

An Investigation of the Relationship between Self-Esteem and Aggression in Care Leavers

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ABSTRACT

Aggression is a significant problem at an individual and societal level, and has a negative impact on both victims and perpetrators. There is evidence that aggression may be a particular problem for young people who have been in care ('care leavers'), and this may exacerbate their already high levels of mental health and social needs. Previous research has suggested that self-esteem may play an important role in aggression. However, the nature of this relationship is unclear and the research evidence is inconsistent. It has been proposed that some of the inconsistencies apparent in the existing research are due to the way that self-esteem has been conceptualised and measured. This research aimed to investigate the relationship between a number of different forms of self-esteem and aggression using a cross-sectional survey design. The study used self-report measures and implicit association tests (Greenwald *et al.*, 1998) designed to assess implicit global self-esteem and implicit domains of self-esteem. The relationship between global self-esteem and aggression, domains of self-esteem (social rank, mate value and social inclusion) and aggression and discrepant explicit/implicit self-esteem (calculated by subtracting implicit self-esteem scores from explicit self-esteem scores) and aggression were investigated. When male and female data were analysed together there was a weak positive relationship between social rank and aggression but no other significant relationships. However when male and female data were analysed separately marked gender differences in the relationships between self-esteem and aggression emerged. For women, there were significant inverse correlations between self-reported aggression and three different forms of self-esteem: global self-esteem, social inclusion and discrepant implicit/explicit social inclusion. For men, there were significant positive relationships between self-reported aggression and four different forms of self-esteem: social rank, mate value, discrepant social rank, and discrepant mate value. The methodological, theoretical and clinical implications of this study are discussed.

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Chapter One

I N T R O D U C T I O N

Overview of the Chapter

This chapter provides the background to the present study. It begins by discussing some of the issues experienced by care leavers and why they are the focus of this study. This is followed by a discussion about aggression: how it should be defined, why it is problematic and some of the main theories of aggression. There is a brief review of the evidence base for the psychological treatment of aggression. There is a discussion of self-esteem and how it can be conceptualised in terms of global self-esteem, domains of self-esteem and implicit and explicit self-esteem. Previously published research which explores the relationship between these different forms of self-esteem and aggression is then reviewed. There is then a discussion of some of the limitations and some of the potential clinical implications of this research. This is followed by a review of what is known about self-esteem and aggression in care leavers. The introduction concludes with an outline of the main hypotheses which this study aimed to address.

CARE LEAVERS

Definition of Care Leavers

The Children (Leaving Care) Act 2000 (Department of Health, 2000) defines a care leaver as someone who has been in the care of the Local Authority for a period of 13 weeks or more, spanning their 16th birthday. The number of children who have been taken into care and the number of care leavers in England and Wales have been gradually increasing over the last three years (Welsh Assembly

Government, 2010; Department for Children, Schools and Families, 2010). In Wales in 2010 over 4000 children were in foster care and 503 young people aged 16 and over left care (Welsh Assembly Government, 2010). In England in 2010 there were over 47000 children in foster care and 9100 young people aged 16 and over left care (Department for Children, Schools and Families, 2010).

The Difficulties Experienced by Care Leavers

The majority of children are taken into care in an attempt to protect them from abuse, neglect or acute family distress or dysfunction (Welsh Assembly Government, 2010). However, being taken into care can present children with further difficulties including multiple placements, stigma, problems at school and the disruption of valued relationships (Ofsted, 2009; Rubin *et al.*, 2007).

A number of studies have shown that young people in care have significantly higher rates of psychiatric disorders compared to the general population (McCann *et al.*, 1996; Blower *et al.*, 2004). In one of the largest studies of its kind, Meltzer *et al.* (2003) found that 45% of 5-17 year olds under the care of the local authority were assessed as having a 'mental disorder' (p. xii).

Many care leavers can find the transition from being in care to becoming an independent adult difficult (Dixon *et al.*, 2004). Broad (1999) notes that the transition to independent living for care leavers is often more rapid and occurs at an earlier age than for most young people and that it can involve disruption at an emotional, psychological and practical level. There is also often a lack of continuity in the support care leavers receive from family and others (Broad, 1999).

Young people who have been in care have significantly more difficulties in many areas of health and well being than the general population (Ryan, 2008). Viner and Taylor (2005) found that young people with a history of being in care in the UK were significantly more likely to have been homeless, have a conviction and to have poor general and psychological health, as well as less likely to achieve high social status. They also found that women who had a history of being in care were more likely to have been expelled from school, and that men were less likely to have gone into higher education and more likely to be unemployed and to have a history of mental health problems. Tweddle (2005) found similar patterns in a review of international research into the outcomes for young people who had been in care. Despite the high levels of mental health problems amongst young people who are, or who have a history of being, in care, the provision of mental health services for this group is very variable (Department of Health, 2009), and there has been very little research looking at the psychological needs of this vulnerable population.

There is some evidence to suggest that aggression is also a significant problem for this population (this will be discussed in more detail in a later section). Aggression amongst care leavers is a concern not only in terms of the impact on society and the victims of violence, but also because it is likely to compound the significant social and psychological difficulties already faced by young care leavers. For example, problems with aggression are likely to exacerbate difficulties with finding suitable employment and accommodation, maintaining healthy relationships and avoiding a criminal record. There is a need to understand the psychological processes underlying aggression in order to be able to provide suitable support and interventions to this vulnerable group, as well as to the many other populations who experience difficulties with aggression.

AGGRESSION

Defining Aggression

The term aggression can encompass a wide range of behaviours, from physical assaults on another person to less obvious forms of aggression such as malicious phone calls. There has been considerable debate about how to define aggression (Parrot & Giancola, 2007). One of the most comprehensive definitions of aggression is provided by Baron and Richardson (1994, p.7), who describe it as 'any form of behaviour directed toward the goal of harming or injuring another living being who is motivated to avoid such treatment'.

To reflect the range of behaviours which could be described as aggressive, a number of different ways of classifying or subtyping aggression have been proposed. Parrott and Giancola provide the following comprehensive list of subtypes in their (2007) review: direct versus indirect (Buss, 1961; Feshbach, 1969), physical versus verbal (Buss, 1961), active versus passive (Buss, 1961), rational versus manipulative (Bjorkqvist *et al.*, 1992), proactive versus reactive (Dodge, 1991), antisocial versus prosocial (Sears, 1961), annoyance-motivated versus incentive-motivated (Zillmann, 1979), overt versus covert (Buss, 1995), targeted versus targetless (Buss, 1961), overt versus relational (Crick, 1996; Crick & Grotpeter, 1995), and relational versus social (Bjorkqvist, 2001; Underwood *et al.*, 2001).

While each classification system has its advantages, in the current study aggression will be classified in terms of whether it is reactive or proactive. Reactive aggression can be described as 'a fear-induced, irritable, and hostile affect-laden defensive response to provocation... which involves a lack of inhibitory functions, reduced self-control and increased impulsivity', while

proactive aggression can be described as 'instrumental, organized, and "cold-blooded", with little evidence of autonomic arousal' (Raine *et al.*, 2006, p.161). Raine *et al.* (2006) argue that classifying aggression as proactive or reactive is particularly helpful as it distinguishes the intrinsic motivation for the aggressive act. McGuire (2008) argues that definitions based on the function of the aggressive behaviour may be most relevant to clinical work, as interventions are based on an understanding of the function of the problem behaviour.

The Problem of Aggression

Aggression presents a significant problem at both an individual and a societal level. Although many acts of aggression do not result in criminal prosecution, crime statistics can give some indication of the prevalence and financial cost of aggression. The British Crime Survey (Home Office, 2010) reported that there were over two million violent crimes committed between 2008 and 2010. The financial cost of violent crimes is considerable; in 1999/2000 it was estimated at 16.8 billion pounds (Home Office 2000). It is clear that, even in purely financial terms, the cost of aggression is very high.

The personal cost to victims and witnesses of violent crimes and aggressive behaviour can also be considerable. Exposure to violence, either as a victim or a witness, has been shown to be significantly related to psychological distress including depression, anger, anxiety, dissociation, and posttraumatic stress (Singer *et al.*, 1995). There is also evidence that exposure to violence as a child is a risk factor for the development of aggressive behaviour in later life (Farrington, 1998), suggesting that exposure to violence has a cyclical effect. Victims of aggression are also clearly at risk of physical harm, which at its most serious may mean loss of life.

The personal cost to the perpetrators of aggression can often be overlooked. Aggressive behaviour may result in the impairment or loss of relationships, loss of employment, imprisonment, and may place individuals at greater risk of being victims of violence themselves. As noted earlier, even without the problems arising from aggression, many care leavers already face significant social and psychological difficulties and many have histories of abuse and disrupted relationships. Problems with aggression are likely to exacerbate the issues already experienced by this vulnerable group. Individuals who have committed serious acts of aggression may also experience psychological distress as a result of this; for example some individuals experience post traumatic distress disorder following homicide (Pollock, 1999).

Risk Factors Associated with Aggression

There has been a considerable amount of research exploring the risk factors associated with engagement in aggressive behaviour. Some of the risk factors that have been identified include: certain genetic disorders (Arron *et al.*, 2011), neurobiological susceptibilities (Siever, 2008), low resting heart rate (Raine *et al.*, 1997), birth complications combined with early maternal rejection (Raine *et al.*, 1994), attachment difficulties in childhood (Lyons-Ruth, 1996), physical maltreatment in early childhood (Lansford *et al.*, 2002; Fergusson & Lynskey, 1997), corporal punishment in childhood (Gershoff, 2002), poor child-rearing, family criminality, school failure, economic deprivation, antisocial child behavior (Farrington, 1989), trauma (Sarchiapone *et al.*, 2009), major mental illness (Mulvey, 1997), personality disorders (Johnson *et al.*, 2000), psychopathy (Hare, 1999), attention-deficit / hyperactivity disorder (Dowson & Blackwell, 2009); substance misuse and the early development and onset of alcohol dependence (Snowden, 2001); social problem solving deficits (McMurrin *et al.*, 2002), high impulsivity (Farrington, 1998) low intelligence (Farrington, 1998) anger (Novaco, 1994) and simply being a young adult male (Archer, 2004).

The identification of risk factors associated with aggression has informed the development of risk assessment tools, such as the Historical Clinical Risk-20 (Webster *et al.*, 1997), which can help to identify individuals who are at high risk of engaging in aggressive behaviour (McGuire, 2004). Identification of risk factors can also guide the development of preventative measures, for example working to relieve socioeconomic deprivation or working with 'at risk' groups (McGuire, 2008).

Walker and Bright (2009b) note that focusing on risk factors has its limitations, as risk factors cannot explain why a particular individual is aggressive at a particular time. In addition, risk factors provide little guidance for the development of effective interventions for the treatment of problematic aggression. In terms of Weerasekera's (1996) 'four P' model of formulation, the risk factors proposed above can be understood as equivalent to predisposing factors. An understanding of the precipitating, perpetuating and coping factors is also needed in order to develop an effective formulation of an individual's difficulties. A formulation will help to determine the likelihood of aggressive behaviour occurring, and help to identify appropriate interventions.

Theoretical Perspectives on Aggression

Theories of aggression provide a more complex way of understanding aggression, by proposing possible mechanisms and processes by which aggressive behaviour occurs. A broad overview of the most influential theories of aggression is given below.

Instinct Theories

Instinct theories postulate that humans are genetically or constitutionally programmed for aggressive behaviour (Baron & Richardson, 2004).

Freud's psychoanalytic approach (1920) proposes that all humans have both a 'death instinct' (thanatos) and a 'life instinct' (eros). Aggression is thought to arise from the conflict between these two instincts and the subsequent diversion of the death instinct away from the self and towards others. Most psychoanalysts have largely rejected the idea of the death instinct, although the idea of aggression as instinctive has been retained (Baron & Richardson, 2004).

Lorenz (1974) proposed an ethological version of the instinct theory. He argued that humans, along with other organisms, have a 'fighting instinct' which evolved to ensure that only the strongest individuals survived. He believed that aggressive energy from this fighting instinct builds up and is released in the presence of specific external stimuli (Baron & Richardson, 2004). However, this theory has been criticised as it relies on evidence from non-human animals and there is no empirical evidence for aggressive energy in animals or humans (Baron & Richardson, 2004).

Sociobiologists apply evolutionary theory to social behavior and argue that many social behaviours, including aggression, have been shaped by natural selection (Wilson 1975). This approach views behaviour in terms of how it may contribute to an individual's survival and reproductive chances. In this context, aggression is adaptive when it is used to protect the self or offspring, and when it is used to compete for limited resources; for example food or mates (Archer, 2009). However, aggression is only adaptive when the benefits (eg importance of

resources) outweigh the costs (eg harm to the aggressor). Archer (2009) suggests that humans, like other animals, assess their own fighting ability ('Resource Holding Power') compared to their potential opponents in order to assess the relative costs and benefits of aggression.

Social Rank Theory (Gilbert, 1989; 1992) is also based on evolutionary theory and proposes that dominance hierarchies play an important role in the social behaviour and affect of humans and other social animals. It argues that within social hierarchies more dominant individuals threaten or attack others in order to maintain their dominance, as greater dominance is associated with benefits such as greater access to resources or mates. More subordinate individuals tend to engage in submissive behaviour in order to terminate the threats or attacks whilst maintaining their membership of the social group. Thus aggression is used by dominant individuals as a way of maintaining their position in the social hierarchy.

Drive Theory

According to drive theories of aggression, an aggressive drive is a heightened state of arousal which arises in response to aversive stimulation. Aggressive behaviour serves to reduce this state of arousal (Baron & Richardson, 2004). Dollard *et al.*'s (1939) frustration-aggression hypothesis is probably the most well known drive theory. This hypothesis is founded on two premises: frustration always results in aggression, and aggression is always a result of frustration. In this context 'frustration' refers to the thwarting of an ongoing goal directed behaviour and 'aggression' refers to an aggressive drive which facilitates aggressive behaviour (Baron & Richardson, 2004). However, there is considerable evidence that frustration does not always lead to aggressive behaviour and that the presence of frustration is not always necessary for aggression to occur; for example an individual might respond to failing an exam

by working harder, and in instrumental aggression, aggressive behaviour is thought to be a way of achieving a particular goal. In light of this, there have been several revisions to the original theory. Miller (1941) suggested that aggression is only one of the behaviours which can result from frustration. Berkowitz (1969) argued that frustration is one of a number of different aversive stimuli which create a readiness to respond aggressively, but that aggression will then only occur in the presence of aggression-relevant cues. Aggression-relevant cues are environmental stimuli which are either generally associated with aggression or have become so through repeated associations with anger and aggression (for example particular individuals or clothing). Although drive theory offers a more complex explanation of the processes involved in aggression than instinct theory, it does not satisfactorily explain the causes of proactive aggression or why some individuals are aggressive while others are not. It also implies that the most effective way of reducing aggression is to remove all sources of arousal or aversive stimulation from the environment (Baron & Richardson, 2004), which is at best impractical.

Social Learning Theory

Bandura's social learning theory (1983, cited in Baron & Richardson, 2004) proposes that individuals learn aggressive behaviour from others in the same way that they learn other complex forms of social behaviour; through direct and observational learning. Aggressive behaviour is thought to be instigated by incentives, instructions, aversive treatment, and bizarre beliefs or through the influence of models such as arousal and attention. It is thought to be regulated or maintained through external sources such as rewards and punishment (for example admiration or vilification by others), vicarious experiences such as observing others being rewarded or punished for aggressive behaviour and by self-imposed consequences such as guilt or pride (Baron & Richardson, 2004). For example, when children witness domestic violence they may learn that

aggression is an appropriate way to treat people in close relationships and to get their needs met. Children may learn more directly that aggression is a rewarding way to behave if they receive attention and respect from peers when they behave aggressively, or when desired goals are achieved through aggression.

Cognitive Models

Cognitive models focus on the cognitive and emotional processes that underlie aggressive behaviour (Baron & Richardson, 1994). These models propose that it is the way in which individuals interpret threats or provocations and their physiological and emotional responses which determines whether they are likely to respond aggressively. Berkowitz's cognitive neoassociative model (as cited in Baron & Richardson, 2004) suggests that aversive stimuli (including frustration) cause an individual to experience negative affect and, depending on the individual's interpretation of this negative affect, this may or may not result in them responding aggressively. For example if the negative affect were interpreted as fear the individual might try to escape, while if it were interpreted as anger the individual might be more likely to aggress. Aggressive cues may serve to heighten the individual's aggressive response. Zillmann (cited in Baron & Richardson, 2004) proposed an alternative cognitive model in which arousal and cognitive processes are interdependent. He suggested that an individual's cognitions about a situation could either enhance or reduce his or her emotional responses, and hence affect whether he or she responds aggressively. However, high levels of emotional arousal could interfere with the cognitive processes which would otherwise inhibit an aggressive response, leading to impulsive aggression. These theories emphasise the importance of interpretations of events and affect in aggression, with the implication that aggression can be reduced if individuals can learn to interpret situations differently and to develop alternative coping strategies.

Although Novaco's (1977) cognitive model of anger focuses on anger rather than aggression, it is worth mentioning here because it is widely used as a treatment for aggression (Walker & Bright, 2009b). Novaco's model has much in common with the cognitive models of aggression mentioned earlier. He proposed that anger is an emotional response to provocation which is dependent on cognitive, physiological, affective and behavioural factors. Cognitive factors include how the individual appraises the event, their expectations, attributions and self-statements. Physiological and affective factors such as tension and agitation as well as behavioural responses like confrontation are thought to exacerbate anger. Novaco proposed that anger will lead to aggressive behaviour depending on the degree of and interpretation of the provocation, situational constraints, the individual's expectations of the outcomes and their coping style (Novaco, 1977).

Although risk factors and theories of aggression contribute to our understanding of aggressive behaviour, identifying causal pathways and developing integrative explanatory models of aggression is extremely challenging. Most aggressive behaviour is the result of a very complex sequence of events and processes including neurobiological, hormonal, cognitive, attitudinal, experiential, interactional, dispositional and situational factors, which are not yet well understood (McGuire, 2008). Further research is required in order to achieve a greater understanding of these processes and thus develop further effective interventions.

Psychological interventions for Aggression

In a recent review of interventions for reducing aggression and violence in adolescents and adults, McGuire (2008) reported that most interventions could be broadly divided into the following categories: anger management, behavioural

interventions, interpersonal skills training, structured individual counselling, teaching family homes, cognitive skills programs, cognitive self-change and multi-modal programs. This section will provide a brief summary of these interventions.

Psychological interventions for aggression have been dominated by anger management programmes, the majority of which are based on the cognitive model of anger proposed by Novaco which was outlined earlier (Walker & Bright, 2009b). Increasing self-awareness of anger, identifying potential triggers, enhancing coping strategies and relaxation training are the key elements of anger management programmes (Walker & Bright, 2009b). There is evidence that this approach can be effective in the reduction or control of anger and reduction in resultant aggression (DiGiuseppe & Tafrate, 2003). However, not all forms of aggression involve anger (for example instrumental aggression), and anger management is unlikely to be helpful in these cases. It has also been observed that there are high dropout rates from anger management programmes, and treatment is only likely to be effective for those individuals for whom anger is a particular issue and who are willing and able to acknowledge this and the need for help (McGuire, 2008).

Cognitive skills programmes aim to address cognitive, interpersonal and self-management skills deficits or distortions which are thought to contribute to criminal behaviour. Reasoning and Rehabilitation is the most widely used cognitive skills programme and is a group based programme which focuses on problem-solving, social interaction, impulse control and self-management, negotiation and conflict resolution, and critical thinking (McGuire, 2008). A large Canadian study showed that the programme led to a significant reduction in recidivism, particularly for violent and sexual offenders (Robinson 1995); however implementation of the programme in prisons in England and Wales has

shown less positive results (Falshaw *et al.* 2003). Falshaw *et al.* noted that there are a number of possible reasons for the poor outcomes in prisons in England and Wales, including issues with the quality of programme delivery and the motivation of the prisoners.

Cognitive self-change programmes focus on addressing cognitive distortions held by the offender which are thought to be directly conducive to antisocial acts. This is often done in a group setting and involves discussion and identifying and practising new skills and thinking patterns. These programmes have been shown to have positive outcomes in terms of reducing recidivism (Henning & Frueh, 1996).

For young offenders, interpersonal skills training, structured individual counselling, behavioural interventions and teaching family homes have also been shown to have beneficial outcomes in terms of reducing violent recidivism (McGuire, 2008). In interpersonal skills training, groups of individuals identify situations in which they tend to respond aggressively and use role-play, discussion and feedback to identify alternative, more helpful ways of responding. Structured individual counselling based on reality testing, problem-solving or multi-modal frameworks has been shown to have contributed to a reduction in recidivism in offenders, especially in community settings. Behavioural interventions including contingency contracts and behavioural training procedures such as modelling and graduated practice, and cognitive and problem-solving skills training have been shown to reduce juvenile offending. Teaching family homes are residential units or group homes in which specially trained adults develop positive working alliances with residents in order to impart a range of interpersonal and self-management skills and provide counselling and advocacy services (McGuire, 2008).

McGuire notes that there are also several multi-modal programs which have been used to address violent offending. These include the Violence Prevention Programme which incorporates motivational enhancement, behavioural change methods, a focus on aggressive beliefs, cognitive distortions, arousal management, impulsivity, conflict resolution, problem-solving, empathy enhancement and relapse prevention (McGuire, 2008). This and other multi-modal cognitive skills groups (such as the Montgomery House Violence Prevention Project, the Violence Prevention Unit in New Zealand and Aggression Replacement Training) have been shown to be effective in reducing recidivism (McGuire, 2008).

McGuire concludes that interventions which focus on emotional self-management, interpersonal skills, social problem-solving and allied training approaches show 'mainly positive effects with a reasonably high degree of reliability' (p.2591), but that the research findings are less positive for domestic violence and prison-based programmes. A limitation of this brief review of psychological interventions for aggression is that it has focused almost exclusively on forensic populations. Research in non-forensic populations has tended to focus on the treatment of anger rather than aggression (eg Bowman-Edmondson & Cohen-Conger, 1996; Beck & Fernandez, 1998; DiGiuseppe & Tafrate, 2003; Del Vecchio & O'Leary, 2004), and while cognitive based approaches (the most common treatment modality) have been shown to be effective in the treatment of anger, Walker and Bright (2009) note that the role of anger in aggression is uncertain, and that there is considerable doubt as to whether anger is the most appropriate focus for interventions for aggression.

Although many of the interventions available for the treatment of aggression appear to have relatively good outcomes, many individuals still fail to benefit from

them. In addition, apart from anger management programmes, there appear to be relatively few interventions designed for people like care leavers, and other adults who have problems with aggression but do not fall under the remit of forensic services. There is therefore a need to continue to develop effective interventions for the treatment of aggression.

SELF-ESTEEM

Defining Self-Esteem

Self-esteem has received considerable attention in both academic and popular circles (Mruk, 1999). There has been a great deal of research into self-esteem and there continues to be considerable debate as to whether high self-esteem is essential, of little consequence or even detrimental to human wellbeing (Brown, 2010). Despite this level of attention, there has been a lack of consensus about the definition of self-esteem. The most straightforward definition of self-esteem is 'an evaluation of oneself' (Zeigler-Hill & Jordan, 2010, p.392), however the exact nature of this evaluation continues to be disputed. Issues include whether self-esteem should be understood as a state or a trait, whether it is based on affective or cognitive processes, whether it is global or domain specific, and whether implicit and explicit self-esteem are two distinct forms of self-esteem (Mruk, 1999; Zeigler-Hill & Jordan, 2010). Space does not permit a discussion of all these issues here, however the questions of whether self-esteem is best understood as a global or a domain specific construct, and whether implicit and explicit self-esteem are two distinct types of self-esteem are of key importance to this research and will therefore be considered in more depth.

Global Versus Domain Specific Self-Esteem

Global self-esteem can be defined as an 'individual's positive or negative attitude toward the self as a totality' (Rosenberg *et al.*, 1995, p.141). The majority of studies into self-esteem have treated it as a global construct, and global self-esteem has been found to be related to many and diverse outcomes (Salmivalli, 2001). For example, low self-esteem has been found to predict depression, suicide ideation, problem eating behaviours, poor physical and mental health, lowered economic prospects and increased levels of criminal behaviour (Cheng & Furnham, 2002; McGee & Williams, 2000; Trzesniewski *et al.*, 2006); whilst high self-esteem has been shown to predict happiness, to help buffer against negative feedback and to help to protect against depressive symptoms in people with chronic illness (Brown, 2010; Cheng & Furnham, 2002).

Although most researchers have treated self-esteem as a global construct, it has been argued that it would be more meaningful for self-esteem to be understood as a dimensional construct (e.g. Kirkpatrick & Ellis, 2004; Tafarodi & Milne, 2002; Swann *et al.*, 2007). Swann *et al.* (2007) argue that the specificity matching principle means that global self-esteem is unlikely to predict specific behaviours. The specificity matching principle states that in the natural environment, most outcomes are caused by multiple factors which may interfere with each other, and to compensate for this, 'the specificity of predictors and criteria should be matched' Swann *et al.* (2007, p.87). For example, someone's evaluation of their scholastic competence might include very positive self-evaluations of their likeability and sporting skills but very poor self-evaluations of their academic skills. Their overall evaluation of their scholastic competence (which combines these elements) might be a good predictor of how much they enjoy school, but a very poor predictor of their performance on maths tests. A more specific self-evaluation of their academic competence would be far more likely to give an accurate prediction of their performance on maths tests. In other words, the most

meaningful links are between attitudes and behaviour within the same domain (Gentile *et al.*, 2009). Swann *et al.* argue that global measures of self-esteem may be effective at predicting more global outcomes, but that they are likely to be poor at predicting more specific outcomes, and in these cases more specific measures of self-esteem should be used.

In theory, the number of different domains or dimensions of self-esteem is almost limitless, as it could be argued that individuals view or evaluate themselves differently in all the roles they inhabit or the skills they use. A number of different domains of self-esteem have been proposed, including physical appearance, athletic, academic, social acceptance, family, behavioural conduct, affect, personal self, self satisfaction, moral-ethical (Gentile *et al.*, 2009) as well as social inclusion, superiority and mate value (Kirkpatrick & Ellis, 2004; Webster & Kirkpatrick, 2006). Support for a multi-dimensional construction of self-esteem is provided by a number of studies which show that specific domains of self-esteem are differentially related to different aspects of behaviour. In a study of American school children, Haynes (1990, cited in Gentile *et al.*, 2009) found that behavioural conduct self-esteem was a significant predictor of classroom behaviour, group participation, and attitudes toward authority. Wild *et al.* (2004) found that family self-esteem, but not peer, school, body, sports or global self-esteem, was independently associated with suicidal ideation and attempts. Vermeiren *et al.* (2004) found that low family acceptance, low academic competence and high peer popularity predicted property offending for male and female adolescents. Violent offending was predicted by low family acceptance, low academic competence, high peer popularity and high personal security in male adolescents but only low academic competence and high peer popularity predicted violent offending in female adolescents.

Implicit Versus Explicit Self-Esteem

Self-esteem has traditionally been assessed using self-report measures, which are arguably an appropriate means of assessing an individual's subjective experience or view of themselves (Zeigler-Hill & Jordan, 2010). However, self-report measures rely on respondents providing an accurate report of their views, as well as being able consciously to access all aspects of their self-esteem, and it may be that neither of these assumptions is true. Johnson (1997, cited in Samivalli, 2001) notes that self-esteem questionnaires are very sensitive to various forms of response bias and related psychological defences, while Zeigler-Hill and Jordan (2010) observe that self-report measures of self-esteem correlate with measures of impression management, suggesting that individuals tend to provide responses in order to present a particular image or to appear more socially desirable. Baumeister *et al.* (1989, cited in Salmivalli, 2001) suggests that self-report measures of self-esteem should be regarded as measuring how a person wishes to present him or herself rather than as a pure measure of self-esteem. For example, a low score on a self-esteem measure may be an indication of 'a cautious, conservative self-protective style' and a high score may be indicative of a 'risky, self-aggrandizing style of presentation' (Samivalli, 2001, p.397). There is also evidence that individuals may not be aware of all aspects of their self-esteem. There is a correlation between self-report measures of self-esteem and measures of self-deception, suggesting that individuals may tend to present a positive self-image that they believe is true but that does not reflect less conscious beliefs (Zeigler-Hill & Jordan, 2010).

In response to issues in the measurement of self-esteem, Greenwald and Banaji proposed the existence of implicit self-esteem; 'the introspectively unidentified (or inaccurately identified) effect of the self-attitude on evaluation of self-associated and self dissociated objects' (1995, p.11). Zeigler-Hill and Jordan (2010, p.394) note that there is a lack of consensus as to whether implicit self-esteem is non-

conscious, and suggest that implicit self-esteem may be best defined as 'evaluations that are cognitively associated with the self and activated in response to self-relevant stimuli but that are not necessarily endorsed as valid reflections of how one feels about oneself'.

Measuring Implicit Self-Esteem: The Implicit Association Test

A number of different methods of measuring implicit self-esteem have been developed; including the name-letter task (Nuttin, 1987), the self-esteem Implicit Association Test (Greenwald & Farnham, 2000), the Implicit Self-Evaluation Survey (Hetts *et al.*, 1999) and the Subliminal Attitude Prime Task (Spalding & Hardin, 1999). As yet there is no consensus as to which of the available measures are most effective or accurate (Zeigler-Hill & Jordan, 2010). The IAT was chosen for this study as it has a relatively good research evidence base and, compared to some other implicit measures, is thought to capture a relatively pure form of self-esteem (Zeigler Hill & Jordan, 2010). In addition, the nature of the IAT methodology means that it is relatively easy to adapt it to explore potential domains of implicit self-esteem.

The Implicit Association Test (IAT) is a computer administered test which is designed to measure implicit self-esteem by measuring the positive and negative associations a person has with the self. It is based on the assumption that it will be easier (and therefore quicker) for people to categorise two concepts together if they are highly associated. It is assumed, for example, that it will be easier for people with high self-esteem to associate pleasant words with themselves than it is for them to associate unpleasant words with themselves (Teige-Mocigemba *et al.*, 2010). Further details of the structure and procedure of the IATs used in this study are given in the method section; however a broad overview of the key principles of the IAT is given below.

Self-esteem IATs involve two sets of stimuli (usually words): target categories, which are words relating to the self or others; and attribute categories, which are pleasant or unpleasant words. Both target and attribute categories are arranged on bipolar dimensions, i.e. self vs. others and pleasant vs. unpleasant (Teige-Mocigemba *et al.*, 2010). Participants are required to categorize the words which represent the four categories using two response keys. The traditional IAT consists of seven blocks. Block one and two are practice blocks to familiarize participants with the procedure and correct response keys. In block one participants are required to categorize target words into the appropriate category ('self' or 'others'). In block two participants are required to categorize attribute words (pleasant or unpleasant). In blocks three and four, participants are required to categorise both target and attribute words; 'self' and 'pleasant' words are categorized using the same key, and 'others' and 'unpleasant' words are categorized with the other key. Block five is another practice block; participants are required to categorize target words only, but the response keys are reversed. In blocks six and seven participants are required to categorize both target and attribute words again; the response key for the attribute words remains unchanged from the earlier blocks however the response key for the target stimuli remains reversed. Thus in blocks six and seven 'self' and 'unpleasant' words are categorized using the same key, and 'others' and 'pleasant' are categorized with the other key. The difference in response times between the initial combined blocks (blocks 3 and 4) and the reversed combined blocks (blocks 6 and 7) is called the IAT effect (Teige-Mocigemba *et al.*, 2010). The size and direction of the IAT effect is interpreted as revealing the relative strength of the association between the target and attribute categories. Therefore, individuals with high implicit self-esteem are expected to respond faster and more accurately when self and pleasant words are assigned to the same response key and individuals with low implicit self-esteem are expected to respond faster and more accurately when self and unpleasant words are assigned to the same response key (Teige-Mocigemba *et al.*, 2010). It should be

noted that IATs only provide information about an individual's self-esteem relative to their evaluation of others (Teige-Mocigemba *et al.*, 2010).

Evidence for Implicit Self-Esteem

Zeigler-Hill and Jordan (2010, p.396) argue that the strongest evidence for the differentiation between implicit and explicit self-esteem comes from the way that measures of implicit self-esteem relate to other variables in 'theoretically significant ways', reveal meaningful effects, produce interesting findings and improve understanding of self-evaluations and how they influence judgements and behaviours. Some of the evidence which they offer in support of the differentiation between implicit and explicit self-esteem is outlined here. Implicit self-esteem measures tend to only be very weakly correlated with explicit self-esteem measures (Zeigler-Hill & Jordan, 2010), which suggests that they are measuring different constructs. Although it could be argued that the weak correlations are actually due to implicit measures having poor psychometric properties, this is unlikely as implicit self-esteem has been shown to be related to other variables in meaningful ways. For example, there is evidence that implicit self-esteem relates to some variables in the same way as explicit measures; Dijksterhuis (2004) found that people with high implicit self-esteem showed no change in mood following negative feedback, while people with low implicit self-esteem showed more negative mood, mirroring the patterns that would be expected with explicit self-esteem. Although the convergent findings for implicit and explicit measures could be interpreted as suggesting that they are measuring the same construct, Zeigler-Hill and Jordan note that many of the effects for implicit self-esteem remain even after the effects for explicit self-esteem have been controlled for. In addition, there is research evidence that shows that the effects of implicit and explicit self-esteem can be dissociated; for example Spalding and Hardin (1999) found that explicit self-esteem predicted explicit self-judgements of anxiety while implicit self-esteem predicted anxious

non-verbal behaviour in an interview situation. Further evidence for the distinction between implicit and explicit self-esteem comes from research which shows that discrepant implicit/explicit self-esteem is related to particular variables, such as days of impaired health and symptoms associated with borderline personality disorder (Vater *et al.*, 2010 and Schroder Abe *et al.*, 2007).

SELF-ESTEEM AND AGGRESSION

Literature Review

In order to gain a picture of the existing research examining the relationship between self-esteem and aggression, a review of the literature was conducted. A list of relevant search terms was identified, drawing on Walker & Bright's 2009 systematic review of research evaluating the relationship between self-esteem and violence. The following terms were used: 'self-esteem', 'attractive\$', 'rank\$', 'social\$ inclu\$' or 'social\$ exclu\$' combined with 'aggress\$', 'violen\$', or 'anger'. A recent systematic review in forensic psychiatry conducted by Amos *et al.* (2007, cited in Walker & Bright, 2009b) found that almost all of the articles were found within Embase, Psychinfo and Medline, therefore the search was restricted to these databases. The search was restricted to original journal articles with adult human participants, published in English between 1995 and 2010. The initial search identified 6914 articles; following a review of the titles 502 of the articles were retained in order to review the abstracts. Of these articles, 92 were deemed relevant and obtained in full. This study draws on these articles as well as other relevant studies cited within them.

There has been increasing interest in the possible link between self-esteem and aggression, and accumulating evidence that there is a meaningful relationship between the two variables. However, the research evidence is inconsistent and

the nature of the relationship remains unclear (Ostrowsky, 2010; Walker & Bright, 2009b). The majority of studies suggest that low self-esteem rather than high self-esteem is related to aggression; however there are a significant number of studies which indicate that high self-esteem is related to aggression, and yet more which present mixed evidence (Ostrowsky, 2010; Walker & Bright, 2009b).

Low Global Self-Esteem and Aggression

Historically, low self-esteem has often been viewed as playing an important role in aggressive behaviour. Several theories as to why there may be a relationship between low self-esteem and aggression have been proposed. It has been suggested that aggression may provide individuals with low self-esteem with an increased sense of power and independence, that aggression may serve as attention seeking behaviour which enhances self-esteem, or that individuals with low self-esteem may externalize blame for their problems and failures to protect themselves against feelings of inadequacy, inferiority, and shame, which leads to aggression towards others (Ostrowsky, 2009).

In a recent systematic review, Walker and Bright (2009b) found that 12 of the 19 studies identified showed a relationship between low self-esteem and aggression. One of the most robust studies to show a relationship between low self-esteem and aggression was conducted by Donellan *et al.* (2005). They conducted two cross-sectional studies and one longitudinal study with children and teenagers in America and New Zealand, and found a strong relationship between low self-esteem and aggression, delinquency and anti-social behaviour (measured by self-report, parent and teacher ratings). This relationship was found in both the cross-sectional and longitudinal studies, across all the age groups and after confounding factors had been controlled for. In a longitudinal study of American adolescents Trzesniewski *et al.* (2006) also found that

adolescents with low self-esteem grew up to have more criminal convictions compared to adolescents with high self-esteem; and that they were 1.48 times more likely to be convicted for a violent crime. Since this review further studies have been published which provide additional support for this view, including robust studies with large sample sizes, and both longitudinal and cross-sectional studies. For example, in a cross sectional survey of Greek men and women, Papadaki *et al.* (2009) found that self-esteem was negatively correlated with self-reported physical violence towards intimate partners, but not with self-reported sexual or emotional violence. Additional studies which support the low self-esteem hypothesis include Parker *et al.* (2005), Murphy *et al.* (2005), Lopez *et al.* (2006) and Sutherland and Shepherd (2002).

High Global Self-Esteem and Aggression

It has also been argued that high, rather than low, self-esteem is related to aggression. Bushman, Baumeister and colleagues are strong advocates of the threatened egotism hypothesis, whereby aggression occurs in response to the 'sense that one's favourable views of self have been impugned by others' (Bushman *et al.* 2009 p428). Kernis *et al.* (1989) provide a helpful summary of the argument:

Threats to self-esteem are more apt to be perceived as unjustified if one's self-concept is positive than if one's self-concept is negative, and unjustified threats are more likely to prompt anger...Also, high self-esteem individuals may be more likely to take steps to restore a damaged self-view than low self-esteem individuals. (Kernis *et al.*, 1989, p.1014)

Samilvalli (2001) notes that aggression is a often a risk-taking behaviour and individuals must have a certain degree of courage and confidence that they will be successful in an aggressive encounter, which would be more typical of

individuals with high rather than low self-esteem. The idea that individuals with high self-esteem being more aggressive is also compatible with the anecdotal observation that people who are aggressive often appear very arrogant (Bushman *et al.*, 2009). There is relatively little research evidence for the high self-esteem hypothesis but, in one of the only studies that looked at a forensic population, Gillespie (2005) found that high self-esteem predicted violent behaviour inside prison in the USA for white prisoners. No relationship between self-esteem and violence was found for black prisoners, suggesting that there may be racial differences in the operation or function of self-esteem. However it should be noted that this study had a very low response rate and relied on self-report measures of aggression.

There is some evidence that a combination of high self-esteem and high levels of narcissism may be related to aggression. The relationship between self-esteem and narcissism is unclear, but Taylor *et al.* (2007) provide the following explanation:

While self-esteem is generally conceptualized as a global assessment of one's own worth, narcissism is a sense of entitlement and superiority. An individual with high-self esteem thinks she or he is good; a narcissistic individual thinks she or he is better. Individuals who score high on measures of narcissism are likely to score similarly high on measures of self-esteem, though the reverse is not necessarily true. (Taylor et al., 2007, p.131)

However Bushman *et al.* (2009) note that not all narcissists have high self-esteem:

So-called covert narcissists have relatively low self-esteem and have been described as socially avoidant individuals who are self-absorbed yet shy and introverted. In contrast, overt narcissists have much higher self-esteem and are

described as self-assured extroverts who have a dominant, antisocial, and aggressive interpersonal orientation. (Bushman *et al.*, 2009, p.429)

A number of studies have found a relationship between aggression and a combination of high self-esteem and narcissism. In a behavioural experiment with young adolescents Thomaes *et al.* (2008) found that low self-esteem did not lead to aggression (in the form of blasting opponents with noise), but that narcissism in combination with high self-esteem led to exceptionally high aggression. Papps and Carroll (1998) found that individuals with high self-esteem and high narcissism reported a significantly greater tendency to experience and express anger and aggression compared to individuals with high self-esteem and low narcissism. In a study of undergraduate students Bushman *et al.* (2009) found that high self-esteem combined with narcissism and ego threat yielded the highest levels of aggression (blasting a fellow participant with a blast of aversive noise or giving a fellow student a bad mark for their essay) in a series of three experiments. These research findings are inconsistent with the hypothesis that low self-esteem causes aggression, although it is notable that the behavioural experiments lack ecological validity.

Conflicting Evidence for the Relationship between Global Self-Esteem and Aggression

Some research fails to provide support for either the low or the high self-esteem hypothesis. Some studies have found no relationship between self-esteem and aggression. Walker and Gudjonsson (2006) found no relationship between self-esteem and self-reported aggression in a cross-sectional survey of a large sample of adolescents in the UK, and in a comparison of violent and non-violent offenders, Beesley and McGuire (2009) found no difference in the levels of self-esteem.

Other studies have provided mixed evidence. Diamantopoulou *et al.* (2008) found that both low levels of global self-worth and exaggerated but disputed self-esteem were related to peer and teacher rated aggression in school children. Bradshaw and Hazan (2006) found that young adults who had more favourable views of self than others, and those who had equally unfavourable views of both self and others to have highest self-reported aggression. Sandstrom and Herlan (2007) found a positive association between egotism and generalized aggressive reputation in the classroom. In addition to this they found a positive association between global self-esteem and retaliatory behaviour when in receipt of negative feedback. However, they also found that children with an excessively pessimistic perception of their status behaved most aggressively in response to negative feedback.

Ostrowsky (2009) suggests that these sorts of inconsistent findings could be due to the ways in which self-esteem has been conceptualized and measured in these studies. While global self-esteem can be a useful construct, there are convincing arguments for differentiating between different domains of self-esteem and between explicit and implicit self-esteem. If different domains of self-esteem differentially relate to aggression but are conflated into a single measure of self-esteem they may interfere with each other or cancel each other out (Kirkpatrick & Ellis, 2002). Similarly, if implicit and explicit self-esteem differentially relate to aggression, or if it is the interaction between the implicit and explicit self-esteem that is important, then relying solely on an explicit global measure of self-esteem may also lead to inconsistent results. The potential relationship between domains of self-esteem and aggression, and the potential relationship between implicit and explicit self-esteem and aggression, will be discussed in the following sections.

Domains of Self-Esteem and Aggression

According to the specificity matching principle, research looking at the relationship between self-esteem and aggression should focus on specific domains of self-esteem that are relevant to aggression, rather than global self-esteem. The multidimensionality of self-esteem has most frequently been inferred from factor-analytic results (Kirkpatrick & Ellis, 2002). However Kirkpatrick and Ellis (2002) propose three domains of self-esteem which are based on an evolutionary approach. They argue that taking an evolutionary approach is the most useful way to develop hypotheses about the way that self-esteem relates to strategic behaviours such as aggression. The authors build on Leary *et al.*'s sociometer theory (1995), which proposes that self-esteem is designed to monitor acceptance in interpersonal relations (which is vital to reproductive success) and to drive corrective action should the level of acceptance fall too low. Kirkpatrick and Ellis (2002) argue that different types of relationships pose different types of problem and therefore there is a need to monitor inclusion in each one. They suggest that, from an evolutionary perspective, mateships, coalitions and familial networks are the most important and functionally distinct types of relationship. They argue that sociometers should reflect the perceived strength and value of the interpersonal relationships as well as the degree of inclusion, and that they are designed not just to trigger corrective action should the level of acceptance within a relationship fall too low, but to activate various psychological and behavioural processes designed to solve the particular type of problem which is presented. They argue that social inclusion, mate value and superiority are differentially related to aggression. They hypothesize that an individual's perceptions of relative standing in terms of desirability as a mate and social status are most likely to predict aggression, with individuals who perceive themselves as of higher standing being more likely to aggress in order to maintain their status. In contrast, greater perceived social inclusion is likely to be associated with decreased aggression in most scenarios.

There are strong parallels between Kirkpatrick and Ellis's approach to self-esteem and Social Rank Theory, which also argues that aggression is used by dominant individuals as a way of maintaining their position in the social hierarchy. Allan and Gilbert (1995) suggest that individuals monitor their position in the social hierarchy through social comparison in the domains of social rank, relative attractiveness and group fit. These domains mirror the domains of self-esteem proposed by Kirkpatrick and Ellis: superiority, mate value and social inclusion. Archer (2009) suggests that domains of self-esteem such as mate-value and entitlement to resources can also be viewed as an assessment of an individual's own fighting ability ('Resource Holding Power') compared to their potential opponent, which can be used to help the individual decide whether or not to fight.

A number of studies have found evidence to support Kirkpatrick and Ellis's theory of a differential relationship between the different domains of self-esteem and aggression. In an experiment where participants were given the opportunity to aggress (by administering hot sauce) against the evaluator of an essay they had written, Kirkpatrick and Ellis (2002) found that self-perceived superiority was positively and social inclusion negatively associated with aggression, but that there was no relationship between mate value and aggression. In a similar experiment where the context was manipulated to simulate a mating competition, mate value was positively related to aggression but there was no relationship between superiority or social inclusion and aggression. These results also suggest that the relationship between domains of self-esteem and aggression are at least partly context dependent. Webster and Kirkpatrick (2006) also found that self-assessed mate value positively, and self-assessed social inclusion inversely, predicted self-reported hostility and aggression. In a laboratory experiment conducted by the same authors, participants were given the opportunity to aggress (by administering hot sauce) against someone who had provided either positive or negative feedback about a personal essay they had

written. In participants who had received negative feedback, mate value was positively associated with aggression and global self-esteem was negatively associated with aggression. Johnson *et al.* (2007) also found that perceived dominance but not global self-esteem was positively associated with self-reported aggression in a sample of students in America. Other studies have provided further support for the relationship between mate value and aggression; Archer and Thanzami (2009) found that young Indian males who viewed themselves as more attractive to women reported higher levels of aggression. There is also additional evidence that social exclusion is related to aggression; Twenge *et al.* (2001) found that people behaved more aggressively (by blasting others with aversive noise) when they had experienced simulated social exclusion by being told that they would end up alone later in life or that other participants had rejected them.

In summary, there is evidence that aggression is associated with a sense of superior rank and attractiveness, as well as with a feeling of being left out. There is also evidence that these domains of self-esteem may be more strongly associated with aggression than global self-esteem is.

Aggression and Implicit Self-Esteem

As discussed earlier, some studies have found that implicit self-esteem relates to variables in much the same way as explicit self-esteem, but other studies have found that implicit and explicit self-esteem relate to variables in different ways. It is therefore difficult to hypothesise about how implicit self-esteem might relate to aggression. In what appears to be the only directly relevant study, Sandstrom and Jordan (2008) found no association between children's implicit self-esteem (measured using an IAT) and teachers' reports of aggression, although they did find a relationship between discrepant implicit/explicit self-esteem and

aggression (see the following section). This suggests that there is no direct relationship between implicit self-esteem and aggression. However, particularly in light of the inconsistent findings from other studies examining the relationship between self-esteem and aggression, there is clearly insufficient evidence to draw any firm conclusions.

Aggression and Defensive Self-Esteem

Walker and Bright (2009b) propose that the conflicting evidence for the relationship between self-esteem and aggression can be explained by the concept of 'false-inflated self-esteem' whereby individuals present with self-esteem which appears high, but which actually forms a fragile cover for low (implicit) self-esteem. Walker and Bright argue that:

...if self-esteem is inflated it is in reality covering low self-esteem, and that the inflation of self-esteem is part of the 'macho' cover-up of embarrassment. Why would the violent person be vulnerable to taking serious (overstated) offence if they were genuinely secure in themselves with high self-esteem? (Walker & Bright, 2009b, p.9)

Discrepant explicit-implicit self-esteem, where explicit self-esteem is higher than implicit self-esteem, can be understood as false-inflated self-esteem; some authors also use the term 'defensive' self-esteem (e.g. Sandstrom & Jordan, 2008) or 'fragile' self-esteem (e.g. Schroder-Abe *et al.*, 2007).

There is some evidence that defensive self-esteem is related to psychopathology. In a study using a self-esteem IAT and a questionnaire measuring self-presentation bias, Lambird and Mann (2006) found that defensive self-esteem predicted poor self-regulation after ego-threat, and in a study using

the Name Letter Task Kernis *et al.*, (2008) found that defensive self-esteem was related to verbal defensiveness. Evidence in more direct support of the proposed link between defensive self-esteem and aggression is provided by the study conducted by Sandstrom and Jordan (2008). This study found a positive association between children's explicit self-esteem and teachers' reports of aggression when levels of implicit self-esteem (measured using an IAT) were low but not when levels of implicit self-esteem were high. To date, this appears to be the only published study exploring the relationship between discrepant implicit-explicit self-esteem and aggression.

Domains of Implicit Self-Esteem and Aggression

Implicit self-esteem is often understood as a 'unidimensional evaluation of the self' (Sakellaropoulo & Baldwin, 2007, p.995), and equivalent to implicit global self-esteem. However, as with explicit self-esteem, it could be argued that implicit self-esteem should be regarded as a dimensional rather than a global construct. There is little research exploring the idea of domains of implicit self-esteem, however there is some evidence to provide support for this conceptualization.

In a comparison of seven different measures of implicit self-esteem (IAT, Subliminal Attitude-Prime Task, Supraliminal Attitude-Prime Task, Stroop Colour-Naming Task, Implicit Self-Evaluation Survey, Initials and Birthday Preference Tasks), Bosson *et al.* (2000) found that there were no significant correlations between them. While the authors note that this might reflect a number of issues (for example that some or all of the measures do not actually measure implicit self-esteem) they also raise the possibility that the different measures may be accessing different aspects of implicit self-esteem, and that implicit self-esteem may be a 'complicated and multi-faceted construct' (p.640).

Campbell *et al.* (2007) noted that many self-esteem IATs tend to use words which activate participants' communal self-views (eg 'friend') rather than agentic self-views (eg 'assertive'). They created three different IATs which were designed to measure implicit agency, communion and self-esteem (the self-esteem IAT included equal numbers of agentic and communal words). They found that narcissism was positively correlated with implicit agency and the self-esteem IAT, but not with the communal IAT. This suggests that implicit agency and implicit communion may reflect two different aspects of implicit self-esteem.

Sakellaropoulo and Baldwin (2007) suggest that implicit self-esteem has at least two domains; self-liking and self-attractiveness. Self-liking refers to implicit communal-based self-evaluation, which the authors note is similar to Kirkpatrick and Ellis' (2002) concept of social inclusion. Self-attractiveness refers to implicit agency based self-evaluation, which the authors note is similar to Kirkpatrick and Ellis' (2002) concept of superiority. The authors conducted a study looking at the relationship between implicit self-liking and implicit self-attractiveness and self-reported aggression using the Name Letter Task. They found that a combination of high implicit self-attractiveness but low implicit self-liking predicted aggressive thoughts and feelings; mirroring the findings for explicit measures of superiority and social inclusion found by Kirkpatrick and Ellis (2002).

In summary, there is some evidence to suggest that implicit self-esteem may be best understood as a multi-dimensional concept and that different domains of implicit self-esteem may relate to aggression in different ways. If Kirkpatrick and Ellis's (2002) conceptualization of explicit self-esteem is applied to implicit self-esteem this would mean that implicit self-esteem should be understood in terms of the domains of implicit superiority, implicit mate value and implicit social inclusion. In the same way that it is hypothesised that defensive global self-

esteem may be associated with aggression, it is also possible that defensive domains of self-esteem may be associated with aggression.

The Limitations of Existing Research

The existing research into the relationship between self-esteem and aggression has a number of limitations. It is particularly important to review these as they may have a bearing on the lack of consistency in the research findings. Some of the potential limitations of the research (for example the issues around the conceptualization and measurement of self-esteem) have been mentioned earlier and will not be repeated here.

In the majority of studies exploring the relationship between self-esteem and aggression in adults, participants have been university students. While studying this population has a number of advantages, not least their relative accessibility, university students may not be representative of the type of populations where interventions around aggression are most needed and most relevant (Ostrowsky, 2009). Very few studies (e.g. Cale & Lilienfeld, 2006) have studied forensic populations or other populations where aggression is a clearly identified issue. A further limitation of the research is that most of the studies are American or European, and there is evidence of cultural effects both in self-esteem and in aggressive behaviour (Archer, 2006; Spencer-Rodgers *et al.*, 2004).

Gender differences in self-esteem and aggression have received considerable attention from researchers and theorists (eg Bjorkvist, 1994; Archer, 2004; Kling *et al.*, 1999), and there is considerable evidence that men show both higher levels of aggression and higher levels of self-esteem than women. However, potential gender differences in the *relationship* between self-esteem and

aggression have received very little attention (Ostrowsky, 2010). Most existing research exploring the relationship between self-esteem and aggression either does not report or did not find any gender differences in the relationship between self-esteem and aggression, and Baumeister *et al.* (2000) suggest that, although the majority of research into violence has focused on men, 'it seems reasonable to assume that violent women conform to similar patterns' (p. 26). In those studies which have reported gender differences the effect of gender appears to be relatively small, however the results are conflicting. In a cross-sectional survey of students and internet users in Germany, Von Collani *et al.* (2005) found that low global self-esteem was related to self-reported aggression in both men and women, but that the relationship between low global self-esteem and aggression was much stronger in women. In a cross sectional survey of undergraduates, Webster (2007) found that global self-esteem was negatively, and narcissism was positively, associated with self-reported aggression in men and women. These relationships became stronger when controlling for gender, and the effects of gender and self-esteem on aggression were also mutually suppressive. The negative effect of self-esteem on verbal aggression was stronger for men than for women. In another questionnaire based study with undergraduates, Webster and Kirkpatrick (2007) found complex relationships between gender and the relationship between global self-esteem and aggression. They found that either low global self-esteem or high self-esteem instability was related to attitudinal aggression in men, but that in women it was a combination of both low self-esteem and high self-esteem instability that was related to attitudinal aggression. The authors suggest that these results indicate that men have a lower threshold for aggression than women. In one of the few studies that explored gender differences in the relationships between different domains of self-esteem and aggression, Diamantopoulou *et al.* (2008) examined the relationship between self-esteem and peer or teacher nominated aggression in 12 year olds. They found that there were no gender differences in the relationship between global self-esteem and aggression, but that exaggerated self-evaluations of social competence (relative to peer ratings of social

competence) were more strongly related to aggression in boys than in girls. Ostrowsky (2010) notes that the evidence for gender differences in the relationship between self-esteem and aggression is conflicting and there is a need to 'disentangle the gender dynamics surrounding the relation between self-esteem and violent behavior'.

Most studies have used self-report measures or observations in laboratory based experimental situations to measure aggression. While it is clearly difficult to obtain objective data about aggressive behaviour for many populations, self-report measures and behavioural experiments lack ecological validity, and in the case of self-report, may be subject to impression management. A relatively small number of studies use more objective measures such as criminal convictions (e.g. Trzesniewski *et al.*, 2006) or observer reports (e.g. Donnellan *et al.*, 2005). Salmivalli (2001) also notes that most research does not distinguish between different types of aggression, which is an issue as self-esteem may relate to different forms of aggression in different ways. For example, proactive aggression can be regarded as being about showing people 'who's on top' (Raine *et al.*, 2006) and proactively aggressive children tend to have negative peer social status (Brown *et al.*, 1996). It might therefore be expected that high superiority and low social inclusion would be particularly associated with proactive rather than reactive aggression. It could also be argued that defensive self-esteem would be most strongly associated with reactive aggression, as this type of aggression is about reacting to perceived provocation.

Lastly, many of the studies are cross-sectional in design, which provides only limited evidence of causal relationships.

Implications for Psychological interventions for Aggression

Considerable time and resources have been invested in trying to find effective interventions for people exhibiting problematic levels of aggression (McGuire, 2008). There is evidence for a link between self-esteem and aggression and although there is little consensus on the exact nature of this link as yet, self-esteem may be an important area to focus on when designing interventions for the treatment of aggression. There are a number of evidence based interventions for the treatment of low self-esteem, and it may be that elements from these could form an important part of treatment programs for aggression (e.g. Warren *et al.*, 1988). However, it is clearly essential that the true nature of the link between self-esteem and aggression is understood, as an intervention which focuses on increasing self-esteem may be effective if low self-esteem is linked to aggression, but it could be ineffective or even detrimental if high self-esteem is implicated in aggression (Baumeister *et al.* 1996). Similarly, a better understanding of whether particular domains of self-esteem are related to aggression would allow interventions to be more targeted, and if defensive implicit/explicit self-esteem is related to aggression then this too has practical implications. Improving implicit self-esteem may require a different type of intervention than that required to enhance explicit self-esteem and would certainly provide different challenges, as an individual with defensive self-esteem might feel threatened by any suggestion that their self-esteem was not as high or robust as they presented. Walker and Bright (2009a) describe a cognitive approach to the treatment of aggression which is based on the assumption that important cognitions relating to violence also relate to self-esteem and the protection of (false inflated) low self-esteem in the face of humiliation. There is some evidence to suggest that implicit self-esteem can be enhanced by classical conditioning; where self-relevant information is repeatedly paired with positive stimuli (e.g. smiling faces) (Dijksterhuis, 2004; Baccus *et al.*, 2004). Baccus *et al.* also found that participants with low explicit self-esteem who completed the conditioning task reported significantly lower levels of aggressive thoughts and

feelings compared with their counterparts in the control condition. However, it should be noted that the researchers did not conduct any measures of aggressiveness prior to the conditioning task; therefore it is possible that the experimental group had lower levels of aggression to begin with. It is also not known whether the effects of the conditioning task were maintained for any significant length of time. However, this study suggests that interventions specifically targeted towards implicit self-esteem may be possible.

SELF-ESTEEM AND AGGRESSION IN CARE LEAVERS

As discussed earlier, most studies exploring the relationship between self-esteem and aggression have used non-clinical populations or have focussed exclusively on forensic populations where aggression and violence have a high incidence. This study focuses on young people leaving care in order to try and address this issue and because there is a need to gain a better understanding of the psychological needs of this vulnerable and under researched population. Although care leavers are not defined as a clinical population they have high levels of mental health and social needs. As yet there has been little research exploring the levels of self-esteem and aggression amongst care leavers; however the following section discusses what is currently known.

Care Leavers and Self-Esteem

Given the difficult experiences of young people who have been in care, it might be expected that care leavers would tend to report lower self-esteem compared to the general population. Much of the literature works on this assumption; for example Rees (2006) notes that poor self-esteem is common amongst looked after children and relates this to a history of poor attachments. However, it is difficult to find research which specifically focuses on self-esteem in care leavers,

as the majority of the research exploring the health and well being of care leavers focuses on more concrete outcomes such as psychiatric diagnoses, housing and education. The small body of research which examines self-esteem in looked after children is inconclusive. In a postal survey of professional and kin carers, Stanley (2007) found that low self-esteem, together with anxiety and fearfulness, was identified as being the most common mental health problem amongst looked after children and young people. This research supports earlier findings from a file review study by Stanley *et al.* (2005), who found that 45-50% of the looked after children in their sample had low self-esteem. However, it should be noted that neither of these studies used formal measures of self-esteem, and in contrast, a study which did use a formal self-esteem measure found that most looked after children in their study had 'well preserved global self-esteem' (Blower *et al.*, 2004). Blower *et al.* found that the looked after children tended to score most highly in the domain of social self-esteem, and most poorly in the domain of behaviour. The authors note that this echoes previous research from Lyman and Bird (1996) which also found that adolescents in foster care showed higher scores on their social domain of self-concept compared to other dimensions. An additional study by Flynn and Legault (2003, cited in Legault *et al.*, 2006) also found that there was little difference between the levels of self-esteem of 10-15 year olds in care in Canada and children of equivalent age in the general population.

Care Leavers and Aggression

Care leavers are over represented in the prison population; compared to the general population, prisoners are 13 times more likely to have been in care as a child (Social Exclusion Unit, 2002). Although there is no information available about the proportion of these care leavers who were convicted of aggressive

crimes, the experience of clinicians working with care leavers suggests that there is a high level of violence and aggression amongst this client group (E. Andrew, personal communication, 23 April 2010). In a study of service outcomes and costs for young people leaving care Dixon *et al.* (2004) found that the costs incurred from the involvement of youth justice were similar to those of social services once the cost of accommodation had been excluded. Clear research evidence about the prevalence and level of aggression amongst care leavers is lacking, however there are a number of factors which suggest that care leavers may be particularly vulnerable to engaging in aggressive behaviour.

It is notable that many of the risk factors associated with aggression which were outlined earlier, for example hyperactivity in childhood, substance abuse, low socioeconomic status, childhood neglect, trauma, early attachment difficulties and parental violence are particularly common amongst children and young people in care (McCann *et al.*, 1996; Meltzer *et al.*, 2003; Department of Health, 2009; Welsh Assembly Government, 2010). In addition, conduct disorder, which includes persistent aggressive behaviour as one of the possible diagnostic criteria (American Psychiatric Association, 2000), is one of the most common psychiatric diagnoses in looked after children (McCann *et al.*, 1996; Blower *et al.*, 2004); Meltzer *et al.* (2003) found that 40% of 11-15 year olds in local authority care had a clinically significant conduct disorder, compared to just 6% of children of the same age in private households. In a report describing a mental health service for young people in care, Arcelus *et al.* (1999) found that aggressive behaviour was one of the main reasons for referral to the service, and Stanley's (2005) study found that anger and aggression, together with low self-esteem, were the most frequently identified mental health problems. There is evidence that aggression and conduct disorders in childhood are predictive of aggression in adulthood (Loeber, 1997; Copeland *et al.*, 2007).

SUMMARY

In summary, care leavers have typically been subject to very adverse childhood experiences and have high rates of mental health and social problems. Although there is a lack of information about the prevalence and level of aggression amongst care leavers, there is evidence to suggest that aggression may be a particular issue for this population. Providing appropriate support to care leavers is challenging and resource intensive and issues with aggression are likely to magnify this. In addition to this a high proportion of care leavers have spent time in prison, which is likely to have a profoundly negative impact on them, as well as having a high social and financial cost to society. There has been little research into the psychological needs of care leavers despite the vulnerable nature of this population.

Existing research on the relationship between self-esteem and aggression presents inconsistent and, at times, contradictory findings. A number of explanations for these inconsistencies have been proposed (Ostrowsky, 2009). These include the failure to differentiate between explicit and implicit self-esteem and the use of global measures of self-esteem rather than distinguishing between different domains of self-esteem. The majority of the research in this area has also relied on samples of university students, which means that the findings may not be representative of other, more clinically relevant populations (Ostrowsky, 2009).

The aim of this study is to explore further the relationship between self-esteem and self-reported aggression in young care leavers, firstly in order to see whether existing research on non-clinical populations is replicated in the care leaving population and secondly, in order to begin to think more carefully about how to address violence and aggression amongst care leavers.

HYPOTHESES

This study will re-examine a number of existing hypotheses and explore a number of new hypotheses. The main hypotheses are outlined below:

Explicit global self-esteem and aggression

1. There will be a relationship between explicit global self-esteem and self-reported aggression

Domains of explicit self-esteem and aggression

2. There will be a positive association between self-perception of social rank and self-reported aggression
3. There will be a positive association between self-perceived relative attractiveness and self-reported aggression
4. There will be an inverse relationship between self-perceived group fit and self-reported aggression

Defensive self-esteem and aggression

5. There will be an interaction between levels of implicit and explicit global self-esteem such that individuals with high levels of explicit global self-esteem will report higher levels of aggression when levels of implicit global self-esteem are low, but not when levels of implicit global self-esteem are high.

6. There will be an interaction between levels of implicit and explicit self-perceived social rank such that individuals with high explicit self-perceived social rank will report higher levels of aggression when implicit self-perceived social rank is low, but not when implicit self-perceived social rank is high.
7. There will be an interaction between levels of implicit and explicit self-perceived attractiveness such that individuals with high explicit self-perceived attractiveness will report higher levels of aggression when implicit self-perceived attractiveness is low, but not when implicit self-perceived attractiveness is high.
8. There will be an interaction between levels of implicit and explicit self-perceived group fit such that individuals with high levels of explicit self-perceived group fit will report higher levels of aggression when levels of implicit self-perceived group fit are low, but not when levels of implicit self-perceived group fit are high.

Chapter Two

M E T H O D O L O G Y

Study Aims

The aim of this study was to explore the relationship between self-esteem and aggression in care leavers. Existing research presents inconsistent and occasionally contradictory findings, which may be due to the different ways that self-esteem has been conceptualised and measured. This study aimed to examine the relationship between aggression and several different forms of self-esteem: global self-esteem, domains of self-esteem and defensive self-esteem.

Design

The study used a cross-sectional survey design to explore correlations between different forms of self-esteem and aggression. The study used implicit association tests designed specifically for this research and standardized self-report questionnaires.

Power Analysis

There are no published studies exploring the relationship between implicit self-esteem and aggression in adults, however data from a pilot study with female psychiatric inpatients by Snowden and Gray (study in progress) found that the self-esteem IAT correlated at rates of $r = .30$ to $.70$ with various measures of aggression (medium to large effect sizes using Cohen's criteria: Cohen, 1992). There is a number of studies exploring the relationship between explicit self-esteem and aggression; however, there is considerable variation in the effect

sizes. In one of the largest and most sophisticated studies Donnellan *et al.* (2005) found an association of $r = .30$ (medium effect size using Cohen's criteria: Cohen, 1992). It was therefore concluded that it would be appropriate to power the study to be able to detect a medium effect size ($r = .30$). Hence, using standard parameters of $\alpha = .05$ and 80% power, this study aimed to collect data from 68 participants (Table 3.3.2, Cohen, 1988, p.83).

Participants

The participants comprised of 57 young people over the age of 18 who were under the care of Leaving Care Teams in the five local authorities in Gwent: Newport, Caerphilly, Blaenau Gwent, Monmouthshire and Torfaen. Unfortunately time limitations meant that it was not possible to recruit the full target of 68 participants. Individuals for whom English was not a first language or who had visual, auditory, physical or intellectual impairments which would impair their ability to complete IATs or questionnaires were excluded from the study. Individuals with an active severe mental illness such as psychosis, or who were identified by themselves or by the interviewer as being intoxicated at the time of interview were also excluded from the study as both conditions were likely to impair their ability to complete the questionnaires and IATs. The Leaving Care Teams were asked to apply these exclusion criteria when identifying potential participants, therefore numbers of participants excluded for these reasons were not available. Four potential participants identified by the teams did not take part in the study. This was due to a variety of issues including problems arranging a suitable time to meet or individuals having significant difficulties understanding the measures. The number of participants from each Leaving Care Team is shown in Table 1.

Table 1: Data collected from each Leaving Care Team

Leaving Care Team	Number of Participants
Caerphilly Aftercare Team	11
Blaenau Gwent Team	9
Monmouth Through Care Team	12
Torfaen 16+ Team	13
Newport Aftercare Team	12
Total:	57

A pilot study was carried out with five participants to ensure that the research procedure was acceptable and effective. Subsequent to this pilot some small changes were made to the IAT (the target words 'my' and 'themselves' were replaced with 'I' and 'others' respectively to ensure that the items within the 'others' and 'self' categories did not all start with the same word; see Nosek *et al.*, 2007). All other aspects of the study were found to be acceptable; therefore the data from the questionnaires (but not the IATs) were included with the data from the main study.

Four participants in the main study failed to complete a full set of IATs. There were a number of reasons for this, including participants having significant difficulties concentrating or understanding the words used in the IATs and the data collection sessions being interrupted. For example, some of the female participants had their children present during the data collection sessions because no other care arrangements were available, making it difficult for them to concentrate. In addition to this, IATs where more than 10% of the trials had a latency of less than 300ms were excluded from the data set in accordance with the scoring guidelines proposed by Greenwald *et al.* (2003). The number of datasets for each of the measures under investigation are shown in Table 2.

Table 2: Number of data sets for each measure

Participants	Explicit Measures			Implicit Self-esteem Measures (IATs)			
	RPQ	RSES	SCS	Global Self-Esteem	Group Fit	Social Rank	Relative Attractiveness
Total Sample	57	57	57	51	48	46	42
Male Participants	25	25	25	21	20	20	18
Female Participants	32	32	32	30	28	26	24

MEASURES

Demographics Questionnaire

This was a brief questionnaire which was designed for the purposes of this study and was used to record demographic information about the participants, including information about gender, ethnicity and whether they had ever been warned, cautioned, charged or convicted for a violent offence.

Rosenberg Self Esteem Scale (RSES; Rosenberg, 1965)

The RSES is a widely used measure of global self-esteem. Respondents use a four-point Likert scale (strongly agree/agree/disagree/strongly disagree) to rate five positive and five negative self worth statements. The scale has been shown to generally have high reliability: test-retest correlations are typically in the range of .82 to .88, and Cronbach's alpha for various samples are in the range of .77 to .88 (Blascovich & Tomaka, 1993; Rosenberg, 1986).

The Social Comparison Scale (SCS; Allan & Gilbert, 1995)

The SCS is an 11-item semantic differential type scale that measures the individual's judgement of their social rank (e.g. inferior-superior; incompetent-competent; untalented-more talented etc), relative attractiveness (e.g. unlikeable-likeable; undesirable – more desirable), and group fit (left out-accepted; different-same). Higher scores on this scale represent higher self-perceived ranking. In this study the Social Comparison Scale is used as a self-esteem measure; although it was not specifically designed for this purpose the subscales can be seen as equivalent to the domains of self-esteem identified by Kirkpatrick and Ellis (2002): superiority, mate-value and social inclusion. The authors of the scale report a Cronbach's alpha coefficient of .91 in a sample of college students (n = 263), and of 0.88 in a sample of individuals with "non-psychotic depression and anxiety disorders" (Allan & Gilbert, 1995, p294).

Reactive-Proactive Aggression Questionnaire (RPQ; Raine, *et al.* (2006); adapted by Snowden, 2010)

This scale assesses proactive and reactive aggression. It consists of 23 items: eleven items which measure reactive aggression, and twelve items which measure proactive aggression. Items are rated on a 0–2 scale (0 = never, 1 = sometimes, 2 =often). The original questionnaire was developed for use in the USA and was adapted for use with adults in the UK by Snowden (2010). The internal reliability coefficients of the RPQ total questionnaire, reactive subscale of the RPQ, and proactive subscale of the RPQ are .90, .81, and .84 respectively (Raine *et al.*, 2006). Miller and Lynam (2006) found slightly lower Cronbach's alphas for the two subscales, .74 and .78 for the proactive and reactive subscales, respectively.

Wechsler Test of Adult Reading (WTAR UK, Wechsler, 2001)

This reading test is composed of a list of 50 words that have atypical grapheme to phoneme translations. It allows pre-morbid level of intellectual functioning to be estimated in individuals aged between 16 to 89 years. The WTAR has good internal consistency for the various age groups with coefficients ranging from .87 to .95 for the UK standardisation sample. Test retest correlations have been shown to be good (>.90) and practice effects minimal (Wechsler, 2001). Cognitive abilities have been found to have a confounding influence on the IAT effect (Teige-Mocigemba *et al.*, 2010). Although the scoring method proposed by Greenwald *et al.*, (2003) has been shown to be less susceptible to cognitive abilities than the conventional score (Teige-Mocigemba *et al.*, 2010), the WTAR data allows the participants' cognitive abilities to be factored into the data analysis.

Implicit Association Test (IAT; Greenwald, McGee & Schwartz, 1998)

Participants were asked to complete four IATs; each of which aimed to measure a different domain of self-esteem: global self-esteem, social rank, group fit and relative attractiveness. For the sake of clarity in the results and discussion sections the IAT scores are treated as measures of implicit self-esteem, however it should be noted that the IATs have not been validated and it has not been confirmed that the scores do in fact reflect levels of implicit self-esteem (this is discussed further in Chapter Four).

Selection of IAT Words

The same set of target category labels and stimulus words were used in all four IATs; however each IAT used different sets of attribute category labels and stimulus words depending on the particular domain of self-esteem under investigation. The words for the IATs were selected using the following process:

1. Potential target category labels and stimulus words were initially drawn from existing English language studies which used self-esteem IATs (Jordan *et al.*, 2005; Pinter & Greenwald, 2005).
2. Potential attribute category labels and stimulus words for the global self-esteem IAT were drawn from the same sources.
3. Potential attribute category labels and stimulus words for the group fit, social rank and relative attractiveness IATs were initially identified from the terms used in relevant papers (Allan & Gilbert, 2002; Leary *et al.*, 2006; Archer, 2006; Kirkpatrick & Ellis, 2002; Webster & Kirkpatrick, 2006). An online thesaurus (www.thesaurus.com) and consultation with five trainee clinical psychologists were then used to identify additional synonyms.
4. All potential stimuli words and category labels were then reviewed with three care leavers. Words which the care leavers found unfamiliar or were difficult to understand or read were excluded, as were words which the care leavers felt were not strongly associated with a particular category (Nosek *et al.*, 2007).
5. The final sets of words (see Table 3) were selected following the guidance provided by Nosek *et al.* (2007). For example the use of gendered words (such as 'beautiful') was avoided, and stimulus words were selected in an attempt to ensure that they would be categorized on the basis of their nominal features rather than on the basis of any irrelevant features such as word length. The number of stimulus words per category was restricted to four, due to difficulties identifying suitable words for the social rank,

group fit and relative attractiveness IATs. Nosek *et al.* (2005) found that IAT effects were robust with even smaller numbers of stimuli per category.

6. The final sets of words were piloted as a word sorting task with five lay people (two sixteen year olds and three adults from professional backgrounds) to ensure that the stimuli would be categorized appropriately. The sixteen year olds (with the permission of their parents) were asked to pilot the word sorting tasks as it was hoped that there would be a degree of similarity between their levels of literacy and their use of language and those of the participants.

Table 3: Words used in the four IATs

Attribute Stimulus Words				Target Stimulus Words
Global Self-Esteem IAT	Group Fit IAT	Social Rank IAT	Relative Attractiveness IAT	Used in all four IATS
<p><i>Pleasant</i></p> <ul style="list-style-type: none"> • Peace • Happy • Sunshine • Joy <p><i>Unpleasant</i></p> <ul style="list-style-type: none"> • Disaster • Stink • Vomit • Evil 	<p><i>Fitting in</i></p> <ul style="list-style-type: none"> • Belong • Included • Accepted • Welcome <p><i>Left out</i></p> <ul style="list-style-type: none"> • Outsider • Rejected • Unwelcome • Excluded 	<p><i>Powerful</i></p> <ul style="list-style-type: none"> • Leader • Respected • Strong • Confident <p><i>Powerless</i></p> <ul style="list-style-type: none"> • Pathetic • Weak • Failure • Useless 	<p><i>Attractive</i></p> <ul style="list-style-type: none"> • Sexy • Gorgeous • Lush • Model <p><i>Unattractive</i></p> <ul style="list-style-type: none"> • Hideous • Vile • Repulsive • Ugly 	<p><i>Self</i></p> <ul style="list-style-type: none"> • Me • I • Mine • Myself <p><i>Others</i></p> <ul style="list-style-type: none"> • Those • They • Them • Others

*Words in italics denote the category labels which participants were required to use to categorise each of the stimulus words.

Structure of the IAT

The basic structure of the standard IAT procedure (described by Greenwald *et al.*, 2003) was used for all four IATs (see Table 4). The procedure for the global self-esteem IAT is described below; the other three IATs followed the same structure. As the main goal of the study was to explore individual differences, all

elements of the procedure (including the order of the blocks and trials) were identical for all participants in order to avoid confounds from position and order effects (Banse *et al.*, 2001).

Table 4: Sequence of blocks in the global self-esteem Implicit Association Test
(adapted from Greenwald *et al.*, 2003)

Block	Number of Trials	Item assigned to left hand key response	Item assigned to right hand key response
1	16	Others	Self
2	16	Unpleasant	Pleasant
3	16	Others + Unpleasant	Self + Pleasant
4	32	Others + Unpleasant	Self + Pleasant
5	40	Self	Others
6	16	Self + Unpleasant	Others + Pleasant
7	32	Self + Unpleasant	Others + Pleasant

Participants were required to categorize target and attribute words appearing in the centre of the screen as quickly and accurately as possible by pressing either a key on the right hand side of the keyboard ('K') or a key on the left hand side of the keyboard ('D'). Throughout all the trials the relevant target ('self' vs 'others') and attribute ('pleasant' vs 'unpleasant') category labels were displayed on the upper right or left hand side of the screen as appropriate, in order to act as a reminder of the correct response key. Greenwald *et al.* (1998), note that whether a particular category is assigned to the left or right response key has no significant effect on IAT measures.

Different coloured fonts (blue for target words and green for attribute words) were used to highlight whether words were to be categorized according to the target or attribute category labels (Nosek *et al.*, 2007). Words were presented in a random order, however in blocks which included both attribute and target words (blocks three, four, six and seven), target and attribute words were presented alternately to provide a predictable pattern for switching between the relevant feature judgements (Nosek *et al.*, 2007). In block one each target word was presented

twice to make a total of 16 trials. In block two each attribute word was presented twice to also make a total of 16 trials. Each target and attribute word was presented once in blocks three and six (making a total of 16 trials in each block) and twice in blocks four and seven (making a total of 32 trials in each block). In block 5 each target word was presented five times, making a total of 40 trials in this block. .

Instructions were displayed on the screen at the beginning of each block and participants were prompted to ask the researcher if they had any questions. A fixation point was displayed in the centre of the screen for 250ms prior to the presentation of the first stimulus word in each block. Stimulus words were then displayed one at a time in the centre of the screen. The words remained on the screen until the correct key was pressed; if an incorrect key was pressed a red 'X' appeared under the stimulus word to indicate the error. A delay of 150ms occurred between the presentation of each stimulus word.

Block one and two were practice blocks to familiarize participants with the procedure and correct response keys. In block one, participants were required to categorize target words into the appropriate category ('self' or 'others'). In block two participants were required to categorize attribute words (pleasant or unpleasant). In blocks three and four, participants were required to categorise both target and attribute words; 'self' and 'pleasant' words were categorized using the same key, and 'others' and 'unpleasant' words were categorized with the other key. Block five was another practice block; participants were required to categorize target words only, but the response keys were reversed. In blocks six and seven, participants were required to categorize both target and attribute words again; the response key for the attribute words remained unchanged from the earlier blocks however the response key for the target stimuli remained reversed. Thus in blocks six and seven 'self' and 'unpleasant' words were

categorized using the same key, and 'others' and 'pleasant' words were categorized using the other key.

PROCEDURE

Approval was obtained from Cardiff and Vale University Health Board Research and Development Office. Gwent Research and Development Office was also contacted about the study, but no formal approval was required as no NHS patients or staff were involved. As no social care ethical review system was in place in Wales, ethical approval was obtained from Dyfed Powys NHS Research Ethics Committee. Permission to conduct the research was also obtained from the managers of each Leaving Care Team and from the service managers at each Local Authority.

As part of the process of designing the study, five care leavers were asked to review the research protocol, participant information sheet, consent form and research flyer to provide feedback about the proposed research procedure and the accessibility of the information to be provided to participants. The participants agreed that the aim and design of the research was acceptable and some minor aspects of the design were adjusted in light of their suggestions.

A meeting was held with all five Leaving Care Team managers to discuss the research procedure and data collection. Professionals from the Leaving Care Teams were asked to inform the young people in their services about the project and to give them a flyer which provided brief details about the study. Staff were requested to record the contact details of any potential participants (with the permission of the young people) on the 'Participant Details Sheet'; meetings with potential participants were then arranged either through the Leaving Care Team

staff, or directly by the researcher. Meetings were held at the Leaving Care Team base, or at a location mutually agreed by the researcher and potential participant. Locations included the participants' homes or quiet cafés; the Cardiff and Vale lone worker policy was employed where meetings were held away from social services premises.

During the meeting with the researcher the study was explained and the young person was given an information sheet and the opportunity to ask any questions. The voluntary nature of the study was emphasized, and participants were encouraged to take as much time as they wished to decide whether they wished to take part. Individuals who agreed to take part completed a consent form, a copy of which was retained by the participant.

The measures were completed in a predetermined order (see Table 5); Nosek *et al.* (2005) found no systematic effects of the order of implicit/explicit self-esteem measures. The administration of the IATs and the questionnaires were alternated in order to provide a clear break between tasks and to prevent them becoming monotonous. Prior to each IAT, participants completed a word-sorting task with the IAT stimuli presented on a series of flashcards. This provided the opportunity to ensure that participants were able to read and understand the words and able to categorize them appropriately. The researcher provided clarification if necessary, however if participants continued to have significant difficulties with the word sorting task the equivalent IAT was not administered. During the word sorting task it was emphasized that the target category 'others' referred to other people generally, in order to try and avoid participants associating the term with specific individuals with whom they might have particularly positive or negative associations (Karpinski, 2004). Participants were given support completing the questionnaires where required.

Table 5: Order of administration of measures

	Measure
1.	Rosenberg Self-Esteem Questionnaire (RSES)
2.	Reactive-Proactive Aggression Questionnaire (RPQ)
3.	Global Self-Esteem word sorting task
4.	Global Self-Esteem IAT
5.	Background information questionnaire
6.	Group Fit word sorting task
7.	Group Fit IAT
8.	Social Comparison scale
9.	Social Rank word sorting task
10.	Social Rank IAT
11.	Wechsler Adult Reading Test
12.	Relative Attractiveness word sorting task
13.	Relative Attractiveness IAT

Completion of all the measures took approximately 50 minutes. On completion the participants were thanked and given the opportunity to ask any questions. Participants were also given a debrief sheet and an information sheet providing contact details for local mental health services and help lines. Each participant was paid £5 in recognition of the time and effort they contributed to the research. This was thought to be important as young care leavers are a relatively disempowered group and, in an earlier research project with young care leavers, Broad and Saunders (1998) concluded that paying participants prevented them from 'feeling used'. All participants were given the option to receive a summary of the research findings on completion of the study.

This study was carried out in parallel with another, unrelated, study which was being conducted by another trainee clinical psychologist. In some cases participants had taken part in the other study (which involved completing a number of questionnaires about relationships and mental state) immediately before taking part in this study. Participants were offered a break and refreshments between the studies and were also offered the opportunity to postpone participation until another occasion.

PRELIMINARY DATA ANALYSIS

Except where otherwise stated, all data were analysed using the Statistical Package for the Social Sciences software (SPSS) version 18. The preliminary data analyses are described below.

Calculating the Implicit Association Test Scores

The implicit association tests were developed using Superlab (version 4.0) software. This software records the time taken for participants to respond to the presentation of each stimulus (ie each trial) and whether the response is correct, erroneous or self correcting following a previously erroneous response. Prior to any more detailed analysis, the data for each IAT was transferred into an excel spreadsheet. For each trial where there was initially an erroneous response, the error response time and the self correcting response time were summed to provide a total time taken to provide a correct response. The data was then checked to ensure that no errors had been made within this process (by comparing the sum of response times for the raw and the transformed data in each block of trials). Each IAT was then scored using the following procedure, as suggested by Greenwald et al (2003):

1. Data was screened to remove any IATs where more than 10% of the trials had a latency of less than 300ms
2. Any trials with response times greater than 10,000 ms were removed
3. Data was then transferred to SPSS (version 18) for further analysis.
4. The 'inclusive' standard deviation was calculated for all trials in blocks 3 and 6
5. The 'inclusive' standard deviation was calculated for all trials in blocks 4 and 7

6. The mean response times for each of the blocks 3,4,6 and 7 were calculated
7. The difference between the mean of block 6 and the mean of block 3 (mean block 6 – mean block 3) was calculated
8. The difference between the mean of block 7 and the mean of block 4 (mean block 7 – mean block 4) was calculated
9. Each difference score was divided by its associated 'inclusive' standard deviation
10. The equal-weight average of the two resulting ratios was then calculated to give the D-score

This scoring procedure is now widely used, and has been designed to optimize internal consistency, give higher correlations with explicit measures and be more resistant to some of the external influences on the IAT procedure (Teige-Mocigemba *et al.*, 2010).

Calculating Explicit/Implicit Self-Esteem Discrepancies

In order to investigate the relationship between defensive self-esteem and aggression, it had been hoped that it would be possible to carry out a between groups analysis with a subsample of participants who reported high levels of explicit self-esteem, in order to compare whether individuals with high explicit, but low implicit, self-esteem (i.e. defensive self-esteem) reported higher levels of aggression than those with equally high levels of explicit and implicit self-esteem (ie secure high self-esteem). However, due to the limitations of the sample size it was not possible to complete this type of analysis and an alternative approach, outlined below, was used.

A measure of the discrepancy between explicit and implicit self-esteem was calculated following a similar method to that outlined by Gailliot and Schmeichel (2006). The scores for all the implicit and explicit measures of self-esteem were converted to z-scores in order to standardize the data. A measure of the discrepancy between implicit and explicit self-esteem was calculated by subtracting the z-score for the implicit measure from the z-score of the equivalent explicit measure (eg SCS Social Rank z-score - Implicit Social Rank IAT z-score). This score indicated both the size and direction of the discrepancy between the explicit and implicit self-esteem scores. A positive score indicated defensive self-esteem (high explicit plus low implicit self-esteem), a negative score indicated damaged self-esteem (low explicit plus high implicit self-esteem) and a zero score indicated secure self-esteem (congruent explicit/implicit self-esteem).

Considerations for Statistical Analysis

The data were screened for any data entry errors using descriptive statistics and visually inspected for any outliers using histograms and box plots. A number of outliers were identified and these were checked to confirm that the data had been entered correctly and that the measures had been completed correctly by the participants. All the results were feasible.

The data from the continuous variables were assessed for normality through a visual inspection of histograms and by calculating the degree of skew and kurtosis following the guidance provided by Field (2009). Both the total data set and the subsets of male and female data were assessed for normality. The majority of the key variables (including scores on the Reactive-Proactive Aggression Questionnaire) did not appear to be normally distributed. Consequently all analyses incorporating these variables were performed using

non-parametric methods. This included all the analyses examining the main research hypotheses. The use of non-parametric analyses negated the need to remove the outliers (as they would have been ranked in the same position regardless of their distance from the mean). Parametric statistics were used elsewhere where appropriate. Outliers were retained for the parametric analyses as they were deemed to be feasible results and individuals with extreme aggression and self-esteem scores were of particular interest in this study. This also ensured that the same sample was used in all analyses.

The data were analysed using correlational analyses. One or two-tailed tests were used depending on whether predictions were being made about the direction of the relationship under investigation.

Chapter Three

R E S U L T S

Overview of the Chapter

This chapter presents the results of the data analyses performed to explore the relationships between aggression and different forms of self-esteem in care leavers. More details of the statistical considerations and how the analyses were carried out are given in the method section. This chapter begins with a description of the sample, including the levels of aggression and self-esteem found in this population. This is followed by a preliminary analysis of the relationships between the implicit and explicit self-esteem measures. The next section provides the results of the correlational analyses exploring the relationships between the different forms of self-esteem and aggression. These are presented in the following order: global self-esteem and aggression, domains of self-esteem and aggression, implicit self-esteem and aggression and finally discrepant self-esteem and aggression. The last section describes a supplementary analysis in which data from the male and female samples were analysed separately in order to explore gender differences in the relationships between self-esteem and aggression. These are addressed in the same order as before; global self-esteem and aggression, domains of self-esteem and aggression, implicit self-esteem and aggression and finally discrepant self-esteem and aggression.

DESCRIPTION OF THE SAMPLE

Age, Gender and Ethnicity

The participants were aged between 18 and 22, with a mean age of 19. 44% of the participants (n = 25) were male and 56% (n = 32) were female. Almost all the participants described their ethnicity as 'White Welsh' (n = 28) or 'White British' (n = 27). One participant described himself as 'Mixed Other' and one declined the opportunity to provide any information about her ethnicity.

Marital Status

The majority of participants described themselves as 'single' (77%, n = 44), while 21% (n = 12) were married or cohabiting. One participant did not provide any information about her marital status.

Education and Employment

Over half the participants were unemployed (55%, n = 32), while 32% (n = 18) were at college or in training, 11% (n = 6) were employed and one participant did not provide any information. Participants had an average of 2.7 GCSE passes, with a range of 0 – 10. On average participants had left school at 15 (range = 10 - 17 years). The mean standard score for participants on the Wechsler Test of Adult Reading (WTAR) was 81, with a range of 51 to 106. The high level of disruption to parenting and schooling experienced by this population is likely to have had a negative effect on their WTAR scores.

Level of Aggression

Almost half of all participants (46%, n = 26) reported that they had been warned, cautioned, charged or convicted of a violent offence at some point in their lives. This included a slightly higher proportion of male (52%, n = 13) than female participants (41%, n =13).

19% of the participants (n = 11), with an approximately equal gender split (male: n = 5; female: n = 6), reported that they had been warned, cautioned, charged or convicted of a violent offence within the last 12 months.

The participants' scores on the Reactive-Proactive Aggression Questionnaire (RPQ) are shown in Table 6.

Table 6: Participants' scores on the Reactive-Proactive Aggression Questionnaire

Measures	Total Sample (n = 57)		Male (n = 25)		Female (n =32)	
	Mean	SD	Mean	SD	Mean	SD
Total RPQ Score (n=57)	16.12 (46)	8.53	17.80 (46)	9.63	14.80 (46)	7.47
Proactive Aggression (n = 57)	4.11 (24)	4.29	5.60 (24)	5.06	2.90 (24)	3.20
Reactive Aggression (n = 57)	12.01 (22)	4.93	12.20 (22)	5.20	11.87 (22)	4.79

*maximum possible scores are shown in the brackets underneath the mean scores

In terms of the level of aggression, in the absence of data from an appropriately matched normative sample, it is difficult to comment on the severity of the difficulties experienced by this population, however the mean RPQ scores for participants in this study are certainly higher than those found in some other studies with non-clinical samples of a similar age. For example, in a study of university students in the USA, *Tharp et al.* (2011) found mean proactive aggression scores of 1.24 and mean reactive aggression scores of 7.12.

Statistical analysis using Mann-Whitney U Tests showed that there were no significant differences between the total RPQ scores ($U = 334.50, p = .29$) or reactive aggression scores ($U = 395.5, p = .94$) for male and female participants. However male participants reported significantly higher proactive aggression scores than female participants ($U = 242.50, p = .018$).

These findings are similar to those of Miller and Lynam (2006) who found that male university students had significantly higher proactive aggression, but not reactive aggression, scores compared to female students. However, the study by Tharp *et al.* (2011) found no gender differences in any of the RPQ scores.

Levels of Explicit Self-Esteem

Table 7 shows the participants' scores on the explicit self-esteem measures used in this study.

Table 7: Participants' scores on the explicit self-esteem measures

Measures	Total sample (n = 57)		Male (n = 25)		Female (n = 32)	
	Mean	SD	Mean	SD	Mean	SD
Rosenberg Self-Esteem Scale (n = 57)	17.02 (30)	6.36	20.04 (30)	4.83	14.66 (30)	6.47
Social Comparison Scale (n = 57)	61.87 (110)	15.93	70.8 (110)	13.34	54.91 (110)	14.34
Social Rank (n = 57)	5.67 (10)	1.45	6.58 (10)	1.22	4.96 (10)	1.21
Group Fit (n = 57)	5.71 (10)	1.67	6.36 (10)	1.55	5.21 (10)	1.60
Relative Attractiveness (n = 57)	5.46 (10)	1.84	6.27 (10)	1.75	4.83 (10)	1.68

*maximum possible scores are shown in the brackets underneath the mean scores

Statistical analysis using Mann-Whitney U Tests showed that males reported significantly higher scores than females in all aspects of self-esteem: global self-esteem ($U = 210.5, p = .002$), social rank ($U = 123, p < .000$) relative attractiveness ($U = 206.5, p = .002$) and group fit ($U = 236, p = .008$) as well as on the Social Comparison Scale total scores ($U = 170.5, p < .000$).

Overall, the mean total scores on the Rosenberg Self-esteem Scale were slightly lower than those recorded by Schmitt and Allik (2005) in a mixed college student and community sample in the UK. Male participants reported higher levels of self-esteem than their female counterparts; a pattern which has been found in other studies (Kling *et al.*, 1999). Mean total social comparison scale scores were also slightly lower than those reported by Cheung and Gilbert in (2004) in a sample of university students. As in Cheung and Gilbert’s research, male participants reported higher Social Comparison Scale scores than female participants; however the difference was more marked in the current study.

Levels of Implicit Self-esteem

The participants’ scores on the self-esteem IATs are shown in Table 8. Sample sizes vary and are shown in brackets under the names of each measure.

Table 8: Participants’ scores on the self-esteem IATs

Implicit Measures IAT D-scores	Total Sample		Male		Female	
	Mean	SD	Mean	SD	Mean	SD
Implicit Global Self-Esteem (n = 51)	0.67	0.33	0.64	0.34	0.69	0.33
Implicit Group Fit (n = 48)	0.47	0.33	0.55	0.35	0.42	0.31
Implicit Social Rank (n = 46)	0.24	0.37	0.28	0.40	0.22	0.35
Implicit Relative Attractiveness (n = 42)	0.35	0.32	0.42	0.35	0.30	0.30

The mean global self-esteem IAT D-score was slightly higher than that found in other studies (e.g. Pinter and Greenwald, 2005, recorded D-scores of .56 and .57 for a sample of university students). As this appears to be the first study to try and develop domain specific self-esteem IATs for social rank, group fit and relative attractiveness, there are no existing studies with which to compare the results of these IATs. There is a general reduction in the D-scores across the four IATs, however Nosek *et al.* (2007) note that there is a tendency for effect magnitudes with the IAT to decline with repeated administrations. It is therefore not possible to draw conclusions about participants' relative scores on the different IATs.

Statistical analysis using Mann-Whitney U Tests showed that there were no significant differences between male and female participants on any of the implicit self-esteem measures; global self-esteem ($U = 288, p = .61$), social rank ($U = 226, p = .45$), group fit ($U = 193, p = .07$) or relative attractiveness ($U = 169, p = .23$).

Relationships between WTAR Scores and All Measures

Correlational analyses were carried out to investigate whether there were any relationships between participants' WTAR standard scores (which give an indication of literacy levels and intellectual ability) and any of the variables under investigation. Two-tailed analyses were carried out as no predictions were made about the direction of any of the potential relationships. Spearman's or Pearson's correlational analyses were used as appropriate. It should be noted that the sample sizes vary and are shown in brackets under the names of each measure. As Table 9 illustrates, there were no correlations between the WTAR standard scores and any of the variables under investigation, indicating that intellectual

abilities and levels of literacy are unlikely to be confounding variables for the main analysis.

Table 9: Correlations between WTAR standard scores and all measures

Measure	Correlations with WTAR standard scores
Reactive-Proactive Aggression Questionnaire (RPQ) (n = 57)	$r_s = .02$ $p = .87$
RPQ Proactive Aggression (n = 57)	$r_s = -.01$ $p = .97$
RPQ Reactive Aggression (n = 57)	$r_s = .03$ $p = .81$
Rosenberg Self-Esteem Scale (n = 57)	$r_s = -.02$ $p = .92$
Social Comparison Scale (SCS) (n = 57)	$r_s = .07$ $p = .62$
SCS Social Rank (n = 57)	$r_s = .07$ $p = .64$
SCS Group Fit subscale (n = 57)	$r = .15$ $p = .29$ [PC]
SCS Relative Attractiveness (n = 57)	$r_s = -.00$ $p = .99$
Implicit Global Self-Esteem (n = 51)	$r_s = .05$ $p = .74$
Implicit Group Fit (n = 48)	$r = -.03$ $p = .83$ [PC]
Implicit Social Rank (n = 46)	$r = -.14$ $p = .39$ [PC]
Implicit Relative Attractiveness (n = 42)	$r = .22$ $p = .18$ [PC]

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

Spearman's correlational analyses were used unless indicated otherwise; **[PC]** indicates a Pearson's correlational analysis

RELATIONSHIPS BETWEEN THE SELF-ESTEEM MEASURES

A series of correlational analyses was conducted to explore the relationships between the implicit and explicit self-esteem measures. It should be noted that the sample sizes vary and are shown in brackets under the name of each measure.

Relationships between the Self-Esteem Implicit Association Tests

The implicit association tests were designed to measure different forms of self-esteem: global self-esteem and the domains of social rank, group fit and relative attractiveness. The relationships between the self-esteem IATs were investigated using Spearman's or Pearson's correlational analyses as appropriate. Two-tailed analyses were carried out as no prediction was made about the direction of any of the potential relationships.

There were positive correlations between the group fit IAT and the social rank and global self-esteem IATs (medium effect sizes using Cohen's criteria: Cohen, 1992), but no significant correlations between any of the other IATs. As the four IATs were all designed to measure aspects of self-esteem it might have been expected that they should all be correlated. However, as individuals may have very different implicit self-evaluations in different domains of self-esteem, it could also be argued that they should not be correlated. These results present mixed findings, suggesting that the group fit, social rank and global self-esteem IATs may be measuring related constructs, but that the remaining IATs may not be. However, it is also possible that the participants' IAT scores and therefore the degree of the correlation between the IATs, was affected by the order in which they were completed, possibly due to a reduction in the participants' levels of concentration over the course of the data collection session. It is notable that the

group fit IAT (which was correlated with two other IATs) was completed second while the attractiveness IAT (which was not correlated to any of the other IATs) was completed last.

Table 10: Correlations between the self-esteem IATs

Implicit Measures (IATs)	Implicit Global Self-esteem	Implicit Group Fit	Implicit Social Rank	Implicit Relative Attractiveness
Implicit Global Self-Esteem (n = 51)				
Implicit Group Fit (n = 48)	$r_s = .38^{**}$ $p = .007$			
Implicit Social Rank (n = 46)	$r_s = .28$ $p = .06$	$r = .35^*$ $p = .019$ [PC]		
Implicit Attractiveness (n = 42)	$r_s = .22$ $p = .16$	$r = .29$ $p = .07$ [PC]	$r = .23$ $p = .15$ [PC]	

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

Spearman's correlational analyses were used unless indicated otherwise; [PC] indicates a Pearson's correlational analysis

Relationships between the Explicit Measures of Self-Esteem and the Self-Esteem Implicit Association Tests

The relationships between the explicit and implicit measures of self-esteem were investigated using Spearman's or Pearson's correlational analyses as appropriate. Two-tailed analyses were carried out as no prediction was made about the direction of any of the potential relationships. It should be noted that the sample sizes vary and are shown in brackets under the name of each measure.

There were significant correlations between the group fit IAT and explicit social rank (small effect size using Cohen's criteria: Cohen, 1992), and between the relative attractiveness IAT and explicit group fit (medium effect size using Cohen's criteria: Cohen, 1992). There were no significant relationships between any of the other IATs and the explicit measures of self-esteem. These results are interesting, as it might be expected that any relationships between implicit and explicit domains of self-esteem would be between the equivalent measures (for example between implicit and explicit social rank). These findings suggest either that the group fit and relative attractiveness IATs are measuring different domains of self-esteem than those which were intended, or that there are complex relationships between different domains of implicit and explicit self-esteem. Previous studies have tended to find weak or no relationships between explicit and implicit measures of self-esteem which has been interpreted as evidence that the explicit and implicit measures are measuring different constructs; however it could also indicate that the implicit measures have poor psychometric properties (Zeigler-Hill & Jordan, 2010).

Table 11: Correlations between explicit measures of self-esteem and the self-esteem IATs

Explicit Measures	Implicit Association Tests			
	Implicit Global Self-esteem	Implicit Social Rank	Implicit Group Fit	Implicit Relative Attractiveness
Rosenberg Self-Esteem Scale	$r_s = -.04$ $p = .77$	$r_s = .00$ $p = .10$	$r_s = .01$ $p = .97$	$r_s = .26$ $p = .10$
SCS Total	$r_s = .08$ $p = .60$	$r_s = .04$ $p = .81$	$r_s = .26$ $p = .07$	$r_s = .28$ $p = .07$
SCS Social Rank	$r_s = .05$ $p = .75$	$r_s = .05$ $p = .76$	$r_s = .29^*$ $p = .044$	$r_s = .22$ $p = .17$
SCS Group Fit	$r_s = .10$ $p = .49$	$r = -.09$ $p = .53$ [PC]	$r = .24$ $p = .10$ [PC]	$r = .35^*$ $p = .024$ [PC]
SCS Relative Attractiveness	$r_s = .06$ $p = .67$	$r_s = .03$ $p = .86$	$r_s = .17$ $p = .24$	$r_s = .23$ $p = .15$

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

Spearman's correlational analyses were used unless indicated otherwise; **[PC]** indicates a Pearson's correlational analysis

PRIMARY RESEARCH HYPOTHESES

A series of Spearman Rank correlational analyses were carried out to examine the research hypotheses set out in the introduction. One-tailed tests were used unless otherwise stated; two-tailed tests were used when no predictions were made about the direction of the relationship under investigation. It should be noted that the sample sizes vary and are shown in brackets under the name of each measure. Unless otherwise stated, references to self-esteem and domains of self-esteem (group fit, relative attractiveness and social rank) refer to explicit rather than implicit forms of self-esteem, and references to aggression refer to self-reported aggression.

The Relationship between Global Self-Esteem and Aggression

It was hypothesised that there would be a relationship between global self-esteem (RSES score) and self-reported aggression (RPQ scores). Two-tailed tests were used as no prediction about the direction of this relationship was made due to the conflicting findings in the extant literature. As Table 12 illustrates, there was no significant relationship between global self-esteem and self-reported aggression.

Table 12: Correlations between scores on the Rosenberg Self-Esteem Scale and the Reactive-Proactive Aggression Questionnaire.

Self-esteem Measure	Reactive-Proactive Aggression Questionnaire (RPQ)	Proactive Aggression Subscale	Reactive Aggression Subscale
Rosenberg Self-Esteem Scale (n = 57)	$r_s = -.18$ $p = .18$	$r_s = -.10$ $p = .46$	$r_s = -.23$ $p = .09$

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

The Relationship between Domains of Self-Esteem and Aggression

It was hypothesised that there would be a positive relationship between self-reported aggression (RPQ scores) and both social rank and relative attractiveness (SCS subscale scores). It was also hypothesised that there would be an inverse relationship between group fit (SCS subscale score) and self-reported aggression (RPQ scores). As Table 13 illustrates, the only significant relationships were between social rank and proactive aggression and between social rank and the total RPQ score (small effect sizes using Cohen's criteria: Cohen, 1992). This suggests that, in this population, people who report feeling superior to others are more likely to report engaging in premeditated aggressive acts. Gender differences in the relationship between social rank and aggression will be explored in a later section.

Table 13: Correlations between scores on the Social Comparison Scale and the Reactive-Proactive Aggression Questionnaire.

Domains of Self-esteem	Reactive-Proactive Aggression Questionnaire (RPQ)	Proactive Aggression Subscale	Reactive Aggression Subscale
Social Comparison Scale (SCS) (n = 57)	$r_s = .12$ $p = .18$	$r_s = .19$ $p = .08$	$r_s = .03$ $p = .41$
SCS Group Fit subscale (n = 57)	$r_s = -.08$ $p = .28$	$r_s = -.01$ $p = .48$	$r_s = -.16$ $p = .12$
SCS Social Rank (n = 57)	$r_s = .22$ $p = .05$	$r_s = .26^*$ $p = .025$	$r_s = .14$ $p = .15$
SCS Relative Attractiveness subscale (n = 57)	$r_s = .12$ $p = .18$	$r_s = .19$ $p = .07$	$r_s = .03$ $p = .42$

** Correlation is significant at the 0.01 level (1-tailed); * Correlation is significant at the 0.05 level (1-tailed).

The Relationship between Implicit Self-Esteem and Aggression

This was an exploratory analysis as there is very little literature available to suggest what, if any, relationship there might be between implicit self-esteem and

self-reported aggression. Two-tailed tests were used as no predictions were made about the direction of any potential relationship. As Table 14 illustrates, there was no significant relationship between self-reported aggression (RPQ scores) and any of the self-esteem IATs.

Table 14: Correlations between scores on the self-esteem IATs and the Reactive-Proactive Aggression Questionnaire

Self-Esteem IATs	Reactive-Proactive Aggression Questionnaire (RPQ)	Proactive Aggression Subscale	Reactive Aggression Subscale
Implicit Global Self-esteem (n = 51)	$r_s = .03$ $p = .82$	$r_s = -.09$ $p = .52$	$r_s = .05$ $p = .75$
Implicit Group Fit (n = 48)	$r_s = .05$ $p = .76$	$r_s = .07$ $p = .64$	$r_s = .02$ $p = .90$
Implicit Social Rank (n = 46)	$r_s = .04$ $p = .78$	$r_s = .12$ $p = .42$	$r_s = .02$ $p = .90$
Implicit Attractiveness (n = 42)	$r_s = -.17$ $p = .28$	$r_s = -.13$ $p = .41$	$r_s = -.18$ $p = .25$

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

The Relationship between Discrepant Implicit/Explicit Self-Esteem and Aggression

In order to investigate the relationship between defensive self-esteem and aggression, it had been hoped that it would be possible to carry out a between groups analysis with a subsample of participants who reported high levels of explicit self-esteem, in order to determine whether individuals with high explicit, but low implicit, self-esteem (i.e. defensive self-esteem) reported higher levels of aggression than those with equally high levels of explicit and implicit self-esteem (ie secure high self-esteem). However, due to the limitations of the sample size it was not possible to complete this type of analysis. As an alternative, correlational analyses were carried out between self-esteem discrepancy scores and aggression. Discrepancy scores represent the size and direction of the discrepancy between explicit and implicit self-esteem scores. A positive score

indicates defensive self-esteem (high explicit plus low implicit self-esteem), a negative score indicates damaged self-esteem (low explicit plus high implicit self-esteem) and a zero score indicates secure self-esteem (congruent explicit/implicit self-esteem).

It was hypothesised that there would be a positive association between the size of the discrepant global self-esteem score and self-reported aggression, such that participants with more defensive global self-esteem (ie larger, positive discrepancy scores) would report higher levels of aggression. It was hypothesised that there would be similar relationships between the discrepancy scores for the domains of social rank, relative attractiveness and group fit and self-reported aggression.

As Table 15 illustrates, there were no significant relationships between global self-esteem discrepancy scores and self-reported aggression, or any of the discrepancy scores for the domains of self-esteem and self-reported aggression.

Table 15: Correlations between discrepant explicit/implicit self-esteem and the Reactive-Proactive Aggression Questionnaire

Self-esteem Measure	Reactive-Proactive Aggression Questionnaire (RPQ)	Proactive Aggression Subscale	Reactive Aggression Subscale
Discrepant Global Self-esteem (n = 51)	$r_s = -.15$ $p = .14$	$r_s = .02$ $p = .45$	$r_s = -.20$ $p = .09$
Discrepant Group Fit (n = 48)	$r_s = -.14$ $p = .18$	$r_s = -.12$ $p = .21$	$r_s = -.14$ $p = .17$
Discrepant Social Rank Difference (n = 46)	$r_s = .19$ $p = .11$	$r_s = .15$ $p = .16$	$r_s = .16$ $p = .14$
Discrepant Relative Attractiveness (n = 42)	$r_s = .12$ $p = .23$	$r_s = .17$ $p = .15$	$r_s = .08$ $p = .31$

** Correlation is significant at the 0.01 level (1-tailed); * Correlation is significant at the 0.05 level (1-tailed)

SUPPLEMENTARY ANALYSES: GENDER DIFFERENCES IN THE RELATIONSHIP BETWEEN SELF-ESTEEM AND AGGRESSION

As the initial descriptive analyses showed that there were significant differences between the male and female participants on some of the key variables, an exploratory analysis was conducted to examine the relationship between the different forms of self-esteem and aggression in separate male and female subsamples. One-tailed tests were used unless otherwise stated; two-tailed tests were used when no predictions were made about the direction of the relationship under investigation. It should be noted that the sample sizes for these analyses are relatively small. The sample sizes vary and are shown in brackets under the names of the measures.

Gender Differences in the Relationship between Global Self-Esteem and Aggression

Although the results of the analysis of the full sample showed no significant relationship between global self-esteem and self-reported aggression, when the male and female subsamples were analysed separately a significant inverse relationship between global self-esteem and self-reported aggression emerged for female participants (see Table 16). Two-tailed tests were used as no prediction had been made about the direction of this relationship prior to the analysis. There was a significant inverse relationship between global self-esteem and both the reactive and proactive subscales, as well as the total RPQ score (medium effect sizes using Cohen's criteria: Cohen, 1992). This suggests that women who have lower self-esteem report higher levels of both reactive and proactive aggression. This pattern was not detected for male participants, suggesting that there are gender differences in the relationship between global self-esteem and aggression.

Table 16: Correlations between the scores on the Rosenberg Self-Esteem Scale and the Reactive-Proactive Aggression Questionnaire: male and female subsamples

Self-Esteem Measure	Reactive-Proactive Aggression Questionnaire (RPQ)		Proactive Aggression Subscale		Reactive Aggression Subscale	
	Male	Female	Male	Female	Male	Female
Rosenberg Self-Esteem Scale (M: n = 25; F: n = 32)	$r_s = .00$ $p = .10$	$r_s = -.43$ $p = .014^*$	$r_s = -.02$ $p = .94$	$r_s = -.43$ $p = .015^*$	$r_s = -.01$ $p = .96$	$r_s = -.44$ $p = .012^*$

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

Gender Differences in the Relationship between Domains of Self-Esteem and Aggression

The analysis of the full sample showed a significant but relatively weak relationship between social rank and proactive aggression, and between social rank and the total RPQ score (small effect sizes using Cohen's criteria: Cohen, 1992). However, when the male and female subsamples were analysed separately, additional and more powerful relationships emerged between the domains of self-esteem and self-reported aggression (see Table 17).

Table 17: Correlations between the Reactive-Proactive Aggression Questionnaire and the Social Comparison Scale: male and female subsamples

Measure	Reactive-Proactive Aggression Questionnaire (RPQ)		Proactive Aggression Subscale		Reactive Aggression Subscale	
	Male	Female	Male	Female	Male	Female
Social Comparison Scale (SCS) (M: n = 25; F: n = 32)	$r_s = .46$ $p = .011^*$	$r_s = -.21$ $p = .13$	$r_s = .37$ $p = .037^*$	$r_s = -.16$ $p = .19$	$r_s = .44$ $p = .014^*$	$r_s = -.28$ $p = .06$
SCS Group fit (M: n = 25; F: n = 32)	$r_s = .10$ $p = .31$	$r_s = -.38$ $p = .015^*$	$r_s = -.04$ $p = .42$	$r_s = -.28$ $p = .06$	$r_s = .10$ $p = .32$	$r_s = -.47$ $p = .004^{**}$
SCS Social Rank (M: n = 25; F: n = 32)	$r_s = .48$ $p = .007^{**}$	$r_s = .00$ $p = .49$	$r_s = .38$ $p = .030^*$	$r_s = -.02$ $p = .46$	$r_s = .49$ $p = .007^{**}$	$r_s = -.06$ $p = .38$
SCS Relative Attractiveness subscale (M: n = 25; F: n = 32)	$r_s = .54$ $p = .003^{**}$	$r_s = -.23$ $p = .10$	$r_s = .54$ $p = .003^{**}$	$r_s = -.21$ $p = .12$	$r_s = .48$ $p = .007^{**}$	$r_s = -.28$ $p = .06$

One-tailed tests were used in this analysis as predictions had been made about the direction of the relationships.

** Correlation is significant at the 0.01 level (1-tailed); * Correlation is significant at the 0.05 level (1-tailed)

As Table 17 illustrates, there were marked gender differences in the relationships between the domains of self-esteem and aggression. There continued to be a significant positive relationship between social rank and proactive aggression, but only in the male subsample and with a stronger effect size (medium effect size using Cohen's criteria: Cohen, 1992). In addition, significant positive relationships emerged between social rank and the total RPQ score and between social rank and reactive aggression for male participants (both medium effect sizes using Cohen's criteria: Cohen, 1992).

There were also significant relationships between relative attractiveness and aggression for male participants; there was a positive relationship between relative attractiveness and the total RPQ score and proactive aggression (large effect sizes using Cohen's criteria: Cohen, 1992), as well as between relative

attractiveness and reactive aggression (medium effect size using Cohen's criteria: Cohen, 1992).

There were also significant positive correlations between the total Social Comparison Scale scores (which combine social rank, group fit and relative attractiveness into an overall measure of rank) and total RPQ, reactive and proactive aggression scores (medium effect sizes size using Cohen's criteria: Cohen, 1992) in the male, but not the female, subsample. As there were strong relationships between aggression and two of the three Social Comparison Subscales (relative attractiveness and social rank) in the male subsample, it seems likely that these are driving the positive relationships between aggression and the total Social Comparison Scale score.

The relationships between the domains of self-esteem and aggression were very different for female participants. There were no significant relationships between social rank or relative attractiveness and aggression in the female subsample; in fact there was a non-significant trend towards an inverse relationship between relative attractiveness and aggression. However, there were significant inverse relationships between group fit and the total RPQ score and reactive aggression for female participants (medium effect sizes size using Cohen's criteria: Cohen, 1992). This relationship did not appear in the male subsample.

In summary, the results suggest that there are gender differences in the relationship between domains of self-esteem and aggression. The results indicate that men who report that they are superior to, or more attractive than others report higher levels of aggression. In contrast, levels of social inclusion are more relevant to aggression in women; with women who report feeling more left out reporting higher levels of aggression.

Gender Differences in the Relationship between Implicit Self-Esteem and Aggression

As with the analysis of the full sample, this was an exploratory analysis to determine whether there were any relationships between implicit measures of self-esteem and aggression in the male and female subsamples and two-tailed tests were therefore used. As Table 19 illustrates, there were no significant relationships between any of the self-esteem IATs and aggression in either the male or female subsamples.

Table 18: Correlations between scores on the self-esteem IATs and the Reactive-Proactive Aggression Questionnaire: male and female subsamples

Measure	Reactive-Proactive Aggression Questionnaire (RPQ)		Proactive Aggression Subscale		Reactive Aggression Subscale	
	Male	Female	Male	Female	Male	Female
Implicit Global Self-Esteem (M: n = 21; F: n = 30)	$r_s = .12$ $p = .60$	$r_s = -.04$ $p = .83$	$r_s = .04$ $p = .87$	$r_s = -.16$ $p = .40$	$r_s = .11$ $p \leq .64$	$r_s = -.01$ $p = .94$
Implicit Group Fit (M: n = 20; F: n = 28)	$r_s = -.08$ $p = .75$	$r_s = .10$ $p = .61$	$r_s = -.21$ $p = .37$	$r_s = .04$ $p = .84$	$r_s = .00$ $p \leq .99$	$r_s = .07$ $p = .71$
Implicit Social Rank (M: n = 20; F: n = 26)	$r_s = -.12$ $p = .61$	$r_s = .15$ $p = .47$	$r_s = -.13$ $p = .58$	$r_s = .23$ $p = .26$	$r_s = -.12$ $p = .61$	$r_s = .09$ $p = .67$
Implicit Relative Attractiveness (M: n = 18; F: n = 24)	$r_s = -.19$ $p = .46$	$r_s = -.27$ $p = .20$	$r_s = -.34$ $p = .17$	$r_s = -.14$ $p = .53$	$r_s = -.09$ $p = .74$	$r_s = -.31$ $p = .15$

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

Gender Differences in the Relationship between Discrepant Implicit/Explicit Self-Esteem and Aggression

Discrepancy scores represent the size and direction of the discrepancy between explicit and implicit self-esteem scores. A positive score indicates defensive self-esteem (high explicit plus low implicit self-esteem), a negative score indicates damaged self-esteem (low explicit plus high implicit self-esteem) and a zero score indicates secure self-esteem (congruent explicit/implicit self-esteem).

Analysis of the full sample showed no relationships between any of the discrepant self-esteem scores and aggression, however when the male and female subsamples were analysed separately some significant relationships did emerge. These are illustrated in Table 19.

Table 19: Correlations between discrepant explicit/implicit self-esteem and the Reactive-Proactive Aggression Questionnaire: male and female subsamples

Measure	Reactive-Proactive Aggression Questionnaire (RPQ)		Proactive Aggression Subscale		Reactive Aggression Subscale	
	Male	Female	Male	Female	Male	Female
Discrepant Global Self-Esteem (M: n = 21; F: n = 30)	$r_s = -.15$ $p = .25$	$r_s = -.23$ $p = .11$	$r_s = -.09$ $p = .35$	$r_s = -.14$ $p = .23$	$r_s = -.14$ $p = .27$	$r_s = -.26$ $p = .08$
Discrepant Group Fit (M: n = 20; F: n = 28)	$r_s = .23$ $p = .17$	$r_s = -.41$ $p = .015^*$	$r_s = .19$ $p = .22$	$r_s = -.33$ $p = .043^*$	$r_s = .21$ $p = .19$	$r_s = -.40$ $p = .017^*$
Discrepant Social Rank (M: n = 20; F: n = 26)	$r_s = .37$ $p = .06$	$r_s = -.08$ $p = .35$	$r_s = .34$ $p = .07$	$r_s = -.18$ $p = .19$	$r_s = .40$ $p = .041^*$	$r_s = -.06$ $p = .39$
Discrepant Relative Attractiveness (M: n = 18; F: n = 24)	$r_s = .24$ $p = .17$	$r_s = .01$ $p = .48$	$r_s = .42$ $p = .042^*$	$r_s = -.04$ $p = .42$	$r_s = .14$ $p = .20$	$r_s = .00$ $p = .49$

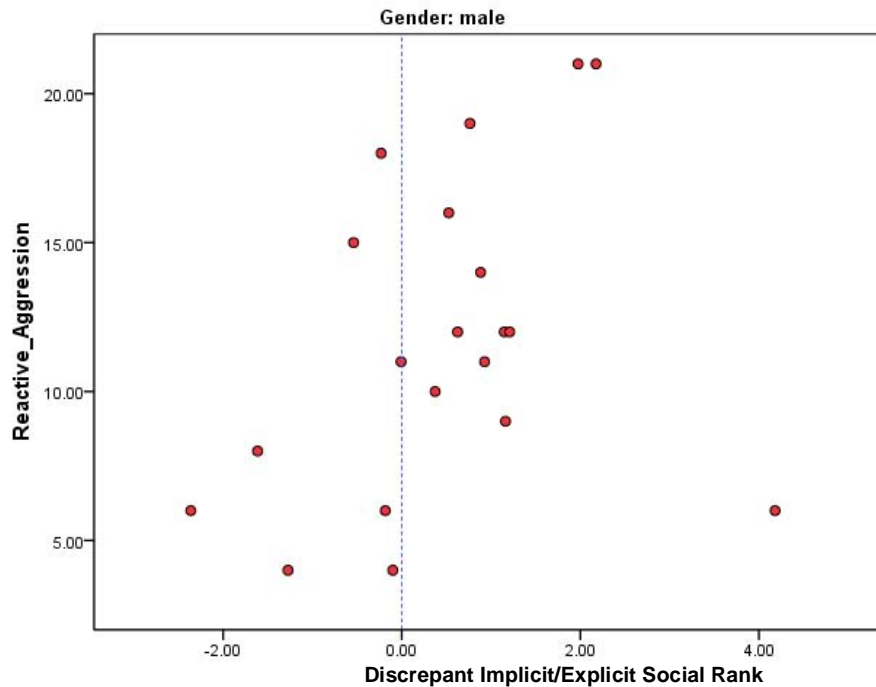
** Correlation is significant at the 0.01 level (1-tailed); * Correlation is significant at the 0.05 level (1-tailed)

Once again, gender differences in the relationships between discrepant self-esteem and aggression were apparent. To a large extent, the relationships between the discrepant forms of self-esteem and aggression mirrored those found between explicit self-esteem and aggression.

For male participants there was a significant positive relationship between social rank discrepancy scores and reactive aggression, as well as between relative attractiveness discrepancy scores and proactive aggression (medium effect sizes using Cohen's criteria: Cohen, 1992). This suggests that men with defensive (high explicit but low implicit) social rank or relative attractiveness are more aggressive than those with secure (similar levels of implicit and explicit self-esteem) or damaged (low explicit but high implicit) forms of these domains of self-esteem.

The relationship between discrepant social rank and reactive aggression is illustrated in the scatter plot shown in figure 1. The blue dotted line marks 'secure' social rank (no implicit/explicit social rank discrepancy) and data points to the left of this represent individuals with damaged social rank (low implicit but high explicit social rank), with those to the right representing defensive social rank (high explicit but low implicit social rank). Those data points falling closest to the blue line would be regarded as indicating more secure self-esteem, while the further away the data points are from the line the more defensive or damaged the individual's sense of social rank was.

Figure 1: Scatter plot illustrating the relationship between discrepant social rank and reactive aggression

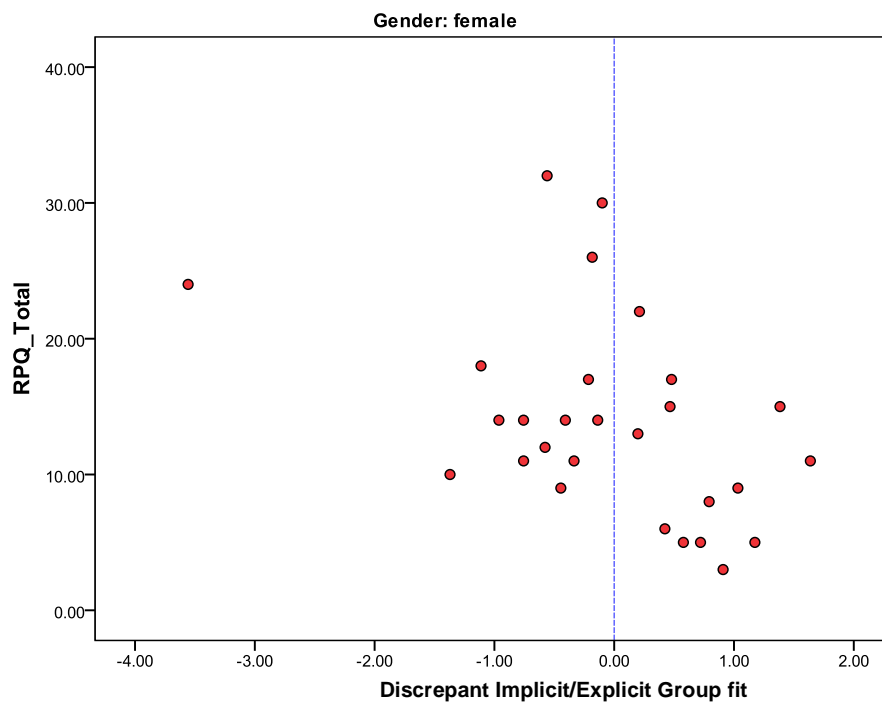


These results suggest that men who report an inflated sense of social rank report higher levels of aggression than those who accurately or under report their sense of social rank. There is a similar pattern for relative attractiveness.

Although the relationships between the discrepant domains of self-esteem and aggression are similar to the relationships observed between the explicit domains of self-esteem and aggression, the discrepant domains of self-esteem appear to be more weakly associated with aggression. In addition, explicit social rank and relative attractiveness were related to both proactive and reactive aggression while discrepant social rank was only significantly related to reactive aggression and discrepant relative attractiveness was only significantly related to proactive aggression (although there were non-significant trends towards positive relationships between these variables).

The relationships between discrepant self-esteem and aggression for women are very different. There were no relationships between discrepant relative attractiveness or discrepant social rank and aggression in the female subsample. However, for female participants, there were significant inverse relationships between group fit discrepancy scores and all three measures of aggression; total RPQ score and proactive and reactive aggression (medium effect sizes using Cohen's criteria: Cohen, 1992). This suggests that women with damaged (low explicit but high implicit) group fit report higher levels of aggression than women for whom the reverse is true or who have a secure sense of group fit. Figure 2 illustrates the relationship between the group fit discrepancy scores and total RPQ scores.

Figure 2: Scatter plot illustrating the relationship between discrepant group fit and total RPQ score



The results suggests that women who minimise their reports of their sense of fitting in report higher levels of aggression than those who accurately or over report their sense of fitting in. This was an unexpected finding, as existing

theories suggest that defensive rather than damaged forms of self-esteem are related to aggression. The implications of these results and what is currently known about damaged self-esteem will be discussed in the next section.

The relationships between group fit discrepancy scores and aggression are very similar to those found between explicit group fit and aggression. However there is a significant inverse relationship between discrepant group fit and proactive aggression but not for explicit group fit and aggression (although the latter is close to significance).

In summary, these results suggest that defensive social rank and defensive relative attractiveness are associated with higher levels of aggression in men, but that damaged group fit is associated with higher levels of aggression in women. There were no relationships between discrepant global self-esteem and aggression, providing further evidence that global measures of self-esteem may not be very informative. When these results are considered in the context of the relationships observed between explicit domains of self-esteem and aggression, it raises the possibility that the more aggressive men may have been reporting inflated levels of social rank and relative attractiveness, while the more aggressive women may have been minimising their level of social inclusion.

Summary

The initial analysis of the mixed data sample found no significant relationships between self-reported aggression and any of the aspects of self-esteem under investigation, apart from a weak positive relationship between self-reported aggression and explicit social rank. However, when the data from male and female participants were analysed separately further relationships emerged.

For women, both explicit global self-esteem and explicit group fit were inversely related to aggression. There was also an inverse relationship between discrepant implicit/explicit group fit and aggression.

For men, both explicit social rank and explicit relative attractiveness were positively associated with aggression. There was also a positive relationship between both discrepant implicit/explicit social rank and discrepant implicit/explicit relative attractiveness and aggression.

These results suggest that men who report that they are higher in social rank and more attractive than other people are more aggressive, but that it is possible that their self-reports of their rank and attractiveness may not be matched by their implicit feelings about themselves. There is a very different pattern for women as it appears that feelings of social inclusion are most relevant. Women who report feeling left out report higher levels of aggression, but it is possible that they implicitly feel more socially included than their self-report would suggest.

Chapter Four

DISCUSSION

Overview of the Chapter

The aim of this study was to investigate the relationship between self-esteem and aggression in care leavers. Many care leavers have mental health and psychological needs, and there is evidence to suggest that aggression is also a significant problem for this population (Meltzer *et al.*, 2003; Stanley *et al.*, 2005). Aggressive behaviour is of concern due both to the impact on victims of violence and on society, and because it is likely to exacerbate the social and psychological difficulties already faced by care leavers. For example, problems with aggression are likely to compound difficulties with finding suitable employment and accommodation, maintaining positive relationships and avoiding a criminal record. Gaining a greater understanding of the psychological processes underlying aggressive behaviour will enable the development of more effective interventions to help care leavers, and others who have problems with aggressive behaviour, to manage and reduce their aggression.

A number of different hypotheses about the nature of the relationship between self-esteem and aggression have been proposed, but there are considerable inconsistencies in the existing evidence base. This study examined the evidence for some of the main hypotheses and attempted to address some of the methodological issues that have been identified as potentially contributing to the inconsistent findings (Ostrowsky, 2010). The study used self-report questionnaires to measure aggression and explicit self-esteem, as well as four implicit association tests which were designed to measure different forms of implicit self-esteem.

The data for male and female participants in this study were initially analysed together, in line with methodology used in most previous studies exploring the relationship between self-esteem and aggression (eg Donellan *et al.*, 2005). This initial analysis found no significant relationships between aggression and any of the aspects of self-esteem under investigation, apart from a weak positive relationship between aggression and social rank. These results failed to provide support for the existence of any relationship between aggression and global self-esteem or discrepant implicit/explicit self-esteem; and only very limited support for Kirkpatrick and Ellis's (2002) theory about the relationship between aggression and domains of self-esteem.

However, a different and more interesting picture emerged when the data were analysed by gender. This discussion will therefore focus on the results from the latter analyses, and will consider how these findings relate to the inconsistencies of the previous research. The results should be interpreted with a degree of caution due to the small sample sizes; however, many of the relationships that emerged were highly significant and had medium to large effect sizes suggesting that similar results would be found in larger sample sizes.

This chapter will begin by considering the relationship between global self-esteem and aggression. The relationships between different domains of self-esteem and aggression will then be discussed, followed by a discussion of the relationships between discrepant forms of self-esteem and aggression. The limitations of the study will then be considered, followed by a discussion of the clinical implications of the findings and possible directions for future research. Unless otherwise stated, references to self-esteem and domains of self-esteem (group fit, relative attractiveness and social rank) refer to explicit, rather than implicit, forms of self-esteem. It should also be noted that references to

aggression in the context of the results of this study refer to self-reported aggression.

The Relationship between Global Self-Esteem and Aggression

Despite a growing body of research, there remains considerable disagreement about what, if any, relationship there is between global self-esteem and aggression (Ostrowsky, 2010). In this study, no relationship between global self-esteem and aggression was found when the data from both male and female participants were analysed together. This initially appeared to provide support for the argument that there is no relationship between the two variables. However, when data from the male and female participants were analysed separately, the results showed that there was an inverse relationship between global self-esteem and both proactive and reactive aggression for female, but not male, participants. This provides some support for the low self-esteem hypothesis but it also suggests that there are gender differences in the role of global self-esteem in aggression.

As noted earlier, gender differences in the relationship between global self-esteem and aggression have received relatively little attention. However, most aggressive behaviour is the result of a very complex sequence of events and processes including neurobiological, hormonal, cognitive, attitudinal, experiential, interactional, dispositional and situational factors (McGuire, 2008). Given this complexity, and given that this study, in common with previous research (eg Archer, 2004), found that women reported lower levels of aggression (particularly proactive aggression) than men, it is perhaps unsurprising that there might be gender differences in the pathways to aggressive behaviour.

There are a number of reasons why individuals with low global self-esteem might be more likely to behave aggressively. It has been suggested that aggression provides an increased sense of power and independence to individuals with low global self-esteem and that aggression may also serve as attention seeking behaviour which enhances self-esteem. Alternatively, individuals with low self-esteem may externalize blame for their problems and failures to protect themselves against feelings of inadequacy, inferiority, and shame, which then leads to aggression towards others (Ostrowsky, 2009).

If these explanations are considered in light of the results of this study, it suggests either that women are less able to tolerate the difficult feelings resulting from low self-esteem, or that men respond to feelings of low self-esteem in non-aggressive ways, for example by using non-aggressive means to gain attention or power. However, there is a lack of convincing evidence for either of these propositions.

Donellan *et al.* (2005) note that Rosenberg (1965) suggested that low global self-esteem weakens ties to society and that, according to social-bonding theory, this reduces the influence of social norms and subsequently increases delinquent behaviour such as aggression. One possible explanation for the gender differences in the relationship between low global self-esteem and aggression is that women may be more inhibited than men by social norms which condemn aggressive behaviour. In most cultures, aggression is less socially acceptable in women than men (Baron & Richardson, 2004). A reduction in the influence of social norms (associated with low self-esteem) might therefore result in a more significant increase in aggressive behaviour in women than in men.

Another possible explanation for the gender differences in the relationship between low global self-esteem and aggression is that global self-esteem may represent different things for men and women (Schwalbe & Staples, 1991). Men and women may derive their overall sense of self-worth from different domains, and therefore low global self-esteem in women may not be equivalent to low global self-esteem in men.

There is also evidence that men and women regard aggression as serving different functions; men tend to view aggression as a means of obtaining and exercising power to gain social rewards, while women tend to view aggression as a way of expressing anger and achieving catharsis (Campbell *et al.*, 1993). It is therefore possible that women, but not men, respond to the unpleasant emotions that result from low self-esteem with aggression as a way of expressing their distress. However, if this were the case it would be expected that low global self-esteem would be associated with reactive but not proactive aggression in women, and this study found that there were equally strong relationships between low global self-esteem and the two forms of aggression.

One important implication of the findings of this study is that gender differences in the relationship between self-esteem and aggression may provide an explanation for the inconsistent findings in previous research. It may be that in the studies which used mixed samples, the relationship between low self-esteem and aggression in women was obscured by the lack of a relationship between these variables for men. However, it is also possible that gender differences in the relationship between self-esteem and aggression are much more marked in care leavers compared to other populations. This will be discussed further in a later section. However, these findings do not help to explain why some research using mixed samples

found that high rather than low self-esteem was related to aggression, although it might suggest the presence of confounding variables in these studies.

The Relationships between Domains of Self-Esteem and Aggression

Kirkpatrick and Ellis' (2002) evolutionary approach to the relationship between self-esteem and aggression proposes that self-esteem is best understood as a way of monitoring interpersonal relationships in three domains; social inclusion, mate value and superiority (measured in this study using the Social Comparison Scale subscales of group fit, relative attractiveness and social rank). This monitoring then prompts the individual to take appropriate action (in some cases by behaving aggressively) to resolve any problems that arise in these interpersonal domains. According to this theory, it would be expected that there would be a positive relationship between social rank and aggression and between relative attractiveness and aggression, but an inverse relationship between group fit and aggression.

Once again, initial analysis of the mixed data set found no relationships between either relative attractiveness or social inclusion and aggression and only a weak relationship between social rank and proactive aggression. However, when the data from male and female participants were analysed separately, further relationships emerged and suggested that, as with global self-esteem, there were gender differences in the relationships between the domains of self-esteem and aggression.

The results showed that for men, social rank and relative attractiveness were strongly related to both proactive and reactive aggression, but social inclusion was unrelated to aggression. In contrast, no relationships were found between

social rank or relative attractiveness and aggression in women, but there was a strong inverse relationship between social inclusion and reactive aggression. The findings of this study therefore provide support for Kirkpatrick and Ellis's (2002) theory and their earlier research findings. However, Kirkpatrick and Ellis did not report any gender differences in their research and the theoretical implications of gender differences were not discussed.

Compared to the number of studies exploring the relationship between global self-esteem and aggression, relatively few studies have explored the relationships between domains of self-esteem and aggression and even fewer have examined gender differences in these relationships. In one of the few relevant studies, Diamantopoulou *et al.* (2008) examined the relationship between self-esteem and peer or teacher nominated aggression in 12 year olds. They found that there were no gender differences in the relationship between global self-esteem and aggression, but that exaggerated self-evaluations of social competence (relative to peer ratings of social competence) were more strongly related to aggression in boys than in girls. However, this study focused on children and it is not clear how social competence relates to the domains of self-esteem proposed by Kirkpatrick and Ellis (2002).

A sociobiological approach, and in particular ideas around sexual selection, may provide a possible explanation for gender differences in the relationships between domains of self-esteem and aggression. Sexual selection relates to how members of one sex are chosen by members of the other, and to the competition between members of one sex for access to members of the opposite sex. In most mammals, males are usually more competitive and aggressive than females. It has been argued that this is due to gender differences in parental investment; males tend to have much lower parental investment than females and therefore competition for mates is much greater for males than for females

(Archer, 2009). Social rank and relative attractiveness may therefore be particularly important for men (and therefore defended more aggressively) because higher rank and greater relative attractiveness may be linked to reproductive success. There is evidence that social status is directly linked to reproductive success in men, and that women (but not men) find dominance attractive in potential mates (Sadalla *et al.*, 1987). Archer and Thanzami (2009) also note that there is evidence that attractiveness in men is linked to their size and strength, which suggests that it may provide an indicator of 'a man's physical condition, which is in turn linked to his competitive ability' (p. 316). In contrast, dominance in women is not clearly linked to reproductive success (Sadalla *et al.*, 1987) and for many species fitting in with others is often more important for females, as they are often reliant on each other for support when rearing young. Social inclusion is likely to inhibit aggression as aggressive behaviour may result in being excluded from the group.

In summary, social rank and attractiveness may be of particular value to men so that they will use relatively extreme methods, such as aggression, to maintain a position of high rank or relative attractiveness. In contrast, social inclusion may be of particular value to women, so that high levels of social inclusion strongly inhibit aggressive behaviour and low levels of social inclusion remove this inhibition or permit aggression.

The role of social norms (as discussed in the previous section in relation to global self-esteem) may also be relevant to understanding the relationship between low social inclusion and aggression in women. Low social inclusion may cause a reduction in the influence of the social norms which regard aggressive behaviour as inappropriate (particularly in women) and therefore lead to higher levels of aggressive behaviour. Although Kirkpatrick and Ellis (2002) focus on the role of social inclusion as inhibiting aggression rather than on social exclusion causing

aggression, it should be noted that there is considerable evidence that social exclusion is related to aggression (Leary *et al.*, 2006). Leary and colleagues note that a number of possible explanations for the relationship between social exclusion and anger and aggression have been proposed, including 'rejection as a source of pain, rejection as a source of frustration, rejection as a threat to self-esteem, mood improvement following aggression, aggression as social influence, aggression as a means of re-establishing control, retribution, disinhibition, and loss of self-control' (p. 111). Although it is not obvious why any of these reasons would be more applicable to women than men, it is possible that women may be more sensitive to social rejection if social inclusion is of greater value to them than to men. Not 'fitting in' may be particularly difficult for women as, in many cultures, women are expected to display higher communal attributes such as friendliness and concern for others (Baron & Richardson, 2004). It is notable that social inclusion is inversely related to reactive, but not proactive, aggression which would be expected if the aggression were an emotionally driven response to rejection.

It is also possible that men and women use different behavioural strategies to respond to threats to rank or relative attractiveness. Aggression may be an effective response to threats to rank and relative attractiveness for men but not for women. For example aggression may be viewed as a sign of strength in men, and therefore enhance mate value, but it may be viewed as an unattractive quality in women, and therefore reduce female mate value. There is also evidence that men tend to view aggression as a means of obtaining and exercising power to gain social rewards, therefore aggression may be a logical response to threats to their social rank (Campbell *et al.*, 1993). There is also some evidence that men and women respond to threats to rank or mate value with different forms of aggression. A study by Griskevicius *et al.* (2009) found that when motives to compete for status or to attract a mate were experimentally activated in college students, both men and women reported higher levels of self-

reported aggression. However, women reported a tendency to react with indirect aggression while men reported a tendency to react with direct aggression. The authors suggest that, in evolutionary terms, direct aggression is a relatively high-cost and low-benefit strategy for women, so where possible they will tend to respond with indirect aggression as this is a less risky strategy.

Some of the possible explanations for the gender differences in the relationship between global self-esteem and aggression are also relevant when considering the gender differences in the relationships between domains of self-esteem and aggression. Although domains of self-esteem provide a more detailed measure of individuals' self-views compared to global self-esteem, it is still possible that the domains of social rank, relative attractiveness and social inclusion have different meanings for men and women. For example, Terrell *et al.* (2009) suggest that perceptions of physical attractiveness may influence perceptions of status much more in women than in men, so a measure of social rank may be not equivalent for men and women. It is also possible that the apparent relationships between the different domains of self-esteem and aggression may be due to relationships with co-varying variables rather than self-esteem. For example, the relationship between social rank and aggression in men may be due to high ranking men being subject to (and retaliating against) a greater number of aggressive acts from others. It should also be noted that both global self-esteem and social inclusion are inversely related to aggression in women, which raises the possibility that global self-esteem is associated with levels of social inclusion in women.

The Relationship between Discrepant Implicit/Explicit Self-Esteem and Aggression

It has been proposed that the conflicting evidence for the relationship between self-esteem and aggression can be explained by the concept of defensive self-esteem whereby individuals present with self-esteem which appears high, but which actually forms a fragile cover for low (implicit) self-esteem. The only published study to have investigated this hypothesis found a positive association between children's explicit global self-esteem and teachers' reports of aggression when levels of implicit global self-esteem were low but not when levels of implicit global self-esteem were high (Sandstrom & Jordan, 2008).

Sample size limitations meant that correlational analyses between implicit/explicit discrepancy scores and aggression were performed rather than a more complex analysis. Discrepancy scores represent the size and direction of the discrepancy between the explicit and implicit self-esteem scores. The potential difficulties of interpreting the results of this type of analysis are discussed in the limitations section. The present study also explored the relationship between discrepant domains of self-esteem and aggression as well as the relationship between discrepant global self-esteem and aggression.

Once again, the results of the analysis of the mixed gender sample did not reveal any significant relationships between self-esteem discrepancy scores and aggression. When the data from men and women were analysed separately there were still no significant relationships between global self-esteem discrepancy scores and aggression, however significant relationships did emerge between aggression and discrepancy scores for the domains of social rank, attractiveness and group fit.

For male participants there was a significant positive relationship between social rank discrepancy scores and reactive aggression, as well as between relative attractiveness discrepancy scores and proactive aggression. This suggests that men with defensive (high explicit but low implicit) social rank or relative attractiveness are more aggressive than those with secure (similar levels of implicit and explicit self-esteem) or damaged (low explicit but high implicit) forms of these domains of self-esteem. These findings provide some support for the defensive self-esteem hypothesis; however it is notable that aggression appeared to be related to defensive domains of self-esteem rather than defensive global self-esteem and that this pattern was evident only in men.

The relationships between discrepant self-esteem and aggression for women were very different. There were no relationships between discrepant relative attractiveness or discrepant social rank and aggression, but there were significant inverse relationships between group fit discrepancy scores and both proactive and reactive aggression. This suggests that women with damaged (low explicit but high implicit) group fit reported higher levels of aggression than women for whom the reverse was true or who had a secure sense of group fit. The results suggest that women whose self-reports minimise their level of social inclusion have higher levels of aggression than those who accurately or over report their sense of fitting in. This was an unexpected finding, as existing theories suggest that defensive rather than damaged forms of self-esteem are related to aggression.

It is notable that there were no significant relationships between discrepant global self-esteem and aggression and that the patterns in the relationships between discrepant domains of self-esteem and aggression generally mirrored the relationships between aggression and explicit domains of self-esteem. These findings provide further support for the view that domains of self-esteem are

more relevant than global self-esteem when trying to understand the relationship between aggression and self-esteem, and that the domains of social rank and attractiveness are particularly relevant to understanding aggression in men and that the domain of social inclusion is particularly relevant to understanding aggression in women.

When the relationships between the explicit domains of self-esteem and aggression described earlier are considered in the light of the findings on the relationships between discrepant domains of self-esteem and aggression, it suggests that the men who were reporting particularly high levels of rank or relative attractiveness may have been inflating their self-reports, while the women who reported particularly low levels of social inclusion may have been minimising their self-reports. What is not known is whether these inflations and minimisations were conscious (perhaps reflecting social desirability or the unmet desire for high rank) or unconscious (suggesting that the individuals were unaware of the discrepancy with their implicit levels of self-esteem). Morrison and Gilbert (2001) suggest that there are two motives for aggression: to assert a desired level of social standing and to protect a desired social identity. It is possible that discrepant social rank and relative attractiveness may reflect the discrepancy between the individual's desired level of social standing and their actual social rank. Further research into the nature of implicit self-esteem would help to increase our understanding of these issues.

It has been proposed that defensive self-esteem is related to aggression because individuals use aggression as a way of defending themselves from external criticisms or threats which might otherwise make them aware of their implicit feelings of low self-esteem or self-doubt (Walker & Bright, 2009b). Kirkpatrick and Ellis (2002) propose that domains of self-esteem should be understood as sociometers, and it may also be helpful to think of defensive and

damaged domains of self-esteem in these terms. Damaged and defensive forms of self-esteem are thought to be related to psychopathology and to reflect an inaccurate, inflated (or deflated) sense of self-esteem (Schroder-Abe *et al.*, 2007). In evolutionary terms, although some aggressive behaviour can be adaptive, excessive aggression is not. It is possible that damaged and defensive domains of self-esteem represent inaccurate or over-sensitive sociometers which cause people to be oversensitive to threats and to react with excessive levels of aggression.

The gender differences in the relationships between discrepant domains of self-esteem and aggression may again reflect the relative value of these domains to men and women. Rank and attractiveness may be more important to men; an awareness of implicit feelings of inferiority or unattractiveness may therefore be particularly painful for them and lead to higher levels of aggression to defend against these feelings. However, it is less clear why damaged social inclusion would relate to aggression in women, although it may be that the dissonance between implicit and explicit self-views is particularly painful in domains that are highly valued.

It is thought that both implicit and explicit self-evaluations develop in response to interactions with significant others, but implicit beliefs about the self are thought to develop earlier in life as a result of early childhood experiences. Implicit beliefs are thought to change more slowly than explicit beliefs and discrepancies between implicit and explicit self-esteem are thought to arise when people experience different qualities of later relationships, or when they consciously overlook some forms of interaction which may still impact on their implicit self-esteem (DeHart *et al.*, 2006). It is possible that discrepancies between implicit and explicit self-esteem may be particularly marked in care leavers because many of them have had very difficult and traumatic early childhood experiences

and relationships. The nature of these experiences and relationships were then terminated or changed as a result of being taken into care and some care leavers may cope with difficult past and current experiences by choosing to ignore their impact.

Although the findings for the male participants can be understood in terms of the theories proposed about the relationship between defensive self-esteem and aggression, the finding that damaged social inclusion appears to be related to aggression in women was unexpected. As yet, researchers and theorists exploring the relationship between discrepant self-esteem and aggression have tended to focus on defensive self-esteem and damaged self-esteem has received relatively little attention. However, there is evidence that damaged as well as defensive self-esteem is related to some forms of psychopathology. In a study using implicit association tests, Franck *et al.* (2007) found evidence to suggest that suicidal ideation was connected to damaged self-esteem in depressed patients. In a study using the Initials Preference Task to measure implicit self-esteem, Vater *et al.* (2010) found that both damaged and defensive self-esteem were related to the severity of borderline symptoms, autoaggression, dysphoria, and deficits in self-perception in individuals with borderline personality disorder. In another study using implicit association tests Schroder-Abe *et al.* (2007) found that, compared to congruent self-esteem discrepant self-esteem (both damaged and defensive) was related to more anger suppression, a more depressive attributional style, more nervousness, and more days of impaired health. Schroder-Abe *et al.* (2007) suggest that both defensive and damaged self-esteem are maladaptive because they represent 'deficient integration of self-representation' (p 321). Vater *et al.* suggest that both forms of discrepant self-esteem create a state of unpleasant internal tension, which people with borderline personality disorder try to relieve through dysfunctional behaviour such as self-injurious behaviour. It is possible that women with a damaged sense

of group fit may be experiencing unpleasant internal tension, and that they use aggression as a way of reducing this.

Issues in Interpreting the Data and Limitations of the Study

Sample

Care leavers were chosen as the focus of this study because there is evidence to suggest that this population has significant difficulties with aggression, and because there has been relatively little research exploring their psychological needs. Previous research has tended to focus on undergraduate participants. Although care leavers are a more clinically relevant population it is not clear how much the results of this study can be generalised. Further research is needed to determine whether these findings can be replicated in other populations.

This study found marked gender differences in the relationship between self-esteem and aggression compared to previous research, but the reasons for this are unclear. There are a number of factors which may be relevant. Nunn and Thomas (1999) note that although clinical observations suggest that there are significant gender differences in the expression of anger, these observations are often not reflected in the research findings. They suggest that this may be due to the reliance on non-clinical populations in most studies, and that gender differences in the expression of anger may not exist in nonclinical populations because 'mentally healthy individuals' may be able to utilise responses that are adaptive to the situation rather than 'relying on gender stereotyped responses to anger' (p.147). Although care leavers are a subclinical population they have high levels of mental health needs, and it is possible that they have a tendency to respond in more gender stereotyped ways. There is also increasing convergence between men and women's roles amongst people in higher socio-economic

classes, and it is possible that this is reflected in a greater similarity between male and female self-concepts compared to men and women from more deprived and traumatic backgrounds.

Belsky *et al.* (1991) note that early life experiences such as rejection by parents lead individuals to mature earlier and display short-term mating strategies in adulthood. Most care leavers will have had early experiences of rejection and abuse, and it is possible that the subsequent early maturation and use of short-term mating strategies may cause them to be more sensitive to their rank and attractiveness than others with less difficult backgrounds.

It is possible that the importance of the domains of social inclusion, rank and attractiveness are heightened for care leavers because they have lower self-esteem in other domains (for example employment or academic achievement). Cheng *et al.*, (2010) also notes that social status can be achieved by dominance, which is based on intimidation and is closely linked to aggression, and prestige, which is based on the possession of skills or expertise. It may be that, due to their deprived backgrounds, care leavers have more limited opportunities to achieve higher status through prestige and are therefore more reliant on using dominance.

Baumeister *et al.* (1996) argued that aggression occurs when an individual's self-esteem is disputed by others. Arguably the difficult relationships and adverse living conditions experienced by many care leavers, together with the stigma of being in care, may expose them to more situations where their self-esteem is threatened.

Although effort was made to ensure that the sample used in this study was representative of the local population of care leavers, it is possible that the sample may be slightly biased towards less aggressive individuals as individuals who were in prison or police custody at the time of the data collection were excluded from the study. It is also possible that the Leaving Care Teams may not have approached more violent and risky individuals to take part in the study. It should also be noted that the sample in this study was not representative of the wider UK care leaver population in terms of ethnicity or levels of disability (Department for Children, Schools and Families, 2010). In addition the care systems, and therefore the experiences of care leavers, may not be the same outside the UK.

It had been intended that full data sets from 68 participants would be collected for this study. Unfortunately this was not possible as arranging suitable times to meet with care leavers proved difficult. As a result of this, the sample size was smaller than intended and it is possible that weaker relationships between variables have not been detected due to insufficient power. This may have particular relevance when considering the gender differences in the relationships between self-esteem and aggression, as it is possible that there were similar relationships between self-esteem and aggression in men and women, but that the weaker relationships were not detected. However, almost all the non-significant relationships were very weak (the exceptions to this have been noted in the results) suggesting that a larger sample size would have produced similar results. The limitations of the sample size also meant that it was not possible to conduct a between-groups analysis to establish whether individuals with defensive forms of self-esteem reported higher levels of aggression than those with secure high self-esteem. Although an alternative analysis was carried out looking at correlations between discrepant forms of self-esteem and aggression, the nature of these analyses meant that it was not possible to fully address the

original hypotheses regarding the relationships between defensive self-esteem and aggression.

Study design

The cross-sectional design of this study means that it is not possible to draw conclusions about the direction of the relationships between self-esteem and aggression. For example, it is possible that rather than social exclusion precipitating aggression in women, aggressive behaviours may cause others to reject them and therefore bring about social exclusion. Equally, there may be reciprocal relationships between self-esteem and aggression, such that one maintains the other. Further research using a longitudinal design would allow investigation of the direction of the relationship between self-esteem and aggression.

This study included an analysis of the relationships between WTAR scores and other variables in order to confirm that IQ and literacy were not confounding variables. However, as highlighted in the introduction, there is a great range of factors which can contribute to aggression and which can relate to each other in complex ways. It is therefore possible that the apparent relationships between different aspects of self-esteem and aggression may be a product of other covarying variables (Baumeister *et al.*, 2003).

A large number of correlational analyses were carried out due to the multi-dimensional nature of this study. Although the majority of the relationships which emerged showed a high level of significance with medium to large effect sizes, it should be noted that it is possible that some of the results were spurious.

Bonferroni corrections were not performed as the sample sizes were already relatively small and power would have been reduced further.

Use of Self-Report Measures

All the data for this study were collected through the use of self-report measures or implicit association tests. There are issues associated with using both forms of measure, some of which will be discussed here.

Some of the difficulties associated with using self-report measures to measure self-esteem have been previously discussed in the introduction, and form part of the rationale for the use of implicit association tests in this study. However, as with all self-report measures, the RPQ may also be subject to various forms of response bias and impression management. This could be addressed in future research by incorporating measures such as the Paulhus Deception Scales (Paulhus, 1998). It should also be noted that the RPQ provides a subjective measure of aggression, and other methods such as behavioural experiments or the use of data from criminal records might have provided a more objective measure of aggression. However these alternative measures are not without their problems; for example, behavioural experiments used in the study of human aggression almost inevitably have poor ecological validity due to ethical considerations, and using the number of violent convictions as a measure of aggression is problematic because many aggressive acts go unreported or do not result in convictions, and different types of offences have different conviction rates. Triangulating a number of different data sources could provide a more comprehensive measure of aggression in future research.

Raine *et al.* (2006) noted that there are many similarities between proactive and reactive aggression, and the raw scores used in this study do not provide 'pure' measures of proactive and reactive aggression. Future research could use residualised scores to gain further understanding of differential relationships between self-esteem and the elements which are unique to proactive and reactive aggression (Raine *et al.*, 2006).

The RPQ is designed to measure proactive and reactive aggression rather than the categories of indirect and direct aggression. There is evidence to suggest that, compared to men, women tend to engage in more indirect than direct aggressive acts (Griskevicius *et al.*, 2009). It is possible that, due to the use of the RPQ, the levels of aggression in women have been underestimated in this study.

Domains of self-esteem were measured using the Social Comparison Scale, which has been shown to have good validity and reliability. This measure was thought to be more suitable for this study than the four measures used by Kirkpatrick and Ellis (2002) as it is a single, brief measure and therefore takes much less time to complete, and because there was a lack of information available about the validity and reliability of one of the measures used by Kirkpatrick and Ellis (Inclusionary Status Scale; Spivey, 1990). Participants completing the Social Comparison Scale are asked to rate themselves in comparison with others. While this fits well with the idea of self-esteem domains as sociometers, it should be noted that the Social Comparison Scale was not designed as a self-esteem scale, and differs from most self-esteem measures in that it provides a measure of participants' self-esteem relative to others. In that respect, the Social Comparison Scale is similar to the self-esteem IATs.

Participants were encouraged to compare themselves to the general population when completing the Social Comparison Scale and the self-esteem IATs. However, Major *et al.* (1993) found evidence that members of stigmatised groups tend to compare themselves with other members of that group in order to preserve self-esteem, and some of the comments made by participants suggested that they may have been restricting comparisons to within their own peer group. The participants' ratings may have differed depending on whether they were comparing themselves to their peers or to wider society.

Some of the data collection took place in less than ideal conditions where interruptions and distractions may have interfered with the participants' ability to concentrate. This is likely to have had the greatest impact on the participants' completion of the IATs and may have affected some individuals' IAT scores.

Use of the Implicit Association Test

The four self-esteem implicit association tests were designed specifically for this study. There are a number of issues that should be considered when interpreting the results of these IATs, and some of the key points are discussed here (see Teige-Mocigemba *et al.*, 2010 and Zeigler-Hill & Jordan, 2010 for a more extensive critique of IAT methodology).

A key issue is the validity and reliability of the IATs used in this study. There are some grounds to anticipate that the global self-esteem IAT would have a degree of validity, as it draws heavily on global self-esteem IATs successfully used in previous research (Jordan *et al.*, 2005; Pinter & Greenwald, 2005). However, it was beyond the scope of this study to explore the validity and reliability of this, or any of the domain specific IATs, further. Although the validity of the IATs used in

this study has not been formally assessed, the results show that data from the IATs related to other variables in interesting and theoretically significant ways. The positive correlations between the IATs themselves and between the IATs and explicit measures of self-esteem can be interpreted as some evidence that the IATs were measuring an aspect of self-esteem. In addition, discrepant domains of self-esteem (calculated using IAT scores) showed theoretically meaningful relationships with aggression. However, as noted in the results section, not all the IATs and self-esteem measures were intercorrelated, which although not unusual for IATs (Zeigler-Hill & Jordan, 2010), could potentially indicate poor psychometric properties. It should be noted that one potential issue with the domain specific IATs is that participants may have categorised the stimulus words as positive or negative rather than using the domain specific categories (eg 'left out' words may have been categorised as negative and 'fitting in' words may have been categorised as positive). This would mean that the domain specific IATs acted as global self-esteem IATs rather than representing different domains of implicit self-esteem. However, there were only limited correlations between the IATs, and the discrepancy scores for the different domains of self-esteem related to aggression in different ways, which suggests that the IATs were not measuring identical constructs.

It is also possible that the choice of stimuli words may have affected the outcomes of the IATs used in this study. Nosek *et al.* (2007) note that 'category labels appear to be critical for constraining the interpretation of the stimulus items. At the same time, the stimulus items, as a set, can affect the construal of the target category' (p. 281). Studies such as that by Campbell *et al.* (2007) illustrate that the choice of attribute words can have a significant impact on the outcomes of IATs. The words used for the IATs in this study were chosen in consultation with a small group of care leavers. Consideration was given to a number of criteria when choosing stimulus words; including the ability of care leavers to read and understand the words and how much they associated the

words with the attribute categories. However, the original set of words which were reviewed by the care leavers were generated through using a thesaurus, previous studies and consultation with a number of trainee clinical psychologists. It is possible that, had care leavers themselves been asked to generate the original word set, additional words which were more salient to this population would have been included (for example slang words). The degree of familiarity or salience of the word stimuli to the participants may have affected the results of the IATs. In future research it may be helpful for the population under investigation to be involved in generating the initial options for word stimuli, in order to ensure that the words chosen for use in the IATs are as familiar and salient as possible to that particular population.

It was also very difficult to find suitable words for the domains of self-esteem IATs, and in particular the attractiveness IAT. The limited synonyms available, coupled with the need to exclude words which were very clearly gender specific or which would result in the possibility of the words being sorted on the basis of extraneous features (eg word length), resulted in a very small number of words from which the IAT stimuli could be chosen. This may have resulted in less suitable words being included in the IATs (for example words that the care leavers were less familiar with or were not as strongly associated with the target categories). Although effort was made to avoid gender specific words for the attractiveness IAT (eg beautiful), the chosen words could be regarded as having more feminine than masculine qualities, which may also have impacted on the results. In future research it might be appropriate for gender specific IATs to be used, or for pictures to be used instead of word stimuli.

The use of the IATs in this study should be regarded as exploratory and further research is needed to determine whether they are valid and reliable measures of different forms of implicit self-esteem. One way of doing this would be to

compare the scores of two groups with known differences; for example comparing the relative attractiveness IAT scores of people who have been independently rated as physically attractive with people who have been rated as physically unattractive.

It should also be noted that self-esteem IATs, like the Social Comparison Scale scores, should be regarded as measuring self-esteem relative to others, rather than independent measures of an individual's self-worth. Karpinski (2004) notes that when self-esteem is measured using an IAT it is not possible to distinguish someone who has high self- and high other-esteem from someone who has low self- and low other-esteem. This is important as different combinations of self- and other-esteem may relate to aggression in different ways; in a study of young adults Bradshaw and Hazan (2006) found that participants with more favourable views of self than others, and those who had equally unfavourable views of both self and others, were most aggressive. This is also of particular relevance in this study, as care leavers have often had very poor experiences of relationships, and therefore may tend to have particularly negative views of others.

There are a number of reasons why the results of the correlations between self-esteem discrepancy scores and aggression should be regarded with some caution. Firstly, the implicit/explicit self-esteem discrepancy scores range from damaged self-esteem (high implicit/low explicit self-esteem) through to defensive self-esteem (low implicit/high explicit self-esteem). It has been suggested that both forms of self-esteem may be associated with psychopathology (Schroder-Abe *et al.*, 2007), therefore relationships between self-esteem discrepancy scores and aggression should not be interpreted as equivalent to a relationship between aggression and increasing or decreasing levels of self-esteem dysfunctionality. Secondly, the discrepancy scores do not allow different types of implicit/explicit self-esteem discrepancy to be distinguished; for example it is not

possible to distinguish between people who have high secure self-esteem (high implicit and explicit self-esteem) and low secure self-esteem (low implicit/explicit self-esteem). Similarly, different combinations of explicit and implicit self-esteem may result in the same size of discrepancy; for example people who have very high explicit self-esteem and only slightly low implicit self-esteem could have the same size of discrepancy as people who have slightly high explicit self-esteem and very low implicit self-esteem. This is important, as different types of discrepancy may relate to aggression in different ways. For example, the size of an implicit/explicit self-esteem discrepancy might give an indication of the fragility of someone's self-esteem, but the level of explicit self-esteem may affect what situations are perceived as threatening; someone with high explicit rank (and therefore a sense of superiority) may find themselves being treated in a way that does not feel sufficiently respectful more often than someone with only moderately high explicit social rank.

Clinical Implications

The results of this study appeared to confirm that certain forms of self-esteem are related to aggression. In light of this, interventions which focus on self-esteem may be helpful in the treatment of aggression. However, the results also indicated that the relationships between self-esteem and aggression are complex; any interventions must therefore take account of how the individual views him or herself in a number of different domains, their gender and their implicit as well as their explicit self-views.

The findings of this study suggest that assessment tools which measure domains of self-esteem may be more clinically useful than global self-esteem measures when working with men and women who have problems with aggression. The results also suggest that it may be important for clinicians to be able to assess

and monitor the degree and nature of discrepancies between implicit and explicit self-esteem, although to the author's knowledge there are no effective clinical measures of implicit self-esteem currently available. If further research confirms the link between discrepant self-esteem and aggression there may be a need to develop clinical tools to assess implicit self-esteem and implicit/explicit self-esteem discrepancies.

There were substantial gender differences in the relationship between self-esteem and aggression, which suggests that men and women may need different types of interventions to help them manage their aggression. It appears that perceptions of rank and relative attractiveness would be the most important consideration when designing interventions for men, and that their level of global self-esteem is of little relevance. Designing interventions which focus on self-esteem for the treatment of aggression in men could be challenging, as the results of this study suggest that interventions would need to focus on moderating or reducing men's sense of superiority and attractiveness. This presents considerable ethical issues and could even be counterproductive, as a sense of superiority and attractiveness may be protective against other psychological difficulties. This would be of particular concern when working with care leavers as many care leavers already have mental health difficulties and engage in high risk behaviours such as self-harm, and low self-esteem has been found to predict depression and suicide ideation (Cheng & Furnham, 2002; McGee & Williams, 2000). However, as a sense of superiority and attractiveness may reflect negative views of others as much as positive views of self, it may be appropriate for interventions to focus on helping men to develop more positive views of others rather than developing less positive views of themselves. An alternative might be for interventions to focus on other factors that are known to be implicated in aggression (such as social problem solving) rather than on self-esteem.

The above discussion is founded on the premise that men's self-reports of their high rank or superior attractiveness accurately reflect their feelings about themselves, and this may not be the case. The results of this study suggest that although aggressive men may report feeling superior in terms of rank or attractiveness, this may mask implicit feelings of inferiority or unattractiveness. Further research is needed to establish the exact nature of the relationships between discrepant self-esteem and aggression and to develop possible treatment approaches. However one possibility is that interventions might focus on reducing implicit/explicit self-esteem discrepancies by raising implicit levels of self-esteem using methods such as those suggested by Dijksterhuis (2004) and Baccus *et al.* (2004).

In contrast, aggression in women appears to be unrelated to social rank and attractiveness, but does seem to be related to low global self-esteem, low social inclusion and damaged social inclusion. Interventions that might be appropriate for the treatment of aggression in men may therefore be unhelpful or even detrimental for women. Women may benefit from interventions which aim to improve their global self-esteem, however it also seems likely that interventions specifically focused on increasing their sense of group fit would be helpful. This might involve work focusing on increasing or improving their social and supportive relationships.

The results also suggest that women with a damaged sense of group fit (high implicit but low explicit sense of group fit) are more aggressive. As with defensive rank and attractiveness in men, this suggests that there is a need to assess women's implicit, as well as their explicit, reports of social inclusion. As women with a damaged sense of group fit have low levels of explicit social inclusion,

interventions would need to focus on reducing the discrepancy between implicit and explicit group fit by working to increase their explicit sense of group fit.

Although the processes behind the relationships between the different forms of self-esteem and aggression remain unclear, both men and women may benefit from understanding how their views of themselves might relate to aggression and from work helping them to learn to tolerate the difficult emotions that arise when their self-esteem is threatened or from discrepant implicit/explicit self-esteem. However, it may be particularly difficult to work with individuals with defensive self-esteem as they may find the idea that they have relatively low implicit self-esteem very threatening.

It may not be appropriate for all interventions for the treatment of aggression to be focused on self-esteem, however Walker & Bright's (2009a) suggestion that 'each intervention, from an exchange of words to several sessions of work to the entire intervention, should be conducted with self-esteem in mind' (p.188) and their emphasis on the importance of avoiding the client feeling humiliated are very relevant regardless of the nature of the relationship between self-esteem and aggression. An additional consideration is that many of the interventions currently available for the treatment of aggression are group based. While the social aspect of this type of intervention may be of great value to women due to their low sense of social inclusion, more caution may be needed when working with men, as group dynamics around competition may be more likely to evolve and men with defensive self-esteem may find a group setting too threatening.

There are also clinical implications which specifically relate to care leavers. At a service level, thought needs to be given to how services can build the resilience of young people in care and support the development of healthy self-esteem. There is also a wider need to address the stigma and social isolation that care leavers and young people in care experience, as in addition to the other

psychological and social difficulties that may result, there is a distinct possibility that this may contribute to issues with self-esteem which may then lead on to difficulties with aggression. Positive relationships are of fundamental importance to almost all aspects of well being, but it is through positive relationships that individuals learn to develop a secure and worthy sense of self. At a clinical level, engaging with care leavers is likely to be very challenging due to the fractured relationships they are likely to have experienced in the past. Creativity and flexibility are likely to be essential when working with this client group, together with the acknowledgement that attachment issues may bring many challenges to both the care leaver and the clinician.

Future Research

Some of the areas which might benefit from further research have been mentioned in the earlier discussions about the limitations and clinical implications of this study. This section will consider some additional areas which might benefit from further study.

Most researchers accept that there needs to be a great deal more research into implicit self-esteem, including how it differs from explicit self-esteem and how best to study it. Although the evidence base for the self-esteem IAT is continuing to grow there are still many methodological issues which need to be addressed. To the author's knowledge, little research has been done into domains of implicit self-esteem and this is the first study to investigate the domains of implicit social rank, group fit and relative attractiveness using IATs. There is a need for further research to investigate the evidence for domains of implicit self-esteem and to determine whether conceptualising self-esteem in this way is a useful and meaningful way of understanding human behaviour. There is also a need to continue to investigate how the choice of stimuli affects IATs; the results of this

and other studies (eg Campbell *et al.*, 2007) suggest that the choice of words plays an important part in the outcomes of IATs.

Despite the large amount of research into explicit measures of self-esteem there is still a lack of consensus about how self-esteem should be defined and what constitutes 'healthy' self-esteem. Arguably more research is needed to understand how self-esteem is best conceptualised. The findings of this research suggest that, at least in the context of aggression, self-esteem is best thought of in terms of domains. Further research is needed to explore what the most meaningful domains of self-esteem are, how they relate to global self-esteem and whether men and women use different values and reference points when they are evaluating their self-worth. There is also a need to explore the relationship between narcissism and aggression.

This study has produced some interesting findings about the relationship between self-esteem and aggression, and in particular the influence of gender. Further research is needed to establish whether these findings can be replicated with larger sample sizes and different populations. There is also a need to explore whether the findings are replicated when different measures of aggression (for example behavioural experiments and criminal records) and self-esteem (for example the Name Letter Test) are used. There is also a need for more longitudinal research to establish causal relationships between self-esteem and aggression, and for more research which takes account of possible co-varying variables. The findings of this study suggest that both defensive and damaged forms of self-esteem may play an important role in aggression but larger sample sizes are needed to be able to examine the relationship between different forms of discrepant self-esteem and aggression in more detail. There is also a need to disentangle the relative effects of self- and other-esteem, as this potentially has significant theoretical and clinical implications.

Perhaps most importantly, care leavers remain a very vulnerable but poorly understood population. There is a need for further research to investigate the extent and range of all their psychological needs, not just aggression, and to determine how to provide them with the most effective services and interventions.

Conclusions

The results of this study showed marked gender differences in the relationship between self-esteem and aggression. In women, global self-esteem, social inclusion and discrepant social inclusion were all inversely correlated with self-reported aggression. For men, there were significant positive relationships between self-reported aggression and four different forms of self-esteem: social rank, relative attractiveness, discrepant social rank, and discrepant relative attractiveness.

These findings suggest that the relationships between self-esteem and aggression are complex and that research relying solely on measures of global self-esteem may not capture this. There is a need for further research to investigate whether these results are replicated in other populations and to establish more clearly the relationship between discrepant forms of self-esteem and aggression. Effective clinical interventions need to consider how the individual views him or herself in a number of different domains, their gender and their implicit as well as their explicit self-views.

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Appendix 1

Letter confirming initial R&D approval (Cardiff & Vale)



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Cardiff and Vale
University Health Board

Ysgrifftwr Amodol
University Hospital of Wales

Ysgrifftwr Amodol
University Hospital of Wales
Cardiff
CF14 4XW

Tel 029 20746986
Fax 029 20745311
CAV_Research.Development@wales.nhs.uk

From: Professor JI Bisson
R&D Director
R&D Office, 2nd floor TB2
University Hospital of Wales
Cardiff
CF14 4XW

18 June 2010

Ms Amy Canning
Trainee Clinical Psychologist
Cardiff And Vale University Health Board
Psychology Training, Archway House
Llanishen
Cardiff
CF14 5DX

Dear Ms Canning

Project ID : 10/MEH/4881 : An Investigation Into the Relationship Between Self-Esteem and Agression in Young Care Leavers

Thank you for your recent communication regarding the above project, which was reviewed on 18 June 2010 by the Chair of the Cardiff and Vale Research Review Service (CaRRS).

Documents submitted for review were:

Document	Version	Date
NHS RD Form	3.0	15-6-10
SSI Form	3.0	15-6-10
Protocol	1	15-6-10
Patient Information Sheet	1	2-6-10
Participant Details Sheet	1	2-6-10
Contact Details for Sources of Support	1	2-6-10
Participant Background Information Sheet	1	7-5-10
Patient Consent Form		15-6-10
Questionnaire: Reactive and Proactive		
Questionnaire: Rosenberg Self Esteem Scale		
Questionnaire: Social Comparison Rating Scale		
Project Flyer	Draft 1	13-6-10



I am pleased to inform you that the Chair had no objection to your proposal!

You may now contact the R&D Office to obtain the sponsor signature needed for your submission to the NHS Research Ethics Committee.

R&D approval and final acceptance of sponsorship by Cardiff & Vale UHB is now subject to evidence of favourable opinion from the relevant NHS Research Ethics Committee

Once this in place an R&D approval letter will be issued. You should not begin your project before receiving this written confirmation from the R&D Office.

Please ensure that you notify R&D if any changes to your protocol or study documents are required in order to obtain a favourable opinion from the Research Ethics Committee

If you require any further information or assistance, please do not hesitate to contact the staff in the R&D Office

Yours sincerely,



Professor Jonathan I Bisson
Chair of the Cardiff and Vale Research Review Service (CaRRS)

CC R&D Lead Prof Jonathan Bisson

(ENCS) Obtaining a sponsorship signature - guidelines

Appendix 2

Letter confirming NHS ethical approval (Dyfed Powys)



GIG Canolfan Gwasanaethau
Busnes
NHS Business Services
Centre

Dyfed Powys Research Ethics Committee

PO BOX 108
Building 1
St David's Park
Carmarthen
SA31 3WY

Telephone: 01267 225045
Facsimile: 01267 225226

Ms Amy Canning
Trainee Clinical Psychologist
Cardiff and Vale University Local Health Board
Psychology Training, Archway House
Llanishen
Cardiff CF14 5DX

28 July 2010

Dear Ms Canning

Study Title: An investigation into the relationship between self-esteem and aggression in young care leavers
REC reference number: 10/WMW01/11

The Research Ethics Committee reviewed the above application at the meeting held on 21 July 2010. Thank you for attending to discuss the study.

Ethical opinion

- The Information Sheet should include further information in the introductory paragraph to explain that the study is being carried out to fulfil the requirements of the doctorate training programme. It was confirmed that Cardiff & Vale University Health Board headed paper would be used. The term 'literacy' should be explained in lay language e.g. reading abilities.

The members of the Committee present gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Canolfan Gwasanaethau Busnes GIG Cymru.
Canolfan Henffordd, 36 Stryd y Berllan,
Abertawe, SA1 5AQ
Ffôn: 01792 458066
WHTN: 1780
Ffacs: 01792 607533
Ffacs yr hafan ddiogel: 01792 607234
TNT QW5/QW3 32



NHS Wales Business Services Centre,
The Oldway Centre, 36 Orchard Street,
Swansea, SA1 5AQ
Telephone: 01792 458066
WHTN: 1780
Fax: 01792 607533
Safe Haven Fax: 01792 607234
TNT QW5/QW3 32

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

For NHS research sites only, management permission for research ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>. Where the only involvement of the NHS organisation is as a Participant Identification Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.

Sponsors are not required to notify the Committee of approvals from host organisations.

It is responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

You should notify the REC in writing once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers.

Approved documents

The documents reviewed and approved at the meeting were:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Investigator CV		
Protocol	1	15 June 2010
Participants details sheet	1	02 June 2010
REC application	3.0	07 July 2010
Letter from Sponsor	signed by Professor Bisson	18 June 2010
Questionnaire: Rosenberg Self-Esteem Scale		
Advertisement	1	13 June 2010
Participant Information Sheet	1	02 June 2010
Participant Consent Form	1	02 June 2010
Questionnaire: Social Comparison Rating Scale		
Questionnaire: Reactive and Proactive		
Background Information	1	07 May 2010
Debrief	1	02 June 2010
Contact details for sources of support	1	02 June 2010
Supervisor's CV		

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk

10/WMW01/11

Please quote this number on all correspondence

With the Committee's best wishes for the success of this project

Yours sincerely



PP

Mrs Sarah Jones
Alternate Vice-Chair

Email: sue.byng@wales.nhs.uk

Enclosures: List of names and professions of members who were present at the meeting and those who submitted written comments
"After ethical review – guidance for researchers"

Copy to: R&D office

Appendix 3

Letter confirming final R&D approval (Cardiff & Vale)



GIG
CYMRU
NHS
WALES

Bwrdd Iechyd Prifysgol
Caerdydd a'r Fro
Cardiff and Vale
University Health Board

Ysbyty Athrofaol Cymru
University Hospital of Wales

Heath Park,
Cardiff, CF14 4XW
Phone 029 2074 7747
Fax 029 2074 3838
Minicom 029 2074 3632

Parc Y Mynydd Bychan,
Caerdydd, CF14 4XW
Ffôn 029 2074 7747
Ffacs 029 2074 3838
Minicom 029 2074 3632

Eich cyf/Your ref
Ein cyf/Our ref
Welsh Health Telephone Network 1872
Direct line/Llinell uniongyrchol

Tel: 029 20746986
Fax: 029 20745311
CAV_Research.Development@wales.nhs.uk

From: Professor JI Bisson
R&D Director
R&D Office, 2nd Floor TB2
University Hospital of Wales
Cardiff
CF14 4XW

02 September 2010

Ms Amy Canning
Trainee Clinical Psychologist
Cardiff and Vale University Health Board
Psychology Training, Archway House
Llanishen
Cardiff, CF14 5DX

Dear Ms Canning

Project ID : 10/MEH/4881 : An Investigation Into the Relationship Between Self-Esteem and Aggression in Young Care Leavers

Further to recent correspondence regarding the above project, I am now happy to confirm receipt of evidence of favourable opinion from the relevant NHS Research Ethics Committee.

Please accept this letter as confirmation of sponsorship by Cardiff and Vale UHB and permission for the project to begin.

Final documents approved for use with this project are:

Document	Version number	Date
NHS RD Form	3.0	15-6-10
SSI Form	3.0	15-6-10
Protocol	1	15-6-10
Patient Information Sheet and Consent form	2	29-7-10
Participant Details Sheet	1	2-6-10
Contact Details for Sources of Support	1	2-6-10
Participant Background Information Sheet	1	7-5-10
Questionnaire: Reactive and Proactive		
Questionnaire: Rosenberg Self Esteem Scale		
Questionnaire: Social Comparison Rating Scale		
Project Flyer	1	13-6-10

Version 1.0. 09.06.10

Page 1 of 2

Bwrdd Iechyd Prifysgol Caerdydd a'r Fro yw enw gweithredol Bwrdd Iechyd Lleol Prifysgol Caerdydd a'r Fro
Cardiff and Vale University Health Board is the operational name of Cardiff and Vale University Local Health Board



UHW129X

May I take this opportunity to wish you success with the project, and to remind you that as Principal Investigator you are required to:

- Ensure that all members of the research team undertake the project in accordance with ICH-GCP and adhere to the protocol as approved by the Research Ethics Committee
- Inform the R&D Office if any external or additional funding is awarded for this project in the future
- Inform the R&D Office of any amendments relating to the protocol, including personnel changes and amendments to the actual or anticipated start and end dates
- Complete any documentation sent to you by the R&D Office or University Research and Commercial Division regarding this project
- Ensure that adverse event reporting is in accordance with the UHB adopted Cardiff and Vale NHS Trust Policy and Procedure for Reporting Research-Related Adverse Events (refs 164 & 174) and Incident Reporting and Investigation (ref 108)
- Ensure that the research complies with the Data Protection Act 1998
- Ensure that arrangements for continued storage or use of human tissue samples at the end of the approved research project comply with the Human Tissue Act, 2004 (for further information please contact Sharon Orton, HTA Coordinator OrtonS@cf.ac.uk).

If you require any further information or assistance, please do not hesitate to contact staff in the R&D Office.

Yours sincerely,



Professor Jonathan I Bisson
Cardiff and Vale University Local Health Board R&D Director

CC Dr Liz Andrew, Clinical Supervisor

Appendix 4

Email confirming no additional R&D approval required (Aneurin Bevan)

Wed, 16 June, 2010 16:54:40
RE: R&D approval
From: Rosamund Howell (Aneurin Bevan Health Board - Research & Development)
<Rosamund.Howell@wales.nhs.uk>
To: amy canning <>

Dear Amy,
Thank you for your e mails and attachments. I apologise for not replying sooner but work has been chaotic as we had our first annual R&D Conference last week and I am now trying to catch up.
I have read your protocol and because you will be carrying out research involving the charity Action for children and will not be recruiting any Aneurin Bevan Health Board patients It will not be necessary to register your project with the Aneurin Bevan Health Board R&D Department.
Best Wishes,
Roz

--- On Tue, 8/6/10, amy canning <> wrote:

From: amy canning <>
Subject: R&D approval
To: rosamund.howell@wales.nhs.uk
Date: Tuesday, 8 June, 2010, 21:12
Dear Ros,

Following our conversation earlier today, I am writing to ask whether I and my colleague will require approval from Aneurin Bevan R&D office.

We will both be doing research projects with young care leavers in Gwent. We are obtaining R&D approval from Cardiff and Vale University NHS trust (as they are our employers) and NHS ethics approval (because although we are not using NHS patients as participants, there is currently no appropriate alternative ethical approval system). Dr Liz Andrew (who has been seconded to the Skills for Living project from Aneurin Bevan) is named on the forms as our clinical supervisor. We may also use the Skills for Living premises in Gwent, which are owned by the NHS, as a venue for participants to complete the research questionnaires.

I have attached copies of the protocols for both projects to this email. I would be grateful if you could confirm whether we will require R&D approval from yourselves.

Best wishes,

Amy

Appendix

Letter to Social Services managers



SOUTH WALES DOCTORAL PROGRAMME IN CLINICAL PSYCHOLOGY CWRS DOCTORIAETH DE CYMRU MEWN SEICOLEG CLINIGOL

South Wales Doctoral Programme in Clinical Psychology
1st Floor, Archway House
Llanishen
Cardiff
CF14 5DX
Tel: 02920 206464
Mobile: 07749 551 680

Dear

We are two trainee clinical psychologists on the South Wales Doctoral Programme in Clinical Psychology. As part of our doctoral qualification we are required to complete a large scale research project, and we have both chosen to examine aspects of the psychological needs of young care leavers. We are both supervised by Dr Liz Andrew, Clinical Psychologist, who works for the Caerphilly Leaving Care Team. We are writing to ask your permission to approach young care leavers (aged 18-21) in the Leaving Care Team in your locality to take part in our studies.

Care leavers often have high levels of psychological difficulties, including problems with aggression. Despite this, there has been very little research with this client group. We are hoping our studies will help to improve understanding of these issues in order to inform future interventions and service planning.

Rhian Murphy will be conducting a questionnaire based survey examining the relationship between adult attachment style, core beliefs, and current emotional difficulties. Amy Canning will be conducting a questionnaire based survey (plus a short computer task) examining the relationship between self-esteem and aggression. Participation in both studies will be voluntary and participants will be able to withdraw at any time. Participation in each study will take approximately one hour and the young people will be paid £5 for their time. We understand that the Leaving Care Team staff are very busy and we will ensure that the studies will require very little staff input and do not interfere with their work.

We have enclosed copies of the protocols and the participant information sheets with this letter, should you require any further information please do not hesitate to contact us or Dr Liz Andrew. We will be very happy to come and present the results of our studies to you and your staff on completion.

As we are both Cardiff and Vale University Health Board employees, the studies are funded by Cardiff and Vale and have been reviewed and approved by the Cardiff and Vale NHS Research and Development Committee. The studies will also be reviewed and approved by an NHS Ethics Committee. We will of course be adhering to the confidentiality and ethical guidelines set out by the British Psychological Society and NHS research governance, however we would be happy to sign an honorary contract or confidentiality agreement with your organisation in addition to this if you felt this was necessary.

Dr Andrew has discussed the projects informally with the Leaving Care Team managers and they have been very positive. **We would be grateful if you could confirm whether you are happy for the studies to go ahead by signing and returning the attached form in the stamped addressed envelope provided.**

Best wishes,

Rhian Murphy and Amy Canning

RESEARCH EXPLORING THE PSYCHOLOGICAL NEEDS OF YOUNG CARE LEAVERS

I agree/do not agree (please delete as appropriate) for the Leaving Care Team in ????? to be involved in the study 'An investigation into the relationship between self-esteem and aggression in young care leavers'.

I agree/do not agree (please delete as appropriate) for the Leaving Care Team in ????? to be involved in the study 'Psychological needs of young adults leaving the care system'.

Signed:

Date:

Appendix 6

Approval from the Social Services managers

Appendix 7

Guidelines for recruiting participants



SOUTH WALES DOCTORAL PROGRAMME IN CLINICAL PSYCHOLOGY CWRS DOCTORIAETH DE CYMRU MEWN SEICOLEG CLINIGOL

Research studies: 'An investigation into the relationship between self-esteem and aggression in young care leavers' & 'Psychological needs of young adults leaving the care system'

Many thanks for agreeing to help us with our research projects. We have put together some guidance about recruiting participants which we hope will help you to decide whether an individual will be able to take part:

Care leavers can take part in either or both studies. They will be paid £5 for each study, so if they take part in both they will receive £10

Inclusion Criteria

- Care leavers must be aged between 18-21 years at the time of taking part
- They must be in contact with a Leaving Care Team
- They must be willing and able to give informed consent to take part
- They must give consent to complete all sections of the study
- Participants must be able to fully understand spoken and written English (but we will provide help when completing the questionnaires)
- For Rhian Murphy's study only - Participants must be able to draw on an experience of having been in a romantic relationship (however care leavers interpret this for themselves).

Exclusion Criteria

- Participants who are illiterate or have severe learning disabilities, as the questionnaires have not been standardised on this population.
- Participants who have audio/visual/physical impairments which prevent them from giving full informed consent, or being able to complete the questionnaires/computer task
- Participants who are intoxicated at the time of interview.

We would be grateful if you could give out flyers to any care leavers who meet the above criteria and record the names and contact details of any who are interested in taking part on the sheet provided. We will then liaise with you and the care leavers to arrange a suitable time and place to go through the information sheet and consent form and to complete the questionnaires.

Please feel free to contact us if you have any questions on the numbers below:

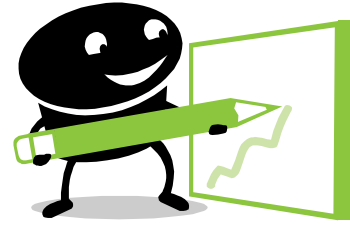
Rhian Murphy:
Amy Canning:

Appendix 8

Participant contact details sheet

Appendix 9

Research flyer



Volunteers Wanted for a Research Study

You will be paid £5 for your time

An investigation into the relationship between self-esteem and aggression in young care leavers.

Understanding more about the underlying causes of aggression may help us to find better ways of helping individuals who have difficulties controlling aggression.

Recently, researchers have begun to look at the role of self-esteem (how you feel about yourself) in aggression. This study is investigating the relationship between self-esteem and aggression in young care leavers.

- **Who can take part?**

Care leavers aged 18-21 who are in touch with one of the Leaving Care Teams in Gwent.

- **What would it involve?**

Filling in 5 short questionnaires and doing a short computer task. The results of these will be anonymous and confidential.

- **How long will it take?**

It should take about 50 minutes.

- **What do I get out of it?**

We will pay you £5 for your time, and you will be helping in an important research study which will help us to understand the underlying reasons for aggressive behaviour.

- **What do I do if I would like to know more?**

Tell a member of staff in the Leaving Care Team. They will pass your details on to me and I will contact you so that we can discuss the study further and you can decide whether you would like to take part. Or, you can contact me directly:

Amy Canning
South Wales Clinical Psychology Training Course
Archway House, 77 Ty Glas Avenue
Llanishen, Cardiff, CF14 5DX
Tel:

Thankyou!

Appendix 10

Participant information sheet



SOUTH WALES DOCTORAL PROGRAMME IN CLINICAL PSYCHOLOGY CWRS DOCTORIAETH DE CYMRU MEWN SEICOLEG CLINIGOL

PARTICIPANT INFORMATION SHEET

An investigation into the relationship between self-esteem and aggression in young care leavers

We are inviting you to take part in a research study looking at how peoples' self-esteem (the feelings you have about yourself) relates to aggression. This study is being carried out by Amy Canning (trainee clinical psychologist) in order to fulfil the requirements of the doctorate training programme in Clinical Psychology.

Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read this information sheet carefully and discuss it with others if you wish.

Please ask if there is anything that is not clear or if you would like more information.

Thank you for reading this and for your interest in the research.

What is the study about?

There has been a lot of research into the causes of aggression. Recently attention has turned to looking at how people's self-esteem can contribute to aggression. We hope that if we can understand more about the underlying causes of aggression, this may help us to find better ways to help individuals who have difficulties controlling aggression.

Why have I been chosen?

We are interested in young people who have left care because there has not been very much research with care leavers, and because a disproportionate number of care leavers end up becoming involved in the criminal justice system. We are interested in speaking to any young care leavers from the Leaving Care Teams in Gwent, whatever views or experiences they have of aggression. We are asking about 136 care leavers to take part in the study and will take the first 136 people who agree to take part.

Do I have to take part?

No – you only take part if you want to. If you decide to take part you can withdraw at any time and you don't have to give a reason. If you don't want to take part, or if you decide to stop and withdraw, this won't affect the care you get from the NHS or the Leaving Care Teams.

What do I have to do?

If you do decide to take part, we will ask you to complete 5 short questionnaires and a computerised task.

One questionnaire will ask you some background information about yourself (for example your age). Two questionnaires will ask you about your feelings about yourself. One questionnaire will ask you about aggressive thoughts or behaviour. One questionnaire will involve reading a series of words out loud; this will tell us about your reading ability.

All the questionnaires will be fully explained to you before you complete them. Help filling them in will be given if you need it.

In the computerised task you will be shown a series of words on a computer screen. You will be asked to classify the words into different categories by pressing a button. The researcher will explain how to classify the words and will give you a practice trial to make sure you understand how to do it.

The questionnaires and computerised task should take no longer than 50 minutes, and it will take about 10 minutes to go through the background information and sign a consent form.

Will my taking part in this study be kept confidential?

If you agree to take part, all of the information that you give us will be anonymous and confidential. Any information about you will have your name and address removed so that you cannot be identified from it.

The only exception is if you tell us something that indicates that you or someone else is at risk from harm. We would have to share that information – and only that information – with an appropriate person in order to keep you and others safe. If we need to break confidentiality we will discuss it with you first, before contacting professionals involved in your care.

All the information from the study will be held confidentially for a maximum of 5 years. The data will be kept secure on a laptop computer and on an NHS computer. The questionnaires will be kept in a locked cabinet in a protected office on NHS premises.

What will happen to the results of the research study?

The results of the study will be written up into a report which will be submitted as part of Amy Canning's doctorate in Clinical Psychology. It may also eventually be published in an academic journal and used in academic presentations. No personal information will be identified in any publication of the results.

What are the disadvantages or risks of taking part?

We don't think there are any, but if you are worried about anything, please ask.

What are the benefits of taking part?

There are no direct benefits to you for taking part except that you will be given £5 for taking part. You will be helping in an important research study which will help us to understand the underlying reasons for aggression.

Who is organising and funding the research?

Cardiff and Vale University Local Health Board is funding and sponsoring the research.

Who has reviewed the study?

This research has been reviewed and approved by an NHS Ethics Committee and by the Cardiff and Vale University Local Health Board.

What if something goes wrong?

It is very unlikely that you will be harmed by taking part in this study; remember **that you don't have to take part if you don't want to and you can choose to stop at any point.** Please talk to us if you are worried or upset about something in the questionnaires or computerised task.

In the very unlikely event that taking part in this project harms you, there are no special compensation arrangements. If you are harmed due to **someone's** negligence, then you may have grounds for legal action but you may have to pay for it. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, the normal National Health Service complaints mechanism should be available to you.

If you would like more information about the project, please feel free to contact us:

Amy Canning Trainee Clinical Psychologist South Wales Clinical Psychology Training Course Archway House Llanishen Cardiff CF14 5DX	Dr Liz Andrew Clinical Psychologist Skills For Living The Woodlands Mamhillad Park Estate Pontypool NP4 0HZ
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Appendix 11

Participant consent form

Consent Form

An investigation into the relationship between self-esteem and aggression in young care leavers

Participant Identification Number:

Please initial the boxes

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.
3. I understand that the information I provide will be collected fairly, will remain secure and confidential, and held no longer than necessary for the purposes of this research.
4. I agree to take part in the above study.
5. I would like a summary of the research findings when the study has been completed.

Name of participant _____

Date _____ Signature _____

Contact details: _____

Contact details for my Leaving Care Team Personal Advisor (to be contacted only if there are any serious concerns for my welfare or others' welfare. No other information will be shared): _____

Name of Researcher _____

Date: _____ Signature: _____

1 copy for participant; 1 copy for researcher

PLEASE KEEP YOUR COPY OF THE INFORMATION SHEET AND CONSENT FORM

Appendix 12

Participant debrief sheet



SOUTH WALES DOCTORAL PROGRAMME IN CLINICAL PSYCHOLOGY CWRS DOCTORIAETH DE CYMRU MEWN SEICOLEG CLINIGOL

An investigation into the relationship between self-esteem and aggression in young care leavers

Thank you for taking part in this study. We greatly appreciate you taking the time to help us.

The aim of this study is to see whether there is an association between self-esteem (your feelings about yourself) and aggression.

We asked you to complete two questionnaires asking you about how you feel about **yourself. However, sometimes we don't know, or can't express, our real feelings.** Our computerised tasks have been designed to measure your inner feelings about **yourself. You were asked to categorise various words (eg 'love' and 'hate') as** relating to yourself, or as not relating to yourself. The stronger the association you hold between yourself and these words, the faster you will have been able to categorise them together. Based upon this technique we can create a measure of your current inner feelings about yourself.

We can then compare the results of these questionnaires and the computerised task with the results from the questionnaire about aggression. This will help us to understand whether there is a relationship between self-esteem and aggression.

Please be assured that the information from the computerised tasks and the questionnaires used in this study will be kept anonymous and confidential and you have the right to withdraw your data without explanation. If you would like any further information please contact us:

Amy Canning
Trainee Clinical Psychologist
South Wales Clinical Psychology Training Course
Archway House
Llanishen
Cardiff
CF14 5DX
Tel:

Dr Liz Andrew
Clinical Psychologist
Skills For Living
The Woodlands
Mamhillad Park Estate
Pontypool
NP4 0HZ
Tel:

Appendix 13

Background information sheet

An investigation into the relationship between self-esteem and aggression in young care leavers

Background Information

Date completed:..... Name of researcher:.....

ID Number:	Name of Leaving Care Team:
Date of Birth:	Gender:
Ethnicity: <input type="checkbox"/> White Welsh <input type="checkbox"/> White British <input type="checkbox"/> White Irish <input type="checkbox"/> White Other <input type="checkbox"/> Black Caribbean <input type="checkbox"/> Black African <input type="checkbox"/> Black Other <input type="checkbox"/> Asian Indian <input type="checkbox"/> Asian Pakistani	<input type="checkbox"/> Asian Bangladeshi <input type="checkbox"/> Asian Other <input type="checkbox"/> Mixed White & Black Caribbean <input type="checkbox"/> Mixed White & Black African <input type="checkbox"/> Mixed White & Asian <input type="checkbox"/> Mixed Other <input type="checkbox"/> Chinese <input type="checkbox"/> Any Other Ethnic Group <input type="checkbox"/> Not Stated
Marital status: <input type="checkbox"/> Single <input type="checkbox"/> Married/co-habiting <input type="checkbox"/> Separated/divorced	<input type="checkbox"/> Widowed <input type="checkbox"/> No Info
Total number of GCSE passes:	
Age left school:	
Employment status: <input type="checkbox"/> Unemployed <input type="checkbox"/> Employed <input type="checkbox"/> Casual	<input type="checkbox"/> Training/college <input type="checkbox"/> No Info
Warning/caution/charge/conviction for a violent offence (eg abh/battery/assault/gbh/threats):	
Warning/caution/charge/conviction for a violent offence (eg abh/battery/assault/gbh/threats) within last 12 months:	

Appendix 14

Reactive-Proactive Aggression Questionnaire

Reactive and Proactive Questionnaire (RPQ)

(adapted to adult UK form by Snowden from Raine et al. (2006), *Aggressive Behavior* 32, 159-171)

There are times when most of us feel angry, or have done things we should not have done. Rate each of the items below by crossing the box around either never, sometimes or often. Do not spend a lot of time thinking about the items – just give your first response. Make sure you answer all the items.

How often have you ...

	Never	Sometimes	Often
1. Yelled at others when they have annoyed you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Had fights with others to show who was on top	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Reacted angrily when provoked by others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Taken things from others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Become angry when frustrated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Vandalised something just for fun	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Had temper tantrums	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Damaged something because you felt mad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Had a fight just to be cool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Hurt others to win a game	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Become angry when you don't get your way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Used force to get others to do what you want	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Become angry or mad when you lost a game	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Become angry when others threatened you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Used force to obtain money or things from others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Felt better after hitting or yelling at someone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Threatened and bullied someone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Made obscene phone calls for fun	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Hit others to defend yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Got others to gang up on somebody else	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Carried a weapon to use in a fight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Become angry or mad or hit others when teased	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Yelled at others so they would do things for you	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 15

Rosenberg Self-Esteem Scale

Rosenberg Self-Esteem Scale (Rosenberg, 1965)

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

- | | | | | | |
|----|--|----|---|---|----|
| 1. | On the whole, I am satisfied with myself. | SA | A | D | SD |
| 2. | At times, I think I am no good at all. | SA | A | D | SD |
| 3. | I feel that I have a number of good qualities. | SA | A | D | SD |
| 4. | I am able to do things as well as most other people. | SA | A | D | SD |
| 5. | I feel I do not have much to be proud of. | SA | A | D | SD |
| 6. | I certainly feel useless at times. | SA | A | D | SD |
| 7. | I feel that I'm a person of worth, at least on an equal plane with others. | SA | A | D | SD |
| 8. | I wish I could have more respect for myself. | SA | A | D | SD |
| 9. | All in all, I am inclined to feel that I am a failure. | SA | A | D | SD |
| 10 | I take a positive attitude toward myself. | SA | A | D | SD |

Appendix 16

Social Comparison Scale

Social Comparison Rating Scale

Please **circle** the number on each line which best describes the way you see yourself in comparison to other.

Example:

Short 1 2 3 4 5 6 7 8 9 10 Tall

If you circle 3 this means you see yourself as shorter than others; if you circle 5 this means you see yourself as average height and if you circle 7 this means that you see yourself as somewhat taller than others.

If you understand the above instructions please proceed. Circle one number on each line according to how you see yourself in relationship to others.

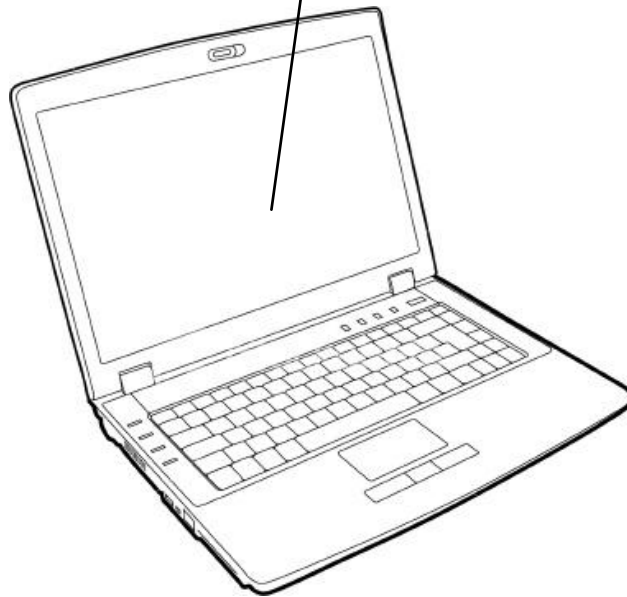
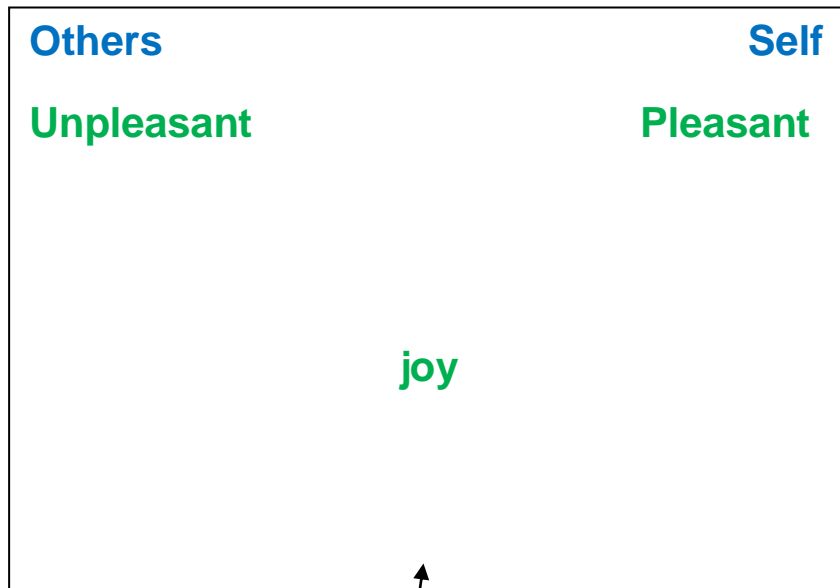
In relation to others I feel:

Inferior	1	2	3	4	5	6	7	8	9	10	Superior
Incompetent	1	2	3	4	5	6	7	8	9	10	More competent
Unlikeable	1	2	3	4	5	6	7	8	9	10	More likeable
Left out	1	2	3	4	5	6	7	8	9	10	Accepted
Different	1	2	3	4	5	6	7	8	9	10	Same
Untalented	1	2	3	4	5	6	7	8	9	10	More talented
Weaker	1	2	3	4	5	6	7	8	9	10	Stronger
Unconfident	1	2	3	4	5	6	7	8	9	10	More confident
Undesirable	1	2	3	4	5	6	7	8	9	10	More desirable
Unattractive	1	2	3	4	5	6	7	8	9	10	More attractive
An outsider	1	2	3	4	5	6	7	8	9	10	An insider

Appendix 17

Diagrammatic representation of the computer screen for the Implicit Association Test

Illustration of the Global Self-esteem IAT



The correct response in this instance would be to press the left hand key ('k')