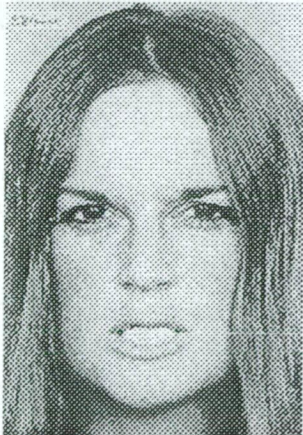
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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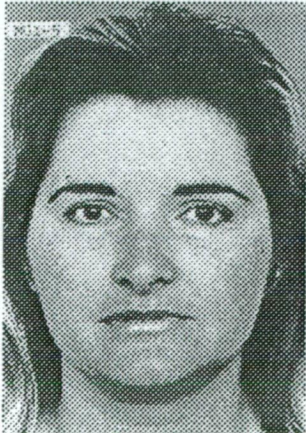
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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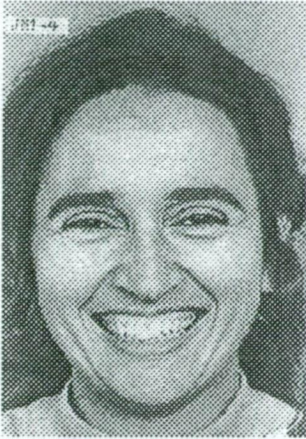
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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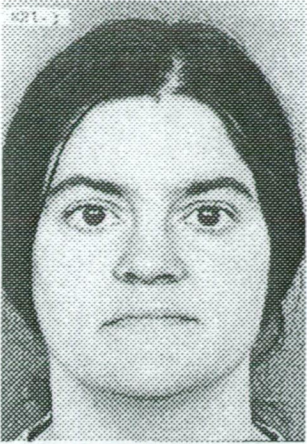
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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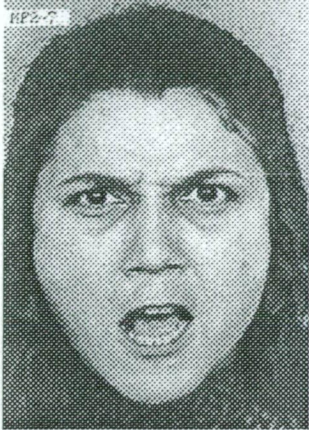
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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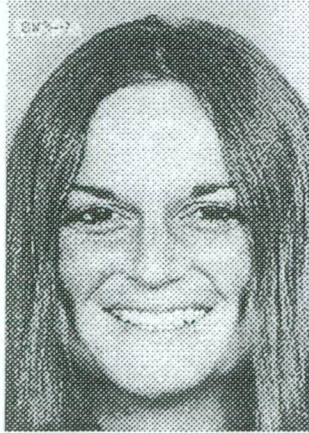
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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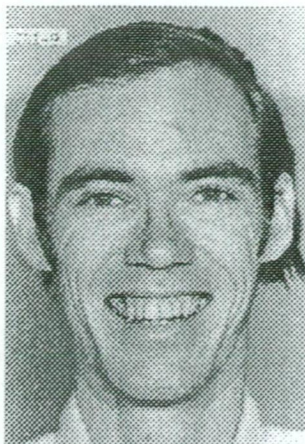
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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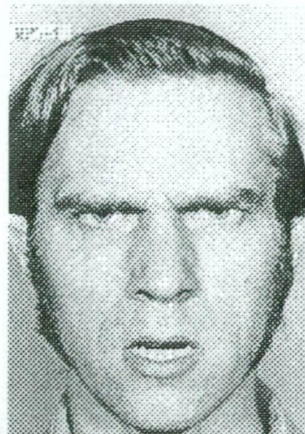
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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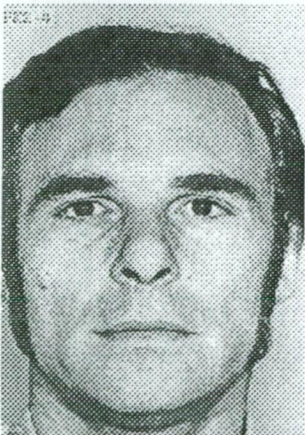
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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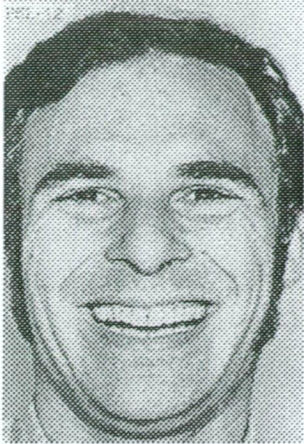
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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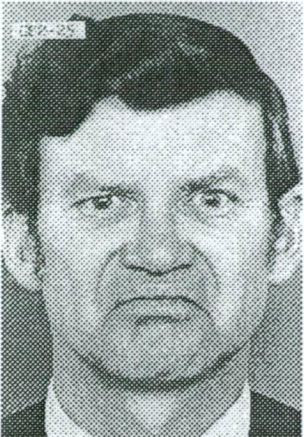
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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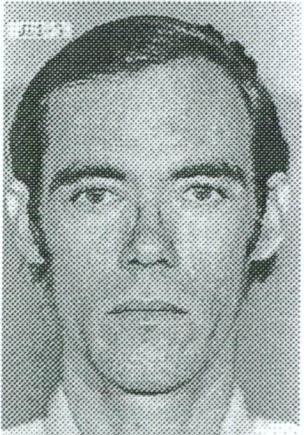
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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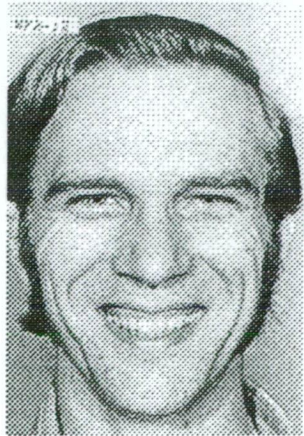
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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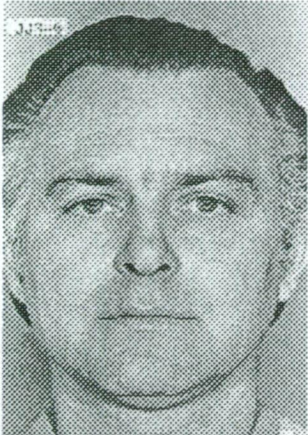
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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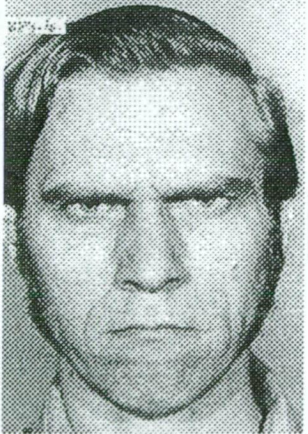
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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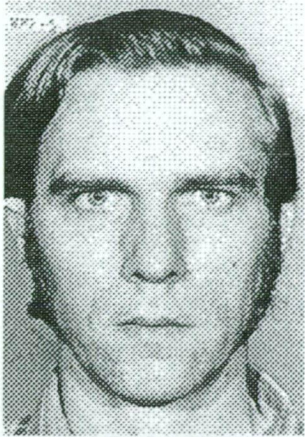
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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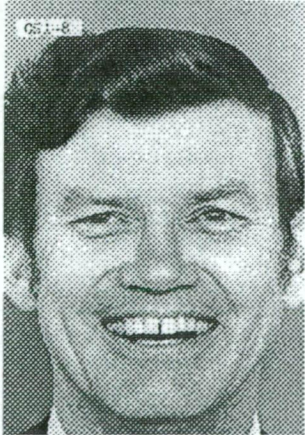
not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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not at all aggressive	a little aggressive	quite aggressive	very aggressive	extremely aggressive
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Appendix L

Statistical Analyses

Analyses of data reported in Chapter 3 ($\alpha = p < .01^$)*

Age differences between male and female undergraduates									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Age	1	269.73	901	52.55	5.13	0.0237			

Sex differences on the I7 Impulsivity Questionnaire and the EPQ Lie Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Impulsiveness	1	13.67	904	18.14	0.75	0.3855			
Venturesomeness	1	1159.34	904	12.92	89.74	0.0000			*
Empathy	1	777.02	904	9.14	84.98	0.0000			*
EPQ Lie	1	23.65	556	12.38	1.91	0.1675			
Impulsivity	1	1424.83	904	40.58	35.11	0.0000			*

Sex differences on the BIS-11 Impulsiveness Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Attentional Imp'ness	1	46.23	556	9.28	4.98	0.0260			
Motor Imp'ness	1	18.02	556	18.30	0.98	0.3215			
Nonplanning	1	81.16	556	22.28	3.64	0.0568			
Sum Scores	1	402.12	556	104.49	3.85	0.0503			

Sex differences on the Aggression Questionnaire									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Physical Aggression	1	2480.89	557	46.78	53.03	0.0000			*
Verbal Aggression	1	89.33	557	17.16	5.20	0.0229			
Anger	1	6.18	557	31.54	0.20	0.6583			
Hostility	1	39.19	557	41.87	0.94	0.3337			
Total Aggression	1	4624.70	557	323.84	14.28	0.0002			*

Sex differences in overall ratings of parents on the Conflict Tactics Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Sex	1	6.89	289	16.85	0.41	0.5229			
Parent	1	30.31	289	5.12	5.92	0.0156			
Sex * Parent	1	18.40	289	5.12	3.60	0.0589			

Reasoning Subscale of the Conflict Tactics Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Sex	1	20.48	289	18.07	1.13	0.2880			
Parent	1	100.18	289	6.14	16.33	0.0001			*
Sex * Parent	1	0.12	289	6.14	0.02	0.8878			

Verbal Aggression Subscale of the Conflict Tactics Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Sex	1	0.11	289	21.71	0.51	0.9433			
Parent	1	8.91	289	6.22	1.43	0.2322			
Sex * Parent	1	17.82	289	6.22	2.87	0.0916			

Violence Subscale of the Conflict Tactics Scale

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Sex	1	0.10	289	15.90	0.01	0.9380			
Parent	1	11.97	289	5.69	2.10	0.1481			
Sex * Parent	1	8.17	289	5.69	1.44	0.2317			

Sex differences on subscales of the abbrev. Anger Expression Scale (anger control, anger out, anger in)

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Sex	1	65.16	294	4.94	13.20	0.0003			*
Anger Exp. Subscale	2	430.11	588	7.18	59.52	0.0000	45.95	0.0000	*
Sex * Subscale	2	67.19	588	7.18	9.36	0.0001	7.32	0.0008	*

Sex differences on total scores of the abbreviated Anger Expression Scale

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Total anger-ex scores	1	131.91	294	20.45	6.45	0.0116			*

Sex differences on the Social Desirability Scale

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
SDS Score	1	4.99	304	32.72	0.15	0.6966			

Sex differences in weekly drug/alcohol consumption on the background questionnaire

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Cigarettes	1	5869.79	67	3335.07	1.76	0.1891			
Alcohol	1	207.35	175	41.22	5.03	0.0262			
Marijuana	1	25.00	2	3.63	6.90	0.1195			

Sex differences in residential and family background on the background questionnaire

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
No. c hood homes	1	7.13	308	11.06	0.64	0.4227			
Age left home	1	107939.00	155	4.06	2.66	0.1050			
No. homes since	1	2.80	152	33.28	0.08	0.7722			
Age parent died	1	9.29	26	204.20	0.05	0.8328			
Age parents div.	1	5.05	83	63.69	0.08	0.7789			

Sex differences in sexual activity, relationships, and childbirth on the background questionnaire

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Age sexually active	1	0.36	196	3.61	0.10	0.7526			
No. sexual partners	1	0.16	184	60.13	0.00	0.9587			
Longest rel'ship	1	13195.79	237	2985.34	4.42	0.0366			
Length current rel.	1	10051.37	151	6750.84	1.49	0.2243			
No. children	1	3.74	40	6.56	0.57	0.4547			
Age first child born	1	3.64	40	14.12	0.26	0.6146			

Analyses of data reported in Chapter 4 ($\alpha = p < .01^$)*

Age differences between female groups (aggressive/control/impulsive/impulsive-aggressive)									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Age	3	92.14	195	48.11	1.92	0.1284			

Group differences on the I7 Impulsivity Questionnaire and the EPQ Lie Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Impulsiveness	3	851.89	195	7.38	115.37	0.0000			*
Venturesomeness	3	442.58	195	7.93	55.80	0.0000			*
Empathy	3	13.71	195	6.16	2.23	0.0865			
EPQ Lie	3	51.20	195	6.24	8.20	0.0000			*
Impulsivity	3	2437.10	195	12.59	193.59	0.0000			*

Group differences on the BIS-11 Impulsiveness Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Attentional Imp'ness	3	22.03	192	9.03	2.44	0.0658			
Motor Imp'ness	3	48.70	192	19.94	2.44	0.0655			
Nonplanning	3	88.20	192	23.21	3.80	0.0112			
Sum Scores	3	402.86	192	109.39	3.68	0.0134			

Group differences on the Aggression Questionnaire									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Physical Aggression	3	1425.84	195	15.07	94.62	0.0000			*
Verbal Aggression	3	496.35	195	10.89	45.56	0.0000			*
Anger	3	1455.66	195	17.12	85.03	0.0000			*
Hostility	3	1425.37	195	21.79	65.40	0.0000			*
Total Aggression	3	18346.34	195	70.40	260.61	0.0000			*

Group differences on subscales of the abbrev. Anger Expression Scale (anger control, anger out, anger in)									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	13.87	110	4.57	3.04	0.0321			
Anger Exp. Subscale	2	40.13	220	6.73	5.96	0.0030	6.39	0.0024	*
Group * Subscale	6	33.26	220	6.73	4.94	0.0001	4.04	0.0007	*

Group differences on total scores of the abbreviated Anger Expression Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Total anger-ex scores	3	176.40	110	16.41	10.75	0.0000			*

Group differences in overall ratings of parents on the Conflict Tactics Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	9.94	110	15.36	0.46	0.5867			
Parent	1	0.22	110	3.79	0.06	0.8095			
Group * Parent	3	8.81	110	3.79	2.32	0.7895			

Reasoning Subscale of the Conflict Tactics Scale									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	35.49	110	17.78	2.00	0.1188			
Parent	1	25.10	110	6.00	4.18	0.0433			
Sex * Parent	3	12.70	110	6.00	2.12	0.1023			

Verbal Aggression Subscale of the Conflict Tactics Scale

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	31.83	110	19.24	1.65	0.1811			
Parent	1	6.01	110	4.48	1.34	0.2491			
Sex * Parent	3	23.19	110	4.48	5.18	0.0022			*

Violence Subscale of the Conflict Tactics Scale

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	11.81	110	15.90	0.74	0.5287			
Parent	1	3.04	110	3.90	0.78	0.3791			
Sex * Parent	3	7.58	110	3.90	1.95	0.1263			

Group differences on the Social Desirability Scale

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
SDS Score	3	108.99	97	25.71	4.24	0.0073			*

Group differences in weekly drug/alcohol consumption on the background questionnaire

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Cigarettes	3	5106.04	25	2962.75	1.72	0.1878			
Alcohol	3	60.19	60	19.15	3.14	0.0317			
Marijuana	-	-	-	-	-	-			

Group differences in residential and family background on the background questionnaire

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
No. c'hood homes	3	10.07	114	11.39	0.88	0.4519			
Age left home	3	3.06	54	5.74	0.53	0.6617			
No. homes since	3	29.74	52	20.77	1.43	0.2440			
Age parent died	2	55.84	8	213.75	0.26	0.7764			
Age parents div.	3	104.75	21	26.05	4.02	0.0209			

Group differences in sexual activity, relationships, and childbirth on the background questionnaire

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Age sexually active	3	1.00	73	1.92	0.52	0.6698			
No. sexual partners	3	11.06	68	15.74	0.70	0.5537			
Longest rel'ship	3	2443.19	93	2296.60	1.06	0.3684			
Length current rel.	3	7423.36	66	11317.13	0.66	0.5821			
No. children	2	0.57	13	1.56	0.36	0.7023			
Age first child born	2	11.29	13	12.55	0.90	0.4305			

Analyses of data reported in Chapter 5 ($\alpha = p < .05^$)*

Age differences between groups									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Age	3	26.64	34	46.48	0.57	0.6366			
Group differences in estimated intelligence (Advanced Progressive Matrices scores)									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
APM scores	3	17.79	32	26.01	0.68	0.5684			
Group differences in total psychopathy scores on the P:Scan									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Total P:Scan scores	3	64.32	34	5.08	12.66	0.0000			*
Group differences in scores on the three P:Scan facets (interpersonal, affective, lifestyle)									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	192.89	34	15.23	12.67	0.0000			*
P:Scan facet	2	20.05	68	5.70	3.52	0.0353	5.40	0.0094	*
Group * Facet	6	7.84	68	5.70	1.38	0.2371	1.12	0.3601	

Analyses of data reported in Chapter 6 ($\alpha = p < .05^$)*

Group differences on the Tasmanian Word Knowledge Test (TWKT)									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
TWKT scores	3	37.96	34	150.45	0.25	0.8591			
Reaction times for each word type (impulsive, aggressive, imp-agg, neutral) on the modified Stroop task									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	128852.80	31	91220.23	1.41	0.2578			
Word type	3	12700.60	93	3809.26	3.33	0.0228	1.85	0.1601	
Group * Word type	9	4456.10	93	3809.26	1.17	0.3235	1.47	0.1780	
Number of correct responses on the modified Stroop task									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	28.64	31	71.99	0.40	0.7555			
Word type	3	27.94	93	8.48	3.29	0.0240	2.19	0.1104	
Group * Word type	9	7.59	93	8.48	0.90	0.5329	0.92	0.5096	
Reaction times on the Dot Probe Words task									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1 (Group)	3	391974.80	4	10490.70	3.74	0.1177			
2 (Dur: 100/500/1500ms)	2	91617.60	8	10237.00	8.95	0.0091	6.53	0.0807	
3 (Word type)	3	2925.70	12	2130.70	1.37	0.2981	3.30	0.2414	
4 (Probe position)	1	5599.80	4	2992.40	1.87	0.2431			
5 (Word position)	1	3390.60	4	2844.30	1.19	0.3363			
1*2	6	15361.40	8	10237.00	1.50	0.2902	0.83	0.5866	
1*3	9	5962.80	12	2130.70	2.80	0.0499	2.16	0.2051	
2*3	6	3468.10	24	3305.60	1.05	0.4193			
1*4	3	11291.90	4	2992.40	3.77	0.1161			
2*4	2	2942.20	8	1467.30	2.01	0.1969			
3*4	3	887.20	12	2457.90	0.36	0.7823	0.20	0.8918	
1*5	3	1745.30	4	2844.30	0.61	0.6413			
2*5	2	3487.20	8	5375.80	0.65	0.5481			
3*5	3	3398.20	12	3103.30	1.10	0.3888	1.80	0.3765	
4*5	1	18277.20	4	1166.60	15.67	0.0167			*
1*2*3	18	1539.00	24	3305.60	0.47	0.9498			
1*2*4	6	2762.40	8	1467.30	1.88	0.2000			
1*3*4	9	1732.10	12	2457.90	0.70	0.6957	0.52	0.8134	
2*3*4	6	1062.60	24	3117.30	0.34	0.9082			
1*2*5	6	706.50	8	5375.80	0.13	0.9883			
1*3*5	9	5972.60	12	3103.30	1.92	0.1441	1.34	0.3928	
2*3*5	6	5508.50	24	4659.00	1.18	0.3486			
1*4*5	3	2612.50	4	1166.60	2.24	0.2259			
2*4*5	2	819.40	8	1248.40	0.66	0.5546			
3*4*5	3	2516.20	12	4790.20	0.53	0.6732	0.29	0.8342	
1*2*3*4	18	3081.80	24	3117.30	0.99	0.5018			
1*2*3*5	18	3888.50	24	4659.00	0.83	0.6487			
1*2*4*5	6	1496.50	8	1248.40	1.20	0.3948			
1*3*4*5	9	1738.00	12	4790.20	0.36	0.9322	0.83	0.6201	
2*3*4*5	6	2106.00	24	2044.90	1.03	0.4304			
1*2*3*4*5	18	1482.00	24	2044.90	0.72	0.7560			

Reaction times on the Dot Probe Words task at the 100ms stimulus duration

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1 (Group)	3	15711.57	21	72682.05	0.22	0.8841			
2 (Word type)	3	7465.82	63	3715.94	2.01	0.1217	1.55	0.2343	
3(Probe position)	1	17262.78	21	4380.60	3.94	0.0603			
4 (Word position)	1	9206.41	21	9173.20	1.00	0.3278			
1*2	9	6614.10	63	3715.94	1.78	0.0898	1.33	0.2470	
1*3	3	3460.94	21	4380.60	0.79	0.5130			
2*3	3	2774.92	63	4016.72	0.69	0.5610	1.39	0.2768	
1*4	3	9933.88	21	9173.20	1.08	0.3779			
2*4	3	10002.71	63	4781.35	2.09	0.1102	0.90	0.4577	
3*4	1	5643.31	21	2942.62	1.92	0.1806			
1*2*3	9	4385.38	63	4016.72	1.09	0.3817	0.97	0.4775	
1*2*4	9	5220.31	63	4781.35	1.09	0.3816	0.86	0.5681	
1*3*4	3	1625.31	21	2942.62	0.55	0.6522			
2*3*4	3	5324.11	63	2496.48	2.13	0.1049	3.09	0.0517	
1*2*3*4	9	3574.27	63	2496.48	1.43	0.1940	2.22	0.0374	*

Reaction times on the Dot Probe Words task at the 500ms stimulus duration

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1 (Group)	3	112782.50	17	77814.29	1.45	0.2635			
2 (Word type)	3	1732.30	51	3631.76	0.48	0.6997	0.67	0.5862	
3(Probe position)	1	4637.70	17	3723.97	1.25	0.2800			
4 (Word position)	1	2147.80	17	3753.30	0.57	0.4597			
1*2	9	3125.80	51	3631.76	0.86	0.5654	1.40	0.2253	
1*3	3	2093.10	17	3723.97	0.56	0.6473			
2*3	3	673.30	51	2234.67	0.30	0.8243	0.39	0.7633	
1*4	3	714.10	17	3753.30	0.19	0.9016			
2*4	3	9061.90	51	2799.24	3.24	0.0296	1.95	0.1656	
3*4	1	900.30	17	2469.89	0.36	0.5540			
1*2*3	9	2793.20	51	2234.67	1.25	0.2868	0.87	0.5628	
1*2*4	9	2098.10	51	2799.24	0.75	0.6623	0.69	0.7110	
1*3*4	3	5347.70	17	2469.89	2.17	0.1297			
2*3*4	3	2259.80	51	2184.17	1.03	0.3852	0.94	0.4459	
1*2*3*4	9	1257.60	51	2184.17	0.58	0.8106	0.54	0.8343	

Reaction times on the Dot Probe Words task at the 1500ms stimulus duration

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1 (Group)	3	218775.70	15	72910.62	3.01	0.0638			
2 (Word type: I/A/IA/N)	3	5829.80	45	3307.12	1.76	0.1678	1.51	0.2595	
3(Probe position)	1	59209.10	15	4787.73	12.37	0.0031			*
4 (Word position)	1	2168.50	15	2239.90	0.97	0.3408			
1*2	9	4275.50	45	3307.12	1.29	0.2674	1.37	0.2431	
1*3	3	6642.00	15	4787.73	1.39	0.2851			
2*3	3	350.00	45	2499.24	0.14	0.9355	0.19	0.9016	
1*4	3	101.60	15	2239.90	0.05	0.9867			
2*4	3	4177.00	45	3418.82	1.22	0.3128	5.64	0.0106	*
3*4	1	6584.80	15	4293.11	1.53	0.2346			
1*2*3	9	3743.50	45	2499.24	1.50	0.1780	1.65	0.1440	
1*2*4	9	2687.20	45	3418.82	0.79	0.6303	2.00	0.0732	
1*3*4	3	4153.00	15	4293.11	0.97	0.4339			
2*3*4	3	101071.20	45	1808.85	0.59	0.6233	1.04	0.4085	
1*2*3*4	9	2844.90	45	1808.85	1.57	0.1527	1.81	0.1061	

Attentional bias scores for the Dot Probe Words task

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1 (Group)	3	3424.56	31	3965.21	0.86	0.4703			
2 (Dur: 100/500/1500)	2	3971.28	62	2540.35	1.56	0.2176	2.00	0.1528	
3 (Word type: I/A/IA/N)	3	1774.52	93	2407.87	0.74	0.5326	0.48	0.6984	
1*2	6	2118.77	62	2540.35	0.83	0.5483	1.00	0.4321	
1*3	9	3067.74	93	2407.87	1.27	0.2615	0.88	0.5470	
2*3	6	3276.01	186	2154.28	1.52	0.1734	1.57	0.1971	
1*2*3	18	3602.37	186	2154.28	1.67	0.0475	1.60	0.0830	*

Attentional bias scores for the Dot Probe Words task at the 100ms stimulus duration

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	2633.54	31	2423.70	1.09	0.3693			
Word type	3	5127.59	93	2205.27	2.33	0.0799	2.11	0.1211	
Group * Word type	9	3777.06	93	2205.27	1.71	0.0969	2.00	0.0518	

Attentional bias scores for the Dot Probe Words task at the 500ms stimulus duration

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	2784.11	31	2812.25	0.99	0.4103			
Word type	3	1774.47	93	2090.92	0.85	0.4708	1.19	0.3307	
Group * Word type	9	2331.17	93	2090.92	1.11	0.3602	0.88	0.5446	

Attentional bias scores for the Dot Probe Words task at the 1500ms stimulus duration

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	2244.46	31	3809.97	0.59	0.6268			
Word type	3	1424.48	93	2420.24	0.59	0.6240	0.45	0.7200	
Group * Word type	9	4164.25	93	2420.24	1.72	0.0951	2.48	0.0163	*

Word recognition test scores

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	244.78	31	1503.74	0.16	0.9206			
Word type	3	1884.73	93	201.48	9.35	0.0000	11.39	0.0000	*
Group * Word type	9	391.92	93	201.48	1.95	0.0548	1.47	0.1778	

Word aggressiveness ratings

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	0.96	31	0.54	1.79	0.1688			
Word type	3	76.17	93	0.12	650.45	0.0000	584.77	0.0000	*
Group * Word type	9	0.18	93	0.12	1.53	0.1503	1.72	0.1017	

Reaction times on the Dot Probe Faces task

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1 (Group)	3	154196.70	29	177609.50	0.87	0.4688			
2 (Dur: 500/1500ms)	1	1983.50	29	13666.40	0.15	0.7060			
3 (Face type: happy/agg)	1	13572.60	29	7711.30	1.76	0.1950			
4 (Probe position)	1	2570.00	29	7800.30	0.33	0.5704			
5 (Face position)	1	72346.20	29	11218.60	6.45	0.0167			*
6 (Sex of facial stimuli)	1	1014.30	29	3831.40	0.26	0.6108			
1*2	3	12819.50	29	13666.40	0.94	0.4350			
1*3	3	1229.40	29	7711.30	0.16	0.9227			
2*3	1	10179.40	29	4589.80	2.22	0.1472			
1*4	3	20090.00	29	7800.30	2.58	0.0731			
2*4	1	6581.40	29	6398.60	1.03	0.3189			
3*4	1	4069.50	29	6597.80	0.62	0.4386			

Reaction times on the Dot Probe Faces task (cont'd)									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1*5	3	8027.60	29	11218.60	0.72	0.5507			
2*5	1	317.00	29	7075.40	0.04	0.8338			
3*5	1	3871.80	29	8678.90	0.45	0.5095			
4*5	1	32651.50	29	12408.00	2.63	0.1156			
1*6	3	12441.30	29	3831.40	3.25	0.0361			*
2*6	1	1763.30	29	12263.40	0.14	0.7073			
3*6	1	128654.50	29	5989.90	21.48	0.0001			*
4*6	1	60.00	29	6247.30	0.01	0.9226			
5*6	1	7393.30	29	6661.80	1.11	0.3008			
1*2*3	3	27521.40	29	4589.80	6.00	0.0026			*
1*2*4	3	8803.80	29	6398.60	1.38	0.2698			
1*3*4	3	1350.60	29	6597.80	0.20	0.8923			
2*3*4	1	1712.20	29	13516.80	0.13	0.7245			
1*2*5	3	16120.80	29	7075.40	2.28	0.1005			
1*3*5	3	11115.40	29	8678.90	1.28	0.2995			
2*3*5	1	3404.60	29	8951.40	0.38	0.5422			
1*4*5	3	6698.60	29	12408.00	0.54	0.6588			
2*4*5	1	8411.10	29	7593.40	1.11	0.3013			
3*4*5	1	288.70	29	10175.30	0.03	0.8674			
1*2*6	3	24078.50	29	12263.40	1.96	0.1415			
1*3*6	3	6414.10	29	5989.90	1.07	0.3768			
2*3*6	1	3069.60	29	9763.80	0.31	0.5793			
1*4*6	3	5767.90	29	6247.30	0.92	0.4419			
2*4*6	1	959.50	29	7893.10	0.12	0.7299			
3*4*6	1	17606.30	29	7796.50	2.26	0.1437			
1*5*6	3	12817.00	29	6661.80	1.92	0.1478			
2*5*6	1	7340.30	29	8249.20	0.89	0.3533			
3*5*6	1	18335.20	29	7382.80	2.48	0.1259			
4*5*6	1	390.00	29	8193.10	0.05	0.8288			
1*2*3*4	3	14670.10	29	13516.80	1.09	0.3709			
1*2*3*5	3	13225.10	29	8951.40	1.48	0.2413			
1*2*4*5	3	4954.80	29	7593.40	0.65	0.5878			
1*3*4*5	3	14189.90	29	10175.30	1.39	0.2643			
2*3*4*5	1	26759.90	29	9162.60	2.92	0.0981			
1*2*3*6	3	6813.40	29	9763.80	0.70	0.5610			
1*2*4*6	3	17356.80	29	7893.10	2.20	0.1095			
1*3*4*6	3	7346.20	29	7796.50	0.94	0.4330			
2*3*4*6	1	17.30	29	5869.90	0.00	0.9571			
1*2*5*6	3	1743.10	29	8249.20	0.21	0.8877			
1*3*5*6	3	1002.70	29	7382.80	0.14	0.9379			
2*3*5*6	1	2990.60	29	7021.00	0.43	0.5191			
1*4*5*6	3	5926.90	29	8193.10	0.72	0.5462			
2*4*5*6	1	2151.20	29	8809.10	0.24	0.6249			
3*4*5*6	1	5095.40	29	6344.40	0.80	0.3775			
1*2*3*4*5	3	5414.60	29	9162.60	0.59	0.6259			
1*2*3*4*6	3	2126.40	29	5869.90	0.36	0.7807			
1*2*3*5*6	3	419.20	29	7021.00	0.06	0.9805			
1*2*4*5*6	3	8004.40	29	8809.10	0.91	0.4489			
1*3*4*5*6	3	5261.10	29	6344.40	0.83	0.4886			
2*3*4*5*6	1	15378.00	29	8688.10	1.77	0.1937			
1*2*3*4*5*6	3	2098.70	29	8688.10	0.24	0.8666			

Reaction times on the Dot Probe Faces task at the 500ms stimulus duration								
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p Significant
1 (Group)	3	39738.38	29	93322.53	0.43	0.7360		
2 (Face type: happy/agg)	1	121.82	29	4813.81	0.03	0.8747		
3 (Probe position)	1	463.02	29	5421.26	0.09	0.7722		
4 (Face position)	1	41120.60	29	10823.61	3.80	0.0610		
5 (Sex of facial stimuli)	1	51.45	29	7779.79	0.01	0.9357		
1*2	3	13502.30	29	4813.81	2.80	0.0573		
1*3	3	24768.99	29	5421.26	4.57	0.0097		*
2*3	1	251.19	29	9787.25	0.03	0.8738		
1*4	3	17064.46	29	10823.61	1.58	0.2163		
2*4	1	7.51	29	7579.30	0.00	0.9751		
3*4	1	37103.43	29	13047.99	2.84	0.1025		
1*5	3	7679.34	29	7779.79	0.99	0.4126		
2*5	1	45989.55	29	8361.24	5.50	0.0261		*
3*5	1	749.61	29	4778.46	0.16	0.6950		
4*5	1	14733.62	29	6046.74	2.44	0.1294		
1*2*3	3	3935.85	29	9787.25	0.40	0.7525		
1*2*4	3	9625.82	29	7579.30	1.27	0.3031		
1*3*4	3	8455.89	29	13047.99	0.65	0.5905		
2*3*4	1	16303.66	29	8518.75	1.91	0.1771		
1*2*5	3	8368.08	29	8361.24	1.00	0.4065		
1*3*5	3	8601.76	29	4778.46	1.80	0.1692		
2*3*5	1	8259.98	29	5814.83	1.42	0.2430		
1*4*5	3	3740.40	29	6046.74	0.62	0.6086		
2*4*5	1	3257.96	29	4838.87	0.67	0.4186		
3*4*5	1	354.68	29	8566.60	0.04	0.8402		
1*2*3*4	3	7877.94	29	8518.75	0.92	0.4412		
1*2*3*5	3	1020.38	29	5814.83	0.18	0.9121		
1*2*4*5	3	1187.79	29	4838.87	0.25	0.8639		
1*3*4*5	3	2892.71	29	8566.60	0.34	0.7982		
2*3*4*5	1	19088.57	29	9012.66	2.12	0.1563		
1*2*3*4*5	3	2269.08	29	9012.66	0.25	0.8594		

Reaction times on the Dot Probe Faces task at the 1500ms stimulus duration

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1 (Group)	3	127277.80	29	97953.42	1.30	0.2935			
2 (Face type: happy/agg)	1	23630.10	29	7487.30	3.16	0.0861			
3 (Probe position)	1	8688.40	29	8777.70	0.99	0.3280			
4 (Face position)	1	31542.60	29	7470.40	4.22	0.0490			*
5 (Sex of facial stimuli)	1	2726.10	29	8315.05	0.33	0.5713			
1*2	3	15248.50	29	7487.30	2.04	0.1307			
1*3	3	4124.90	29	8777.70	0.47	0.7056			
2*3	1	5530.50	29	10327.39	0.54	0.4702			
1*4	3	7084.00	29	7470.40	0.95	0.4302			
2*4	1	7269.00	29	10051.01	0.72	0.4021			
3*4	1	3959.20	29	6953.42	0.57	0.4566			
1*5	3	28840.40	29	8315.05	3.47	0.0288			*
2*5	1	85734.50	29	7392.48	11.60	0.0020			*
3*5	1	269.90	29	9361.96	0.03	0.8664			
4*5	1	0.00	29	8864.16	0.00	0.9982			
1*2*3	3	12084.80	29	10327.39	1.17	0.3381			
1*2*4	3	14714.60	29	10051.01	1.46	0.2449			
1*3*4	3	3197.60	29	6953.42	0.46	0.7124			
2*3*4	1	10745.00	29	10819.09	0.99	0.3272			
1*2*5	3	4859.40	29	7392.48	0.66	0.5849			
1*3*5	3	14523.00	29	9361.96	1.55	0.2225			
2*3*5	1	9363.60	29	7851.51	1.19	0.2838			
1*4*5	3	10819.80	29	8864.16	1.22	0.3199			
2*4*5	1	18067.80	29	9564.92	1.89	0.1798			
3*4*5	1	2186.50	29	8435.63	0.26	0.6145			
1*2*3*4	3	11726.60	29	10819.09	1.08	0.3714			
1*2*3*5	3	8452.20	29	7851.51	1.08	0.3744			
1*2*4*5	3	234.10	29	9564.92	0.02	0.9947			
1*3*4*5	3	11038.60	29	8435.63	1.31	0.2905			
2*3*4*5	1	1384.80	29	6019.74	0.23	0.6351			
1*2*3*4*5	3	5090.70	29	6019.74	0.85	0.4802			

Attentional bias scores for the Dot Probe Faces task

	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1 (Group)	3	837.80	29	12962.46	0.06	0.9781			
2 (Dur: 500/1500ms)	1	3806.07	29	7630.64	0.50	0.4857			
3 (Face type: happy/agg)	1	169.74	29	6600.97	0.03	0.8737			
4 (Sex of facial stimuli)	1	105.49	29	6644.84	0.02	0.9006			
1*2	3	3601.09	29	7630.64	0.47	0.7042			
1*3	3	3928.26	29	6600.97	0.60	0.6233			
2*3	1	17839.88	29	9973.54	1.79	0.1915			
1*4	3	865.22	29	6644.84	0.13	0.9414			
2*4	1	5836.99	29	10001.06	0.58	0.4511			
3*4	1	1710.91	29	6866.48	0.25	0.6214			
1*2*3	3	9278.16	29	9973.54	0.93	0.4386			
1*2*4	3	15484.17	29	10001.06	1.55	0.2232			
1*3*4	3	3867.71	29	6866.48	0.56	0.6436			
2*3*4	1	8834.00	29	8030.50	1.10	0.3029			
1*2*3*4	3	3056.89	29	8030.50	0.38	0.7677			

Face recognition test scores									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
Group	3	50.31	27	73.71	0.68	0.5704			
Face type	2	169.31	54	51.35	3.30	0.0446	4.53	0.0205	*
Group * Face type	6	38.26	54	51.35	0.75	0.6159	0.88	0.5181	

Face aggressiveness ratings									
	df Effect	MS Effect	df Error	MS Error	F	p	Rao R	p	Significant
1 (Group)	3	0.97	31	0.48	2.04	0.1280			
2 (Face type)	2	99.68	62	0.31	325.26	0.0000	248.89	0.0000	*
3 (Sex of facial stimuli)	1	1.88	31	0.07	25.13	0.0000			*
1*2	6	0.40	62	0.31	1.32	0.2632	1.21	0.3125	
1*3	3	0.08	31	0.07	1.12	0.3579			
2*3	2	3.46	62	0.04	88.95	0.0000	72.50	0.0000	*
1*2*3	6	0.02	62	0.04	0.46	0.8350	0.49	0.8111	