

The Relationship between Impulsivity, Aggression and Self-Harming Behaviours in Male, Young and Adult Offenders

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The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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ABSTRACT

Self-harming and suicidal behaviour in prison are serious concerns, given the continued rise in incidents occurring, particularly in the male estate (Ministry of Justice, 2017). This thesis assesses both objective and subjective measures of impulsivity and aggression; two psychological constructs which have shown promise in enhancing our understanding of these behaviours in respect to the management, treatment and support of those at risk of self-harming. Subjective measures included the Barratt Impulsiveness Scale (BIS-11; Patton, Stanford, & Barratt, 1995) and the Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992) and objective measures included four, computer-based behavioural tasks used to assess impulsive decision making (Delay Discounting and Information Sampling Task) and response inhibition (Go/No-Go and Stop Signal Tasks). These measures were tested in young ($n = 75$) and adult ($n = 150$), male offenders, in three groups; those currently self-harming and on an ACCT, those assessed as vulnerable and on an ACCT but not currently self-harming and those in the general prison population. The results identified important differences between young and adult offenders; with subjective measures being better able to discriminate between all of the groups in adult offenders than in young offenders. Objective measures of impulsive behaviour were also able to discriminate between all groups in adult male offenders, whereas, in young offenders, these measures only discriminated between those who are vulnerable to self-harm (both at imminent risk and with a history) and the general prison population. These findings strongly support the notion that interventions with individuals who are currently self-harming should not only focus on the prevention of self-harming behaviours but also work to address the negative emotional states associated with this behaviour. Whilst our theoretical knowledge of the different dimensions of aggression and impulsive behaviour is limited, this thesis gives rise to the possibility of using existing programmes in a new and more holistic way.

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List of Abbreviations

ACCT	Assessment, Care in Custody and Teamwork
ADHD	Attention Deficit Hyperactivity Disorder
BIS-11	Barratt Impulsiveness Scale 11 th Version
BPAQ	Buss-Perry Aggression Questionnaire
BPD	Borderline Personality Disorder
CALM	Controlling Anger and Learning to Manage It
CoP	Cry of Pain
DD	Delay Discounting
DSM-5	Diagnostic and Statistical Manual of Mental Disorders (fifth edition)
DW	Decreasing Win Condition
EAM	Experiential Avoidance Model
FW	Fixed Win Condition
G/NG	Go/No-Go
GPP	General Prison Population
HMP	Her Majesty's Prison
HMYOI	Her Majesty's Young Offender Institute
IRAS	Integrated Research Application System
IST	Information Sampling Task
JETS	Juvenile Estate Thinking Skills
M	Motor
MOJ	Ministry of Justice
NP	Non-Planning
NOMS	National Offender Management Service
PA	Physical Aggression
RT	Reaction Time
SPSS	Statistical Package for Social Sciences
SSD	Stop Signal Delay
SSRT	Stop Signal Reaction Time
SST	Stop Signal Task
TSP	Thinking Skills Programme
VA	Verbal Aggression

1.0 CHAPTER ONE

Self-harming Behaviours in Prison

1.1 Introduction

Self-harm and suicide in the UK have been progressively increasing since 2008 (Department of Health, 2012); with the rate of male suicide in 2013 being the highest on record since 2001 (Mind, 2015). Prevalence figures estimate that between 4–6% of adults (Briere & Gil, 1998; Klonsky, 2011) and as many as 13 to 29% of adolescents (Baetens, Claes, Muehlenkamp, Grietens, & Onghena, 2011; Brausch & Gutierrez, 2010; Heath, Toste, & Beettam, 2007; Ross & Heath, 2002), engage in self-harming behaviours in the community (Gratz, Conrad, & Roemer, 2002; Heath, Toste, Nedecheva, & Charlebois, 2008; Klonsky & Olino, 2008). Additionally, previous research has found that 4–8% of individuals disclose prior attempts at suicide (Bebbington et al., 2010; Whitlock & Knox, 2007). Interestingly, whilst the female rate has stayed comparatively constant, the male rate has increased significantly (Office for National Statistics, 2015). A review by the Samaritans (2012) highlighted that middle-aged men in lower socioeconomic groups are at significantly higher risk, giving evidence to suggest that suicidal behaviour may be a result of an interaction of multifaceted issues such as unemployment, lack of close social bonds, personal crises such as divorce or bereavement.

One particular concern that is less likely to be viewed as a priority by the public, although they have been highlighted in key reports as a particularly high risk group, is the number of incidents that occur within custodial settings. For many people,

being given a prison sentence represents a significant transition from the outside world and some people find it more difficult than others to adjust (Liebling, 2005). Although the increase in risk associated with offenders is likely to involve a number of pre-existing risk factors associated with self-harming, this behaviour can often become intensified under the influence of particular triggers (Van Heeringen, 2001). Triggers may include the most obvious factors such as loss of freedom and being taken away from familiar surroundings (Liebling, 1992), in addition to more specific features of prison life, such as withdrawal from substances (Humber, Piper, Appleby, & Shaw, 2011), having no meaningful engagement in activity (Leese, Thomas, & Snow, 2006), being located in a single cell or segregated (Fazel, Cartwright, Norman-Nott, & Hawton, 2008), getting bad news such as a relationship breakdown (Paton & Jenkins, 2005), bullying (Blaauw, Winkel, & Kerkhof, 2001) and boredom (HM Chief Inspector of Prisons, 2004). The impact of this transition is reflected in the rate of self-harm and suicide in prisons across the world, which remains significantly higher than in the community, with suicide reported to be the most common cause of death in custodial settings worldwide (Fruhwald & Frottier, 2005; World Health Organization, 2007).

Preventing self-harm and suicide is a continuing and significant concern for prison management (Lohner & Konrad, 2006; DeHart, Smith, & Kaminski, 2009) and despite the clinical importance of self-harming behaviour, there still remains a need to understand self-harming behaviours in prison settings as research is limited in this particular sample. A better understanding would therefore be able to inform assessment and treatment in order to provide a more pragmatic framework for research on the prevention of self-harming and suicidal behaviours in male prisoners.

1.2 Rates and Prevalence of Self-harm and Suicide in Male Offenders

The Ministry of Justice (MOJ) define suicide as ‘any death of a person who has apparently taken his or her own life, irrespective of intent’ (MOJ, 2016, p. 8). Self-harm in prison is defined as “any act where a prisoner deliberately harms themselves, irrespective of the method, intent or severity of any injury” (MOJ, 2016, p. 12). The incidence of suicide and self-harming behaviours among offender populations is acknowledged to be significantly higher than in the general population (Cooper & Berwick, 2001; Fruhwald & Frottier, 2005; Jenkins et al., 2005), with some studies estimating it to be up to ten times higher (Fazel, Grann, Kling, & Hawton, 2011). In a study by Dixon-Gordon, Harrison and Roesch (2012), 7% to 48% of offenders reported a history of self-harm, compared with 4% of adults in the community. In 2015, the likelihood of prison mortality was 45% greater than in the general population (Office for National Statistics, 2015).

The rate of suicide in prisons has reached the highest rate since 2003 and in the 12 month period up until December 2016, there was a record high of 119 self-inflicted deaths in prison custody, reflecting an increase of 32% from the previous year (a rate of 1.4 per 1000 prisoners) (Ministry of Justice, 2017). Similarly, self-harm has continued to rise in recent years and in the year up to December 2016, there were nearly 38,000 incidents (a rate of 443 per 1000), up by nearly 7000 incidents and representing a 23% increase from the previous year (Ministry of Justice, 2017).

However, there are considerable gender differences found in the figures and although female prisoners still account for a disproportionate amount of self-harm in custody, unlike the rise in self-harm in the male estate, self-harm incidents amongst female prisoners has fallen by 2% from the previous year (Ministry of Justice, 2017). Whilst

there is little empirical research on the rates of self-harming in young offender populations, the number of young offenders considered to be suicidal or highly vulnerable who were sent to prison in 2003 had risen more than sevenfold in three years (Prison Reform Trust, 2004). Government figures for 2003 to 2004 show that 3,337 young people sent to prison were deemed at risk of self-harm or had been bullied and abused, compared with 432 cases in 2000 to 2001. Tragically, fourteen-year-old Adam Rickwood became the youngest person to kill himself in a British prison in 2004 when he was found hanging in his cell at Hassockfield, a privately run secure training centre in County Durham. In 2009, 5,509 incidents of self-harming occurred among the 15 to 20-year-old age group. This represents 23% of all incidents during that year. (Ministry of Justice, 2010). The increasing number and rates of male prisoner self-harm and suicides in the United Kingdom, highlights the need to provide these vulnerable prisoners with targeted and evidenced based support.

1.3 Conceptualising Self-harm and Suicide

Even the language used to describe self-harming behaviours can be confusing at times, with words such as ‘attempted suicide’, ‘self-mutilation’, ‘self-injury’, ‘abortive suicide’ ‘suicidal gesture’, ‘sub-intentional suicide’, ‘pseudo-suicide’, and ‘para-suicide’ often being used interchangeably, when in fact, these words may be used to describe very diverse behaviours (Favazza & Rosenthal, 1993; Pattison & Kahan, 1983, Tantam & Whittaker, 1992; Ogundipe, 1999). Throughout this thesis, we will refer to this as self-harm which, in general, can be defined (similar to the Prison Service definition above) as the deliberate and direct destruction or alteration of

oneself, resulting in injury severe enough for tissue damage to occur (Favazza & Conterio, 1989; Nock & Prinstein, 2004; Whitlock, Eckenrode, & Silverman, 2006).

Self-harming behaviours can occur using a variety of different methods, although the most common forms of self-harm are scratching, cutting and burning skin (Ross & Heath, 2002; Whitlock et al., 2006); with cutting being the most commonly used method of self-harm in prisons (Ministry of Justice, 2015). Self-harming behaviour is also commonly associated with a range of mental health problems such as anxiety, depression and personality disorders and in particular, Borderline Personality Disorder (Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005; Hawton, Rodham, Evans, & Weatherall, 2002; Klonsky, Oltmanns, & Turkheimer, 2003). Suicide is when a person has the intention to end their own life (Andover & Gibb, 2010; Nock, 2010), whereas suicidal thoughts refer to thoughts or plans to engage in behaviours to end one's life (often referred to as suicidal ideation) (Nock, 2010; Nock et al., 2008). Therefore it is the intention to end one's life that primarily differentiates these two behaviours (Nock, 2010).

The issue as to whether self-harm and suicide are either related or completely distinct behaviors, is an area which requires further consideration and clarity. One position is that self-harm and suicide lie on a continuum and this perspective includes the belief that self-harming behaviours are actions that occur when a person causes direct and deliberate harm to oneself and can include both non-suicidal self-harm, suicidal thoughts or ideation, and suicide (Nock, 2010; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). This standpoint is supported by the fact that

both deliberate self-harm and suicide attempts are considered risk factors for a possible suicide (Fruhwald, Frottier, Matschnig, & Eher; 2003). From this perspective, Farmer, Felthous and Holzer (1996) found that 15% of the suicide attempters eventually succeed. Furthermore, Owens, Horrocks, and House (2002) found that 5% of the prisoners in their sample who displayed self-harming behaviours, commit suicide within nine years and this increased their suicide risk 100-fold compared to the general population. Another perspective is that it is possible to differentiate between those people who want to die, and those who harm themselves without the intent to die. Lloyd (1990) stated that there was a conceptual difference between ‘attempted suicide’ and other forms of self-harm. However, Lloyd acknowledged the difficulty in determining ‘intent’ due to the fact that intent has both subjective and objective elements to it which can be impossible to untangle. Hawton et al. (2014) found that self-harming incidents were associated with consequent suicide and it is suggested that the risk assessment and treatment of self-harm was an essential aspect of suicide prevention strategies. For the purposes of the current research, given that the evidence is mixed, we will make no assumptions and include self-harm, suicidal ideation and attempted suicides under the umbrella of ‘self-harming behaviours’.

1.4 Theoretical Models and Functions of Self-harm and Suicide

Despite increasing concern given to the incidence of self-harm and suicide, current literature lacks a comprehensive theoretical framework within which to understand the complex array of risk factors associated with this behaviour. One of the first major contributions to our understanding was Linehan’s (1993) description of the development of Borderline Personality Disorder (BPD) which also suggested the

potential function of self-harming behaviour (See figure 1). In particular, Linehan proposes an interaction between emotional susceptibility and negative environments cause susceptible individuals to self-harm as a way of regulating emotions. Individuals who have had negative experiences during childhood may not have been taught ways to manage difficult emotions and may have find it harder to tolerate distress (Linehan, 1993). Furthermore, trauma during childhood may contribute to hyper-arousal and, consequently, increased risk for emotion dysregulation, given that high levels of arousal are more difficult to regulate (Eisenberg, Cumberland, & Spinrad, 1998; Flett, Blankstein, & Obertynski, 1996). Moreover, emotional vulnerability in the form of emotional reactivity and intensity may also contribute to emotion dysregulation (Calkins & Johnson 1998; Eisenberg et al., 1998; Melnick & Hinshaw, 2000; Thompson, 1994), as more intense emotions pose a greater challenge for emotion regulation (Flett, Blankstein, & Obertynski, 1996). Thus, the interaction of these factors increases the likelihood of emotion dysregulation, which, in turn increases the risk for deliberate self-harm (as self-harm may function to regulate painful emotions that cannot be tolerated; see Linehan, 1993). Although Linehan's (1993) work is supported by both clinical and empirical literature and offers the most detailed and comprehensive description of the emotion regulating function of self-harm behaviour; other researchers have also conceptualised self-harm as an emotion regulation strategy (see Haines & Williams, 1997; Van der Kolk, 1996; Klonsky, 2007).

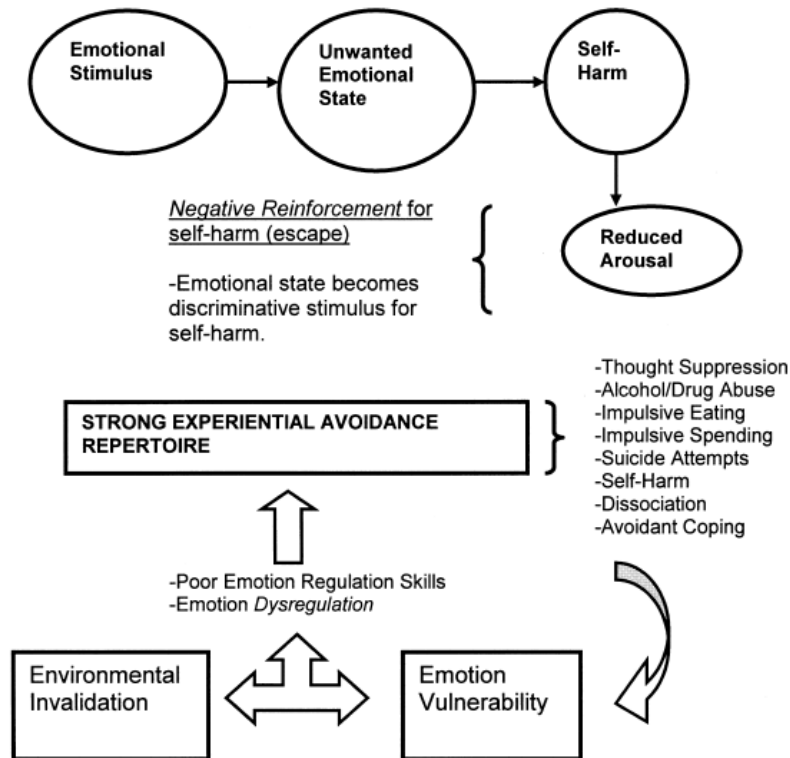


Figure 1: Schematic representation of Linehan's (1993) biosocial theory of BPD.

Furthermore, a comprehensive literature review by Klonsky (2007) identified seven important functions of self-harm; affect regulation (similar to Linehan and the one that has received the most support), anti-dissociation, anti-suicide, interpersonal boundaries, interpersonal-influence, self-punishment and sensation seeking. Similar to Linehan's proposals, the affect-regulation model of self-harm suggests that self-harming behaviour is used as a strategy to relieve intense arousal of negative emotions (Gratz, 2003). Another interesting function of self-harm identified by Klonsky was the function of self-punishment. Using this idea, it is suggested that self-harm is used as an inwardly directed expression of anger. Further support by Linehan (1993) suggests that people who self-harm have learnt from their negative environments to punish or invalidate themselves and many have reported that self-

directed anger is a prominent distinction in those who self-harm (Klonsky, Oltmanns, & Turkheimer; 2003; Soloff, Lis, Kelly, Cornelius, & Ulrich; 1994). The sensation-seeking function of self-harm regards self-harming as form of risky behaviour and a means by which to generate excitement. Although this function has been given less consideration in the literature; its contribution has been studied extensively in the empirical literature (Cyders et al., 2007; Nixon, Cloutier, & Aggarwal, 2002; Whiteside & Lynam, 2001) and may be particularly applicable when exploring the link between self-harm and impulsivity.

One of the most frequently proposed functions of self-harm (as identified above in Klonsky's, 2007 review and in Linehan's, 1993 model) is that it is used in order to reduce negative affect or emotions (Nock & Prinstein, 2004). Explicitly, it has been suggested that self-harm is more likely to be used during intense negative emotional states and that following on from the act of self-harm, negative emotions are often (albeit temporarily) reduced (Chapman, Gratz, & Brown, 2006; Nock, 2009).

Support for this function of self-harm comes from multiple lines of research with some studies suggesting feelings such as sadness, anger and tension, precede self-harming behaviours (Kamphuis, Ruyling, & Reijntjes, 2007; Klonsky, 2009).

Furthermore, Nock, Prinstein, and Sterba (2009), found that negative emotions such as anger, predicted the use of self-harming behaviours. Similarly, Muehlenkamp et al. (2009) found a significant increase in negative affect in the lead up to self-harming behaviours. In further support, Armeij, Crowther, and Miller (2011) found a significant association between feelings of increased negative emotions around the time of self-harming and that following on from self-harming, these feelings had

decreased. These findings highlight the likelihood that increased negative emotions such as anger, increase the chances of a person engaging in self-harming behaviours.

Taking a more behavioural approach is the Experiential Avoidance Model (EAM).

This model is based on the proposition that self-harming behaviours are negatively reinforced strategies used in order to reduce unwanted (and often negative)

emotional arousal and was proposed by Chapman, Gratz, and Brown (2006).

Experiential avoidance encompasses any behaviour that a person wants to avoid or escape from (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996) and includes

unwanted thoughts, feelings or other experiences that are uncomfortable. From this perspective, experiential avoidance is primarily maintained through a process of

negative reinforcement whereby self-harming temporarily relieves a person from

these negative emotions, thoughts and experiences. In a similar way to self-harming,

experiential avoidance behaviours include negative coping strategies such as using alcohol or drugs to avoid or escape from unwanted thoughts and feelings. Although

this process has obvious negative consequences, self-harm can be functional in

getting rid of unwanted emotional stress. According to the EAM, self-harm is

sustained and strengthened through the practise of avoidant behaviour and negative reinforcement (see Fig. 2). Essentially, a negative episode, thought, experience or

event occurs, which in turn triggers a negative emotional reaction. Although a

significant proportion of the literature has explored self-harm and its relationship

with BPD (e.g. Linehan, 1993), the EAM was specifically developed to apply to self-harm at a general level across a variety of samples. A study by Brown et al. (2002)

found that the most frequently cited motive for engaging in self-harm was to gain

emotional relief or to regulate unwanted emotions. From this perspective, this behaviour fits within the broader class of experiential avoidance behaviours.

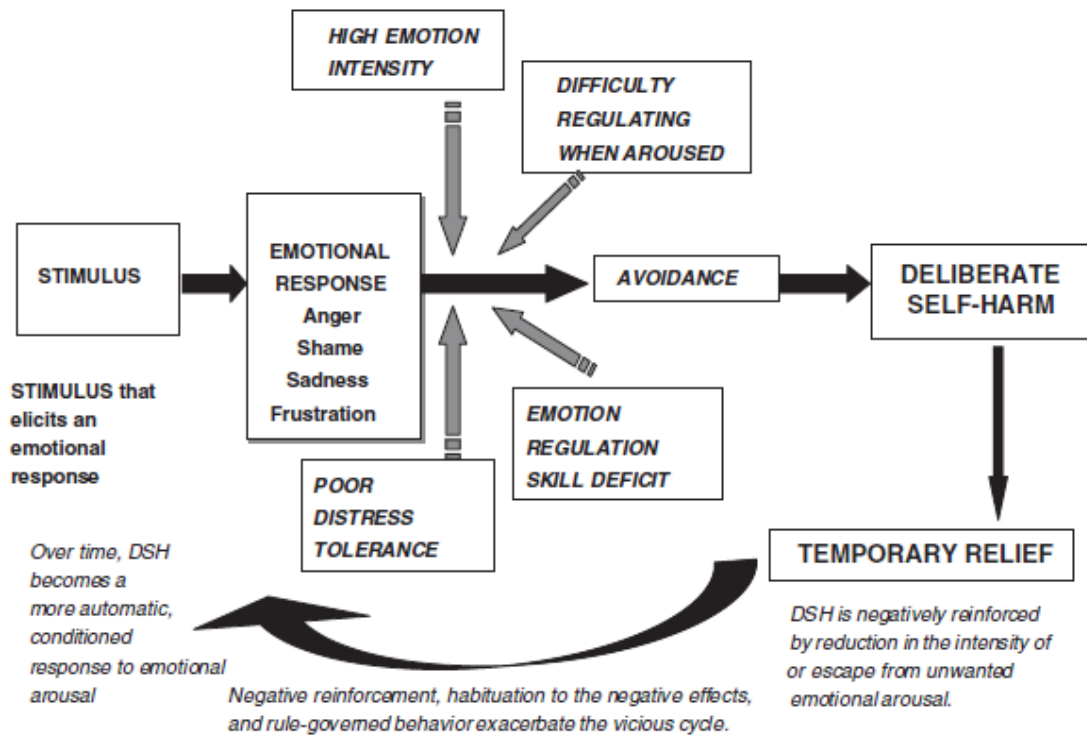


Figure 2: Schematic Representation of the Experiential Avoidance Model (EAM) Chapman et al. (2006).

Similar in some ways to the EAM, the Cry of Pain (CoP) model (Williams & Pollock, 2001) is a particularly important model that can be applied to understanding suicidal behaviour (Williams & Williams, 1997; Williams, Crane, Barnhofer, & Duggan, 2005). ‘Escape’ has been commonly referred to as one of the main reasons for suicide (Leenaar, 1996; Shneidman, Maris, Silverman, & Canetto, 1997). In support of this, Williams and Pollock (2001) propose in the CoP model, that suicide is the end product for a person who feels trapped in an unbearable situation from which the person believes (or perceives) there to be no way out. Furthermore, repeated attempted suicide can be explained by the CoP model through the

development of maladaptive strategies to deal with challenging thoughts and emotions over the duration of a person's lifetime. The CoP model has received lots of support in the literature and feelings of entrapment and defeat, are associated with mental health conditions such as anxiety (Aderka, Weisman, Shahar, & Gilboa-Schechtman, 2009) and depression (Gilbert & Allan, 1998; Goldstein & Willner, 2002); which are both cited as risk factors for suicidal behaviour (Bradvik, Mattisson, Bogren, & Nettelbladt, 2008, 2010; Cassells, Paterson, Dowding, & Morrison, 2005). It has been suggested that suicidal thoughts or intentions are initiated from the perception of being trapped and having no (obvious) alternatives, but it is when the person fails to find other ways to solve their problems that this can be intensified into suicidal behaviour (Williams, Barnhofer, Crane, & Beck, 2005). Therefore, a person's problem-solving ability has been implicated (Pollock & Williams, 1998; 2001) and many studies have associated poor problem solving skills to an increased likelihood of engaging in self-harming behaviours, including suicide (See Pollock & Williams, 1998, for a review). The CoP model, similar to other models and functions described in this chapter, emphasises the potential interactions between emotions and cognitions leading to self-harming behaviours.

Reserachers have yet to determine an all-encompassing model of self-harming behaviour but it is commonly believed to serve multiple functions simultaneously (Gratz, 2003; Klonsky, 2007; Suyemoto, 1998). Theoretical models of self-harm and suicide suggest that self-harming behaviour is rarely the result of a single factor, and more often than not, it depends on the interaction between a number of environmental, social, personality, biological, familial and mental health factors (Ferguson, Woodward, & Horwood, 2000; Mann, Waterneux, Haas, & Malone,

1999; Hawton & Van Heeringen, 2009). Williams, Crane, Barnhofer, Van der Does, and Segal (2006) propose that particular cognitions and negative affect can become associated with each other and form a 'self-harm schema' whenever mood is low. This is an important consideration in helping our understanding of the high percentage of individuals who repeatedly engage in self-harming behaviours and may aid suggestions of potential interventions or strategies to help reduce this significant problem.

1.5 Risk Factors Associated With Self-harm and Suicide in Prison

Self-harm and suicide prevention strategies in the Prison Service are often focused on the search for a solution to the 'problem' of self-harming behaviour. However, in reality, the problem is complex and multi-factorial and therefore, there is no single or simple solution. We know from previous research that those individuals in the general community who are at greater risk of entering custody, share many of the same features of those who are at an increased risk of self-harm and suicide, for example; a disrupted family background, a family history of suicide, drug and alcohol abuse, failure at school, unemployment and depression (Diekstra & Hawton, 1987; Farrington & West, 1993; Towl & Crighton, 1996; Van Egmond & Diekstra, 1989) and in this sense, it is no surprise that prisoners are at a disproportionately higher risk of self-harm and suicide than community samples. Previous efforts to understand self-harming behavior have mostly been atheoretical (Johnson, Gooding, & Tarrier, 2008) and although potentially high-risk groups can be distinguished, there has been limited success in assessing and preventing self-harm and suicide in prison. Many researchers have sought to identify prison-specific risk factors, (Borrill et al., 2003; Dear, Thomson, & Hills, 2000; Hawton, Linsell, Adeniji, Sariaslan, &

Fazel, 2014; Liebling, 1992; Lohner & Konrad, 2006; Sattar, 2001), however, an integrated approach to understanding the dynamic risk factors associated with self-harming behaviours in prison is still limited. Whilst a number of national suicide prevention strategies are targeted to these high risk groups (Department of Health, 2012), these approaches would benefit from gaining more information on specific prisoner subgroups with varying risk profiles (Humber, Piper, Appleby, & Shaw, 2011), and a more in depth understanding of the psychosocial predictors associated with this behaviour.

1.5.1 Static Risk Factors

1.5.1.1 Unemployment

Feelings of boredom, lack of interest and low levels of meaningful activity have all been recognised to be more common in those who self-harm (Liebling, 1992). In particular, unemployment has been found to be an important factor in increasing the risk of self-harm and suicide (Bastia & Kar, 2009; Blakely, Collings, & Atkinson, 2003; Paul & Moser, 2006; Platt & Kreitman, 2004), with two studies reporting unemployment rates of suicidal prisoners prior to custody of 77 and 76 per cent respectively (Dexter & Towl, 1995; Jones, 1996). Boredom or inactivity is likely increase the chance to ruminate on negative thoughts and emotions which can in turn lead to an increased engagement in harmful behaviours. This highlights the potential importance of constructive activity for prisoners, such as having a job or education, whilst in custody (Towl & Hudson, 1997).

1.5.1.2 Age

Researchers have concluded that adolescence signifies a period of heightened risk for the initiation and engagement in self-harm across both community and clinical samples, with a number of studies indicating that self-harming behaviour tends to start between the ages of 13 and 15 years old (Glenn & Klonsky, 2009; Heath et al., 2008; Muehlenkamp & Gutierrez, 2007; Nock, 2010; Nock & Prinstein, 2004; Ross & Heath, 2002; Whitlock & Knox, 2007). Although it is suggested that the rate of self-harm is comparatively high in young offender populations (Thornton, 1990; Winkler, 1992), the association between age and self-harming in adult prisoners is unclear, with different studies producing inconsistent findings (see Livingston, 1997). Although several researchers have found age to be negatively correlated to an increased risk of self-harm (Wool & Dooley, 1987; Wilkins & Coid, 1991; Winkler, 1992), others have found no relationship between age and self-harming behaviours (Beto & Claghorn, 1968; Jones, 1986). HM Prison Service figures reveal that most deaths during 2014 occurred in the 25 to 39 age groups. In all, more than a third (36 per cent) were in the 30 – 39 age group. (Ministry of Justice, 2015). Self-harm however, was found to be more common in young offenders. Hawton, Linsell, Adeniji, Sariaslan and Fazel (2014) found that whilst prisoners under the age of 20 years typically accounted for 13% of the prison population they were overrepresented in the self-harm figures with 23% of male prisoners who self-harmed every year being under the age of 20. These findings highlight the need to explore self-harming in young offender samples to explore the factors associated with this behaviour in order that we can intervene effectively.

1.5.1.3 Ethnicity

Ethnicity has not been found to have any reliable relationship to self-harming or suicides in prisons (Livingston, 1997) and is not something that is routinely examined as part of the reporting process (for example, in the safety in custody reports written quarterly by the Ministry of Justice). Globally, figures in the United States have reported a tendency for black prisoners to be under-represented in the self-harm figures (e.g. Jones, 1986), and white prisoners to be over-represented (e.g. Karp, Whitman, & Convit, 1991) and this has been found to be the case for both male and female prisoners (Rieger, 1971; Toch, 1975; Albanese, 1983; Thornburn, 1984; Jones, 1986). Prison Service figures in the United Kingdom, indicate that a disproportionate number of suicides occurred amongst white prisoners in the UK (Ministry of Justice, 2017). Overall, 86 of the 94 prisoners who committed suicide in 2014 were white (91 per cent), even though white prisoners made up only around 78 per cent of the prison population. Four of those who committed suicide were Asian (4 per cent), three of those who died were Black (3 per cent) and one was Chinese. These figures are consistent with previous figures which suggest that white prisoners are disproportionately more likely to take their own lives (Ministry of Justice, 2015).

1.5.1.4 Prison Status

In particular, prisoners held on remand are consistently over-represented in prison suicide figures (Backett, 1987; Borrill et al., 2003; Hatty & Walker, 1986; Lohner & Konrad, 2006; Novick & Remmlinger, 1978; Shaw, Appleby, & Baker, 2003; Shaw, Baker, Hunt, Moloney, & Appleby, 2004). Custodial status also plays a role in self-harming behaviour amongst adult prisoners and young offenders. For example, Wool

and Dooley (1987) note that 58 per cent of their sample of male adult and young offender self-harmers were remanded in custody. Within the overall figures, remand or pre-sentenced prisoners are at the greatest risk (Jenkins et al., 2005). Dooley (1990) reported that 47.1% of prisoners in England and Wales who complete suicide are on remand, while remand prisoners make up only 11% of the prisoner population. The transition into prison custody is, therefore, a crucial time for investigation with just under half of all suicides occurring within the first month of the prisoner arriving into custody, with a third of all suicides occurring in the first seven days (Crighton & Towl, 1997; Paton & Borrill, 2004).

1.5.1.5 Prison Setting

In the UK, it is recorded that 65 percent of suicides occur in 'local' prisons housing male adult offenders (Shaw, Baker, Hunt, Moloney, & Appleby, 2004; Towl & Crighton, 1998). Local prisons are those which serve the courts of that area and hold a majority of remand and unsentenced prisoners. In particular, remand prisoners are over seven times more likely to commit suicide than those in the general prison population (The Howard League for Penal Reform, 2016). This is consistent with the fact that remand prisoners and those who are in prison for the first time, both of which are largely held in local prisons, are the most likely to commit suicide (Shaw et al., 2004). This is mirrored in the system in the USA where local jails when compared with federal prisons have approximately 3 times the number of self-inflicted deaths (US Department of Justice, 2011). These findings highlight the need to provide these specific prisons additional support to prisoners who are experiencing additional stress due to unknown factors and sentencing.

1.5.1.6 Time in Prison

Entry into custody is considered a particularly high risk period (HMIP, 2015) and there is reliable evidence to suggest that self-harm rates are higher during the first week of imprisonment, with about one third of all self-harm episodes being found to have occurred within this period (Albanese, 1983; Kerkhof & Bernasco, 1990; Phillips, 1986; Shaw et al., 2003; 2004). These findings also correspond with the suicide rates in prison (Backett, 1987; Crighton & Towl, 1997; Topp, 1979), with just under half of prisoners who died in 2003 having spent less than one month in custody (down from 54 per cent in 2002 and 52 per cent in 2001). Overall, a quarter of all prisoners who took their own lives, had spent less than a week in the establishment at the time of their death. It is suggested that this increase in vulnerability during the first week in prison could be as a result of a mixture of feelings experienced by prisoners including; trauma, isolation, shame, and embarrassment (Liebling, 1992; Livingston, 1997) and it is important that resources are put into place to support prisoners during this unsettling period.

1.5.1.7 History of Self-harm and Suicide

It is well established in psychology that having a history of a certain behaviour is the best predictor for future occurrence (Gibbons, Gerrard, Ouellette, & Burzette, 1988; Webb & Sheeran, 2006; Wood, Quinn, & Kashy, 2002). This application is also true for self-harming behaviour and suicide, with a history of self-harming behaviour being linked with an increased risk of future self-harm and suicide (Albanese, 1983; Christiansen & Jensen, 2007; Franklin, 1988; Haycock, 1989a; Jones, 1986; Kerkhof & Bernasco, 1990; Karp, Rieger, 1971; Whitman, & Convit, 1991; Wilkins & Coid,

1991). History of self-harm is not confined to the prison environment either, as Karp et al. (1991) found that 84 per cent of their sample admitted to injuring themselves whilst previously imprisoned and 63 per cent of the sample admitted to self-harming whilst outside prison. Worryingly though, figures show that a significant proportion of prisoners who commit suicide, were not considered to be vulnerable or at risk of self-harm or suicide at the time of their death. Figures from the Prison Service demonstrate that in 2003, only 27 of the 94 suicides that occurred were assessed as being at risk and subject to an open ACCT (Assessment, Care in Custody and Teamwork; a Prison Service document used to assess and care for those at risk of self-harm or suicide) at the time of their death. Out of those prisoners who were not considered to be vulnerable to self-harm or suicide at the time of their death, 62 per cent of them had not previously been assessed as being at risk during their current time in prison. Furthermore, in 8 of those cases, a previous ACCT had been closed within a month of their suicide, and in additional 12 cases it had been closed between 1 and 6 months before their death. According to findings of a systematic review by Fazel, Cartwright, Norman-Nott, and Hawton (2008), about 50% of people who die by suicide in prison have been found to have a history of self-harm, which increases the odds of suicide in custody between six and eleven times and it is therefore pertinent that we assess and identify risk in the most effective way possible.

1.5.1.8 Mental Health

Previous research indicates that mental illnesses has been found to coincide with an increased risk of self-harm and suicide (Cooper et al., 2005; Hawton, Zahl, & Weatherall, 2003; Twombly, 2006; Waern et al., 2002). Overall, psychiatric illness and psychological distress are found to be elevated in prisoners who self-harm

(Green, Kendall, Andre, Looman, & Polvi, 1993; Inch, Rowland, & Soliman, 1995; Ivanoff, 1992; Livingston, 1997), with some disorders being found to be more significant than others. In particular, depression has consistently been recognised as a precursor for self-harm incidents in prisoners, both in custody and upon release (Bonner & Rich, 1990; Hayes, 1995; Ivanoff & Jang, 1991). Shaw, Appleby, and Baker (2003) investigated 172 prison suicides which occurred between 1999 and 2000, as part of a national inquiry into suicides and homicides by mentally ill people. Of these 172 suicides, it was found that nearly three quarters of them had at least one psychiatric diagnosis identified at the time of reception (with the most common diagnosis being drug dependency). One third of the sample had an additional diagnosis of a mental health problem, over half had a history of self-harming behaviour and, of these, nearly three quarters were referred to healthcare services in the prison. Interestingly, less than a third of all prisoners who took their own lives had a history of contact with mental health services prior to custody. These results give hope that some suicides may be preventable with closer supervision and better training for staff in identifying risk factors. In addition to diagnoses such as depression and anxiety, schizophrenia and substance abuse have also been shown to increase the risk of self-harm (Bongar, 1992; Livingston, 1997; Owens, Horrocks, & House, 2002; Shaw et al., 2004). These figures may be underestimated however, as many who die by suicide may have been experiencing undiagnosed mental illness, so it is important that those suffering from psychiatric conditions are identified and supported appropriately.

1.5.1.9 Marital Status

Research by Thompson, Dear, Hall, and Howells (1998) found that recent stressful life events are noticeably prominent in prisoners who self-harm and include issues such as loss, domestic issues and the breakdown of close personal relationships. This included individuals who were widowed, divorced, and those who have never been married. Research suggests that marriage is a protective factor against suicide in men, and that half of the increase in young male suicides may reflect the greater proportion of young men unmarried (Charlton et al., 1992). Similarly, social isolation has been found to be a factor related to both self-harm and suicide (Wyder, Ward, & DeLeo, 2009), suggesting that it is important for prisoners to maintain social contact whilst in prison.

1.5.2 Dynamic Risk Factors

1.5.2.1 Impulsivity

Despite it being an area of considerable research, there has been little consensus over a common definition of impulsivity, particularly in relation to the components which make up this complex construct. Over the years, numerous definitions have been suggested. For example, Logan, Schachar, and Tannock (1997) define impulsivity as an inability to inhibit prepotent responses, whereas others suggest that impulsiveness relates to a preference for immediate rewards (even if they are smaller), over larger delayed rewards (e.g. Bickel & Marsch, 2001; Cherek & Lane, 1999; Rachlin, Brown, & Cross, 2000). Moeller, Barratt, Dougherty, Schmitz, and Swann (2001) define impulsivity as ‘a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to

themselves or others' (p.1784). However, despite there being no clear definition of impulsivity, one viewpoint that theorists do agree on is the idea that impulsivity is a multidimensional construct, consisting of a number of distinct, but overlapping, subcomponents.

An extensive interest in understanding the role of impulsivity, particularly over the last couple of decades, is possibly because of its link to a number of psychiatric disorders and dysfunctional behaviours (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001). For example, impulsivity in its maladaptive and pathogenic form has been linked with BPD during episodes of mania (Swann, Anderson, Dougherty, & Moeller, 2001) and depressive episodes particularly in those prone to suicidal ideation (Corruble, Damy, & Guelfi, 1999). Impulsivity is also a DSM-IV defining feature of Attention Deficit Hyperactivity Disorder (ADHD) and has been found to positively correlate with trait aggression (Houston, Stanford, Villemarette-Pittman, Conklin, & Helfritz, 2003), particularly reactive (spur of the moment) aggression, rather than instrumental (or pre-meditated) aggression (Dolan & Fullam, 2004). Impulsivity also features heavily in the clinical presentation of both antisocial and borderline personality disorders (Stein, Hollander, & Liebourit, 1993) and has been associated with both conduct disorder and oppositional defiance disorders (Eiraldi, Power, & Nezu, 1997). Impulsivity has also been found to show strong links and both licit and illicit drug taking and substance use disorders (Dalley, Everitt, & Robbins, 2011; de Wit, 2009). Given these associations with a number of maladaptive behaviours and syndromes, it is perhaps unsurprising that the prison population have to been found to show elevated levels of impulsive behaviour above that of the general population (Stanford et al., 2009).

Alluded to previously was the disagreement between researchers on the precise definition of impulsivity, mainly due to on-going discrepancies with regards the specific dimensions which make up this construct. This has led to the development of numerous different measures of impulsivity based on different conceptual models of personality. The Barratt Impulsiveness Scale is arguably the most frequently administered questionnaire measuring impulsivity (Spinella, 2007), currently on version 11 (BIS-11; Patton, Stanford, & Barratt, 1995). Early constructions of the measure attempted to relate impulsiveness with anxiety and psychomotor efficiency into a uni-dimensional construct (Barratt, 1959). However, later reviews of several studies influenced Barratt to conclude that impulsiveness was not uni-dimensional as he had originally suggested, and later versions of BIS, including the current revision, the BIS-11, were redesigned to measure three factor analytically derived subtraits of impulsivity; Attention, Motor and Non-planning as well as a total score representing overall impulsivity (Patton et al., 1995). Attentional impulsivity is a cognitive component and relates to the inability to concentrate or focus attention, motor impulsivity is behavioural and relates to doing things without thinking and non-planning impulsivity relates to a lack of forethought.

Whilst trait approaches focus on factors which are arguably resistant to change over time and are useful in allowing the researcher to provide an assessment of stable personality factors related to impulsivity, they are not able to distinguish transitory changes in impulsive responding, require a level of introspection (Moeller et al., 2001), and, like all self-report measures, are open to social desirability bias (Van der Mortel, 2008). In this respect, computer-based behavioural tests offer an insight into impulsivity that is free of subjective bias and measure more dynamic processes such

as attention and cognitive functioning, which although generally stable, can modulate impulsivity in certain situations (Stanford et al., 2009). Evidence suggests that self-report measures of impulsivity are not, or only modestly associated with behavioural measures (e.g. Dom, De Wilde, Hulstijn, & Sabbe, 2007; Lane, Cherek, Rhoades, Pietras, & Tcheremissine, 2003; Perales, Verdejo-Garcia, Moya, Lozano, & Perez-Garcia, 2009; Reynolds, Ortengren, Richards, & de Wit, 2006; Reynolds, Richards, & de Wit, 2006). Cyders and Coskunpinar (2011) found that only 5% of the variance was shared, suggesting that the behaviours measured in the self-report questionnaires may be different from those measured in the behavioural laboratory-based tasks. These findings support the use of multiple modes of measurement in order to assess this complex and multidimensional construct comprehensively.

One of the risk factors identified consistently within the research, yet one which is not fully understood, is the link between impulsivity and self-harming behaviour. Impulsivity is a key feature in most theories of personality and is used to describe a variety of behaviors that reflect impaired self-regulatory functioning, for example; lack of forethought, responding before considering the consequences, risk-taking, response inhibition deficiencies and difficulties in delaying gratification (Evenden, 1999; Gvion & Apter, 2011; Herpertz et al., 1997; Renaud, Berlim, McGirr, Tousignant, & Turecki, 2008; Whiteside & Lynam, 2001). Difficulties in self-regulating behaviour is thought to arise from problems in managing emotions, as well as problems in executive functions that normally give rise to planning, reflection, anticipatory behaviour and goal oriented behaviour (Barkley, 1997). Despite difficulties in a clear definition of impulsivity, there has been a substantial amount of research exploring how impulsivity is linked to a range of externalising

problems, including; substance misuse (Castellanos-Ryan, Rubia, & Conrod, 2011; Dawe, Gullo, & Loxton, 2004; Dom, De Wilde, Hulstijn, Van Den Brink, & Sabbe; 2006), personality disorders (Coccaro et al., 1989; Dolan, Anderson, & Deakin, 2001; Fossati et al., 2007), aggression (Fossati et al., 2007; Jackson, Neumann, & Vitacco, 2007; Moeller et al., 2002; Smith, Waterman, & Ward, 2006) and mental illness (Enticott, Ogloff, Bradshaw, & Fitzgerald, 2008). Castille et al. (2007), researched maladaptive schemas in people who self-harm and found that an underlying belief that he or she is impulsive and lacking in self-restraint, is an important schema that differentiated those who self-harm from those who do not. They concluded that the underlying tendency for impulsive behaviour, might mean that self-harmers are more likely to choose options which are unable to cope with unbearable affect and cognitions in more adaptive ways. While this type of behaviour is a common characteristic of adolescent development, impulsivity has been specifically recognised as an important risk factor for suicidal behaviour in both adolescent community-based and clinical samples (Gorlyn, 2005; Horesh, 2001; Sanislow, Grilo, Fehon, Axelrod, & McGlashan, 2003). Some studies have also found a relationship between high levels of impulsive personality traits and a greater risk of suicide attempts or suicidal thoughts (Dumais et al., 2005; Giegling et al., 2009). Whilst some authors believe that impulsive behaviours are associated with less serious attempts at suicide, there is generally a lack of agreement regarding this relationship (Baca-Garcia et al., 2001), with other authors reporting findings which show higher levels of impulsivity in those who commit suicide compared to those who do not (Dumais et al., 2005; Maser et al., 2002; Swann et al., 2005). However, these disparities are likely to be due to a number of reasons such as a lack of clarity

in defining the constructs, differing definitions of impulsivity, differences in the types of measures used and the different populations studied.

Furthermore, theories of self-harming behaviour (for example, Mann, Wateriaux, Haas, & Malone, 1999) have included impulsivity as an important factor that may be particularly useful in understanding both self-harming and suicidal behaviours.

Furthermore, despite a growing appreciation of impulsivity as a risk factor for suicidal behaviours, research is limited by the nearly exclusive use of self-report measures that rely on accurate personal insight and recollection regarding complex behaviour patterns (Horesh, 2001). This demonstrates a need to consider trait versus state measures of impulsivity. As trait measures assume consistency over time they therefore may be sensitive to situational variables and environmental factors, such as going to prison. This study will use both state (or behavioural) and trait measures of impulsivity.

There is clear evidence that both impulsive behaviour and self-harming behaviour are more prevalent in prison populations (Ireland & Archer, 2008; Prison Reform Trust, 2004). Furthermore, high levels of impulsive behaviour are more prevalent in younger populations (Clarbour, Rogers, Miles, & Monaghan 2009). This data suggests that prison populations and, in particular, young people in custodial settings, may be particularly vulnerable to self-harming. One major criticism of the majority of research in this area is that it has largely been focused on student samples where, arguably, impulsivity is not a problem at clinical levels. Indeed, the failure to explore the factor structure of impulsivity and other psychometric properties beyond

undergraduate student populations has been a noted criticism by those attempting to define and conceptualise impulsivity (Whiteside & Lynam, 2001). However, there have been few large scale studies exploring the multidimensional nature of impulsivity in populations where impulsivity is expected to be elevated, for example, in a prison setting (Ireland & Archer, 2008). Therefore, although there appears to be a link between impulsive behaviour and self-harming behaviour (Evans et al., 1996; Herpertz et al., 1997; Simeon et al., 1992), our theoretical understanding of this link is limited, in part, by our lack of knowledge about the different dimensions of impulsive behaviour and their potential roles in the mediation of self-harming behaviour.

1.5.2.2 Aggression

Aggression, in its simplest form, has been defined as any behaviour that is directed towards another person, with the intention to cause harm (Bushman & Anderson, 2001). Different theoretical perspectives have been put forward in order to explain the aetiology of aggression, including evolutionary (Buss & Shackelford, 1997) psychological (Miller & Dollard, 1941), biological (Berman, McClonsky, Fanning, Schumacher, & Coccaro 2009; Berman, Tracey, & Coccaro, 1997; Gray, 1971) and sociological (Bandura, 1978; Bandura & Walters, 1963). The study of aggression in offender samples is well established and in particular, has been theoretically and empirically linked to sexual offending (e.g. Hall & Hirsschman, 1991; Hanson & Morton-Bourgon, 2005; Whitaker et al., 2008), mentally disordered offenders (Diamond, Wang, & Buffington-Vollum, 2005), violent crimes (Boruchowitz, Brink, & Dimino, 2009) and an increased risk of reoffending (Huesmann, Eron, & Dubow, 2002). Aspects of prison environments such as overcrowding, lack of space, loss of

liberty and an absence of social support, are all likely to have an impact on aggression and the likelihood of it occurring (Picken, 2012). Similar to impulsivity, aggression is commonly referred to as a multidimensional construct and is believed to consist of cognitive and affective components such as hostility and anger, along with behaviour components such as verbal and physical aggression (Anderson & Bushman, 2002; Buss, 1962; Buss & Durkee, 1957; Buss & Perry, 1992; Harris, 1995; Ramirez & Andreu, 2006, Zillmann, 1979).

Initially, experimental methods conducted in a laboratory, were used to measure aggression (Zillman, 1979). However, due to the difficulties in interpretation, Buss and Durkee (1957) developed a 75 item self-report questionnaire, called the Buss-Durkee Hostility Inventory. In order to increase the predictive properties of the measure, Buss and Perry (1992) constructed the Buss Perry Aggression Questionnaire (BPAQ) by performing an exploratory factor analysis on the Buss-Durkee Hostility Inventory (Buss & Durkee, 1957), to determine which factors to include in the BPAQ. After testing a number of different models, it was concluded that a four factor model consisting of verbal and physical aggression, hostility and anger, was the best fit for the data. Using this tool, physical and verbal aggression are considered to represent the motor components of the behaviour and involve items relating to harming others and a propensity to react to stimuli in a physically or verbally abusive way. Hostility is considered to represent the cognitive component of behaviour and relates to entrenched feelings of in-justice and ill will. Anger is considered to characterise the affective or emotional aspect of the behaviour and refers to the physiological arousal and preparation related to aggression. Similar to the reputation of the BIS-11 for measuring impulsiveness, the Buss-Perry

Aggression Questionnaire (BPAQ; Buss & Perry, 1992; Buss & Warren, 2000) is considered the ‘gold standard’ for measuring aggression (Gerevich, Bacskai, & Czobor, 2007) and has been applied to a range of groups including forensic, clinical and normal samples (Diamond et al., 2005; Hornsveld, Muris, Kraaimaat, & Meesters, 2009; Kingston, Yates, & Olver, 2014; Williams, Boyd, Cascardi, & Polythress, 1996).

Both aggression (particularly that resulting in violence) and self-harm, are significant issues facing the Prison Service today, with self-harm incidents up by 23% and assaults up by 31% from the previous year (Ministry of Justice, 2017). Both of these behaviours have serious implications for staff and prisoners and therefore, appropriate assessment and treatment of aggression and self-harm are key priorities for prison management. Although these behaviours are often thought of as distinct and apparently separate behaviours, it has been proposed that self-harm and aggression prevalence are linked (Haavisto et al., 2005; Hillbrand, 2001; Mann & Currier, 2009; O’Donnell, House, & Waterman, 2015; Plutchik, 1994; Tang et al., 2013) and suggest that both behaviours may actually be serving the same function, i.e. to reduce negative affect (Klonsky, 2007, 2009). Some researchers argue that self-harm is a form of inwardly directed anger (Hill & Dallos, 2012). More specifically, higher co-occurrence rates in forensic settings have been found (e.g. Maden, Chamberlain, & Gunn, 2000; Stalenheim, 2001). Maladaptive coping strategies are implicated in the development and maintenance of self-harming behaviours (Barlow, 2000; Folkman, Lazarus, Gruen, & DeLongis, 1986; Gross & John, 2003; John & Gross, 2004). As an example of maladaptive coping, aggression can be used as a way of improving a person’s mood state and getting rid of the

negative emotions associated with the behaviour (Bushman, 2002; Bushman & Anderson, 2001; Bushman, Baumeister, & Stack, 1999). Previous research has found a significant relationship between emotion-focused and avoidant self-control strategies, and self-harming behaviours (e.g., Aldwin & Revenson, 1987; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen 1986; Stanton et al., 2000; Stanton, Kirk, Cameron, & Danoff-Burg, 2000). On the contrary, making use of emotional management techniques which include the willingness to accept and validate emotional responses to situations, have been associated with lower levels of psychological distress (Stanton, Danoff-Burg, Cameron, & Ellis, 1994). This research suggests that emotionally avoidant coping strategies are counterproductive to wellbeing (Bonanno, Papa, Lalande, Westphal, & Coifman, 2004) and can have serious implications. As such, the way in which individuals manage emotions, in particular the way in which anger is regulated, may be an important consideration in our understanding of self-harming behaviours. Previous findings offer a useful foundation for research into the relevance of considering interpersonal styles, such as aggression and impulsivity, in forensic risk assessment, and this may be used to inform more effective intervention strategies.

1.5.2.3 Emotional Management, Coping Strategies and Mindfulness

Associated with aggression, emotional management refers to the way in which a person interprets how feelings are experienced and expressed. In general, emotional suppression (a form of experiential avoidance), has been found to be significantly related to psychological distress and negative consequences. Attempts to escape from or inhibit negative feelings (avoidant coping or suppression) or become detached from negative thoughts and accompanying emotions (detached coping), can

all be considered to be different forms of experiential avoidance. Emotion regulation plays a central role in theories of self-harm and is described in great detail in Linehan's (1993) theory. Specifically, Gratz and Roemer (2004) broadly define healthy emotion regulation as having an awareness, understanding, and acceptance of emotions, as well as having the ability to control behaviour when experiencing emotional distress. A number of studies have given evidence that is consistent with the emotional dysregulation hypothesis for self-harm (e.g. Bijttebier & Vertommen, 1999; Leible & Snell, 2004; Levine, Marziali, & Hood, 1997; Slee, Arensman, Garnefski, & Spinhoven, 2008; Yen, Zlotnick, & Costello, 2002). The affect-regulation model suggests that self-harm is used as a way of getting rid of negative emotions (Favazza, 1992; Gratz, 2003; Haines, Williams, Brain, & Wilson, 1995). Linehan (1993) proposed that prior negative experiences may instil maladaptive techniques for managing emotional distress. Individuals with a pre-disposition for emotional dysregulation are therefore less able to manage their emotions and are more likely to use self-harming as a coping mechanism. Exactly how self-harm reduces negative affect is unclear, but both biological (Russ, Roth, Kakuma, Harrison, & Hull, 1994), and psychological (Brown, Comtois, & Linehan, 2002; Suyemoto, 1998) deficits have been suggested.

In contrast to avoidant coping strategies, mindfulness is described as 'paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally' (Kabat-Zinn, 1994, p. 4) and originates from Buddhist traditions (Rosenberg, 1998; Thera, 1962). Being mindful involves a person being fully connected to what is going on in the 'here and now', both externally, in terms of what is going on, and internally, in terms of their response to it. Having a greater

awareness of one's own thoughts and behaviours, results in reduced emotional responses and can be used to teach a person to have greater self-reflection, increased impulse control and reduced emotive responses when faced with difficult situations. In both adolescent and adult samples, mindfulness techniques have been found to be effective in a variety of clinical and nonclinical settings, including cancer treatment, chronic pain management, developmental disorders, depression, obesity and psychosis (Deng, Li, & Tang, 2014; Langer, Cangas, Salcedo, & Fuentes, 2012; Matousek & Dobkin, 2010; McCracken & Vowles, 2014; O'Reilly, Cook, Spruijt-Metz, & Black, 2014). However, research on mindfulness in adult and adolescent prisoners who self-harm, is minimal. Baer (2003) states that mindfulness-based treatments 'may bring participants with mild to moderate psychological distress into or close to the normal range' (p. 137). Whilst evidence to suggest the usefulness of mindfulness-based treatments in adult populations is relatively strong, at present, the same cannot be said in respect of its use with children and adolescents. Semple, Lee, and Miller (2006) state that although 'early indications are that mindfulness in children is acceptable and feasible' research in this area 'has barely begun' (p. 164).

1.6 Current Screening Practices

As with any facet of human behaviour, self-harming behaviours in prison occur as a result of interactions between a variety of different factors. Therefore, accurate and evidence based risk assessment at the time a prisoner first enters custody (when vulnerability has been identified as being heightened), is crucial for managing the risk of self-harm and suicide (Perry & Gilbody, 2009). Given the elevated proportion of prisoners taking their own lives within the first few days or weeks in prison (Shaw et al., 2004), it is essential that thorough risk assessments are conducted during the

induction period in order to effectively and accurately identify any particular health needs that prisoner may have that is likely to increase their risk of engaging in self-harming behaviours, and to put the necessary and appropriate support in place so that this risk can be minimised where possible.

As a result of the Healthcare Directorate's review, a number of changes to reception screening were introduced and remain in place today. All prisoners in the UK are assessed on arrival into custody for self-harm and suicide risk using a standard medical questionnaire which is carried out on the day of reception by a health care worker. The revised tool is known as the F2169A and consists of a mandatory assessment which is completed by a healthcare worker on the prisoner's first night in custody. The F2169A is shorter and more focused on the detection of immediate health needs than its predecessor. Essentially, it functions as a triage tool, aiming to highlight those at high risk. Questions predominantly focus on static risk factors as indicators of current need. For example, in relation to mental health issues, prisoners are asked whether they have ever seen a psychiatrist outside of prison, have ever had medication for mental health problems, or if they have ever tried to harm themselves. Consequently, if they answer yes to any of these questions, further assessment is conducted and an ACCT document opened. In addition to the initial screen, all prisoners must be examined by a doctor within 24 hours. In relation to the examination of mental health, specific instructions are given to prison doctors to take into account any known psychiatric history, alcohol and substance abuse, and any attempt at self-harm and as described, have a sole focus on static risk factors. The revised reception health screening tool (Gavin, Parsons, & Grubin, 2003) was formally adopted by the Prison Service and rolled out for use across the estate in

2004. In a review of London prisons, staff reported that current screening questions were not always effective in identifying individuals at risk in terms of mental health or substance misuse problems (Durcan & Knowles, 2006). In addition, the time constraints placed on professionals, the conditions within which assessments take place, the inconsistent quality of information attained and the lack of consistent responses to important judgements are just some of the key criticisms of prison reception screening procedures (Mitchison, Rix, Renvoize, & Schweiger, 1994; Home Office, 1990).

If immediate risks relating to self-harm or suicide are identified, the National Offender Management Service has a comprehensive, integrated and multi-disciplinary prisoner suicide prevention strategy that aims to manage and reduce the distress of all those in prison. Any prisoner who is identified to be at risk of self-harm or suicide must be managed using the Assessment, Care in Custody and Teamwork (ACCT) procedures. The ACCT is a care-planning system which is flexible and prisoner-centred. The ACCT process is unavoidably prescriptive and it is vital that all stages are followed in the timescales prescribed (Ministry of Justice, 2014). Effective and accurate risk assessment and management of prisoners vulnerable to self-harm and suicide is everyone's responsibility and any member of staff can initiate the opening of an ACCT document. Therefore, positive staff-prisoner relationships are integral to managing and reducing risk (Liebling, Durie, Stiles, & Tait, 2005; Liebling & Price, 1998; Marzano, Hawton, Rivlin, & Fazel, 2011).

Rates of self-harm and suicide within prison populations have significantly increased over the past few decades (Ministry of Justice, 2017), and studies examining self-harming and suicidal behaviour have highlighted the prevalence of various dynamic risk factors associated with these behaviours (Arsenault-Lapierre, Kim, & Turecki, 2004; Fruehwald, Matschnig, Konig, Bauer, & Frottier, 2004; Shaw, Baker, Hunt, Moloney, & Appleby, 2004, Ministry of Justice, 2015). However, despite these associations, there has been little research focusing on the development of comprehensive screening tools, which include both static and dynamic risk factors, in order to identify those most at risk. Historically, measures used to identify individuals at risk of self-harm and suicide originate from other instruments developed for use with the general population. Simply using measures that were originally developed in psychiatric populations, is flawed due to the unique nature of the prison environment within which offenders are housed. With evidence showing a high proportion of incidents occurring within the first 72 hours of reception into prison (in the UK), identification of immediate risk must be conducted (Shaw et al., 2004). However, it is clear that due to the nature of the increasing levels of self-harm and suicide, the utility of comprehensive and accurate risk assessments are important considerations. Restricted by limited resources, screening therefore needs to be quick, efficient, and accurate in being able to identify those most at risk.

1.7 Thesis Aims and Objectives

Therefore, the aim of this thesis is to explore the psychological constructs of impulsivity and aggression, within young and adult male offender samples. Using both objective and subjective measures, this thesis is an attempt at developing a more nuanced and comprehensive understanding of how these constructs contribute to the

emergence and maintenance of self-harming behaviours in these particular groups. Whilst these psychological constructs are widely accepted in the literature in general, there is still debate over the nature of their expression and measurement. Their role and usefulness in relation to self-harming behaviour in offender samples, is also still an area which requires further understanding.

More specifically, this thesis will:

- Assess differences in aggression and impulsive behaviour in adult male offenders who are either; currently self-harming and on an ACCT, assessed as vulnerable and on an ACCT but not currently self-harming or those in the general prison population using the Buss-Perry Aggression Questionnaire (BPAQ), Barratt Impulsiveness Scale (BIS-11), Delay Discounting Task, Information Sampling Task, Stop Signal Task, and Go No-Go Task.
- Assess differences in aggression and impulsive behaviour in young male offenders who are either; currently self-harming and on an ACCT, assessed as vulnerable and on an ACCT but not currently self-harming or those in the general prison population using the Buss-Perry Aggression Questionnaire (BPAQ), Barratt Impulsiveness Scale (BIS-11), Delay Discounting Task, Information Sampling Task, Stop Signal Task and Go No-Go Task.
- Compare groups of adult and young offenders on the measures described above across the three testing groups.

2.0 CHAPTER TWO

General Methodology

The following methodology section refers to standard procedures that apply to the two major studies in this thesis. Any variation in the standard methodology will be highlighted in the reports of the separate studies.

2.1 Ethical Considerations

All studies undertaken as part of this thesis complied with the British Psychological Society's ethical regulations for the treatment of human subjects in research and were approved by the Institute of Psychological Sciences at the University of Leeds (Study reference: 14-0122). All studies were also ethically approved by the National Offender Management Service through the IRAS process (IRAS reference: 81027).

2.2 Participants

Prisoners housed at Her Majesty's Prison (HMP) Leeds and Her Majesty's Young Offenders Institute (HMYOI) Wetherby were invited to participate in the studies. HMP Leeds is a large category B local remand prison, with over 1,200 bed spaces. It accepts both sentenced and remanded adult male prisoners, primarily from the West Yorkshire area. HMYOI Wetherby is a male young offender institute, located in Wetherby, West Yorkshire, and houses up to 360 young males aged between 15 and 18. All participants were recruited from three samples within these prisons (see table 1).

Table 1: Participant Group Allocation

Group	Allocation Criteria
On an ACCT* document (currently self-harming)	Identified as ‘at risk’ and placed on an ACCT document by a HM Prison Service member of staff. Self-harmed or attempted suicide in the last month
On an ACCT document (not currently self-harming)	Identified as ‘at risk’ and placed on an ACCT document by a HM Prison Service member of staff. Self-harmed or attempted suicide over a month ago or identified as vulnerable for another reason, for example, depressed, anxious, previous self-harm, trigger.
General Prison Population	Not on an ACCT document or identified as at risk of self-harm or suicide Randomly selected from the general prison population

*Assessment, Care in Custody and Teamwork. An ACCT document is a prison service risk management tool for those identified as being at risk of self-harm or suicide.

In the current study, ‘recent’ was classed as within the last month. This was primarily to determine how impulsivity and aggression may vary across prisoners and young people who have engaged in self-harming behaviours in the last month, compared to those who have been identified as vulnerable but have not self-harmed in the past month and comparing both vulnerable groups to those who have not been identified as vulnerable and have not self-harmed. Prisoners who were on an ACCT were selected by using the Safer Prisons Team database. The Safer Prisons Team are responsible for reviewing and monitoring all of the ACCT documents in the prison or young offender setting. In order to minimise bias in recruitment and provide a representative sample across groups, all wings in the prison were utilised and

prisoners who were not on an ACCT were selected at random using the prison database. The wings at each site are divided as follows:

HMP Leeds has a total of 551 cells spread across six residential units, a segregation unit and in-patients Healthcare Facility. The six residential wings are A Wing which is a vulnerable prisoner unit, B Wing which is normal location, C Wing is the resettlement wing and houses prisoners who are in the last 12 months of their sentence and who are wanting to engage with services, D Wing is the drug recovery wing (and includes the First Night Centre), E Wing is the post drug recovery wing and F Wing houses remand prisoners.

HMYOI Wetherby is a dedicated 15 to 18 year old male establishment accommodating 396 trainees or young people. Living accommodation is in single occupancy rooms. Twenty-four rooms are available for temporary double occupancy, increasing the potential total to 420. Main site accommodation is split into five units housing sixty trainees on each unit. In addition the high-dependency unit, the Keppel Unit, accommodates 48 trainees in a purpose-built building. Anson unit, is now dedicated to longer-sentence young people with a capacity of 48.

Following discussions with senior staff and psychologists at HMP Leeds and HMYOI Wetherby, participant samples were expected to be comparable in their demographics, and therefore targeting individuals within each group was seen as unwarranted. Participants who were on an ACCT and those from the general prison population were anticipated to be comparable on demographic and criminal backgrounds (factors such as age, education, criminal history), and therefore

inclusion/exclusion criteria were not introduced to match clients across participant samples. However, Demographic and social history information was collected as part of the questionnaire assessment to compare groups but also for the potential need to use these as statistical controls, given the importance of variables such as age, mental health problems and history of self-harm and suicide attempts in mediating self-harm and suicidal behaviour (see tables 1 and 2 for full demographic breakdown of participants).

2.2.2 Inclusion Criteria

Inclusion criteria included the ability of the participant to give informed consent (assessed by researcher and other professionals in the Safer Prisons Team), that the participants were aged 15 and over and that the participant had vision and motor control necessary to complete behavioural tasks. It was also important that the participant was either English speaking or had a good grasp of the language in order to maintain the legitimacy of the testing measures which are all validated in English.

2.2.3 Exclusion Criteria

The exclusion criterion was therefore based on participants' ability to complete tasks including literacy, motor capacity, and level of risk to self and others. Participants were excluded if they were unable to give informed consent (assessed by the researcher and other professionals in the Safer Prisons Team), if they were unable to understand or complete tasks or if prison staff believed that exclusion was necessary due to risk to themselves or others. Prisoners on 'constant watch' who were of immediate risk of suicide were excluded from the study due to the high immediate risk of them harming themselves.

2.2.4 Informed Consent

All participants in the study were given adequate information and time in order to make an informed decision about whether they would consent to participate in the study. Participants were made aware of what was required of them in the research procedure via verbal explanation, and a written research information sheet outlining the work. Participants were given the opportunity to ask the researcher for clarification about the study. If a participant expressed that they felt pressure to take part in the study, they were able to withdraw with no consequences. Before consent was granted, participants were made aware that confidentiality would be broken if any information was disclosed regarding harm to themselves, or harm to others, and also that participation would not affect their treatment whilst in prison, any aspect of prison life, or parole status. Participants were required to sign their consent to this before they started the study. Consent was obtained in accordance with Prison Research (National Offender Management Service, NOMS) and the University of Leeds ethical guide lines (See Appendix I for participant information sheet and Appendix II for participant consent form).

2.2.5 Confidentiality

All participants' personal information was confidential and each participant was given a unique personal code which was recorded in the database. The unique personal code consisted of the day date of birth, the first and third letters of their Christian name and the year they were born. As outlined above, participants were informed that if they disclosed any intent to harm themselves or others or any intention to pose a threat to security then confidentiality would be broken by the researcher and an appropriate member of staff would be informed.

2.2.6 Responses to Vulnerability

If at any point participants were unhappy or become distressed they were able to discuss this with trained prison staff, and if necessary were able to withdraw from the study. There were a number of sources of support available to participants, and these were outlined to participants throughout and during debrief. The main burden to participants was the time taken to complete the research. However, this was minimised wherever possible by using the most easily comprehensible and also succinct assessment tools available. The research also aimed to fit around participants' 'core day', and was practical for them, with questionnaires and behavioural tasks presented at a suitable time and for a reasonable duration (as discussed with prison staff). The questionnaires and computer tasks were administered in short sessions to reduce boredom of the participants.

2.3 Considerations of Research Design

2.3.1 Prisoner Literacy

When selecting the most appropriate materials to use in the present thesis, validity and reliability were imperative, but equally important was that the measures were suitable for the reading and comprehension capabilities of the prison populations being tested. It is well established that a large proportion of the prison population have difficulty with reading and comprehension (Fazel, Xenitidis, & Powell, 2008). It is thought that the average reading age in the prison population in the UK is around 10-12 years old, with over half the population having a reading ability comparable to that of an 11 year old and 82% having a writing ability equal to, or below this level (Berman, 2012). Further, it was found that between 20–30% of adult

offenders have learning disabilities (Loucks, 2007) and one study found that 23% of young offenders were found to have learning difficulties (IQs of below 70) and a further 36% had borderline learning difficulties (IQs of between 70 and 80) (Harrington et al., 2005). All measures used in this thesis have been used in forensic samples previously. Secondly, all measures were assessed using the Flesch-Kincaid reading scale (Farr, Jenkins and Paterson, 1951). Wording of the BIS-11 and BPAQ was slightly altered by the researcher in order to make them more easily comprehensible and to avoid dominant American. These types of minor alterations have been deemed acceptable following the example of Parry and Lindsay (2003) who revealed that the BIS-11 remained reliable when the statements were rephrased to help participant comprehension, in sex offenders with low cognitive ability. All item changes were checked with prison staff, forensic psychologists and academic supervisors and agreed as acceptable. Additionally, all measures were piloted in a sample of 5 prisoners in order to ensure instructions which accompanied the measures, as well as the measures themselves, were comprehensible. Changes were kept to a minimum in order to retain comparability with previous literature. If prisoners had reading or writing difficulties the questionnaires were read aloud by the researcher on a one to one basis.

2.3.2 Self-Report Measures

Self-report measures are clearly susceptible to the effects of deception and social desirability, both of which are particularly relevant considerations in the current research, particularly given the emotionally and morally charged questions being asked. Additionally, offenders in general may be more likely than other populations to be dishonest about their behaviour (Clements et al., 2007). Because of the

acceptance that offenders are more likely to deceive when self-reporting (Gudjonsson, 1990; Nagayama Hall, 1989; Mills & Kroner, 2005; Rosen & Mink, 1961), dishonesty was an important consideration. Both internal and external factors may influence this distortion. Internal factors may include antisocial, paranoid or manipulative traits (Lord and Wilmott, 2004) and external factors may include accentuating or minimising problems, for example an individual may over-estimate their self-harming history if they believe they will obtain better care or privileges. However, although it is commonly assumed that offenders are more likely to deceive in self-reports, there is little direct evidence to suggest that social desirable response biases sufficiently damage validity to warrant correction. In contrast, offenders' self-reports have been found to be accurate in predicting risk of recidivism (e.g. Kroner & Loza, 2001; Loza, Dhaliwal, Kroner, & Loza-Fanous, 2000; Mills & Kroner, 2005).

The self-report measures used in the present study aimed at reducing these distortions as much as possible as there were no contingencies based on participant responses either in terms of privileges or punishments. Invariably, some participants may have responded inaccurately, either through mistrust of the research, or internal factors such as 'denial' or inaccurate estimations of previous behaviours. However, it is hoped that through clearly and concisely presenting questions, and removing potential consequence to their answers, the reliability and validity of the self-report measures used were strengthened.

The self-report measures used in the current study to assess trait impulsivity and aggression are therefore; proven to be valid and reliable, provide key theoretical

stances in the field, have been used in similar samples (i.e. prison samples of both adult and young offenders) and are easily comprehensible and concise, given the high prevalence of poor literacy and mental health issues in the prisoner population.

2.4 Experimental Measures

A number of measures (both psychometric and computer based) were administered in the studies outlined in this thesis which will be discussed in each separate chapter. However, a number of demographic questions were asked of all participants and they will be discussed below in more detail (see appendix III for full questionnaire).

2.4.1 Demographic Questions

A number of demographic variables have been shown to correlate with self-harm, suicide, impulsivity and aggression and therefore it was important to obtain a marker of these. Their measurement allowed comparison and consistency across groups. Studies revealed that more than half of all prisoners who commit suicide in prisons are between 25 and 34 years of age (Daniel & Fleming, 2006; He, Felthous, & Holzer, 2001; Marcus & Alcabes, 1993). They are often single with no job or family support. Very young prisoners (below age 21) have been found to be especially at risk (e.g. Liebling, 1993). Individuals tend to become less impulsive, and also less likely to self-harm as they grow older (Littlefield, Sher, & Steinley, 2010; Steinberg, 2008; Steinberg et al., 2008). Similarly, education is typically positively correlated to intelligence and has links with impulsivity. IQ and impulsivity have previously shown to be correlated, with lower IQ corresponding to increased impulsivity (De Wit, Flory, Acheson, McCloskey, & Manuck, 2007). However, the links between impulsivity and intelligence are very complex and highly dependent on the task used.

For this reason, age at which the respondent left school was used in this study to assess the participants' level of education. The prevalence of important risk factors for suicide and self-harm, such as mental illness, is higher in prison populations than in the community (McManus, Meltzer, Brugha, Bebbington, & Jenkins, 2009; Singleton, Meltzer, & Gatward, 1998). A number of trends were identified in Fruehwald and Frottier's (2005) study which looked at suicide in prison. They found that male prisoners account for 95% of all self-inflicted deaths, white prisoners make up 90% of all self-inflicted deaths but account for only 78% of the prison population, deaths are more likely to occur among prisoners aged between 21-39 years and that 60% of self-inflicted deaths are by un-sentenced prisoners and yet this group only account for 18% of the prison population. They also found that two-thirds of suicides occur in local prisons that hold one-third of the prison population, which is why it was important to use HMP Leeds as a sample, also a local prison. Offences involving violence (33%) and theft & handling (15%) were also found to be more common in self-inflicted deaths. Shaw, Baker, Hunt, Maloney, and Appleby (2004) investigated 172 prison suicides that occurred between 1999 and 2000, as part of the National Confidential Inquiry into Suicides and Homicides by Mentally Ill People. Out of 172 suicides, almost three quarters of the sample had one psychiatric diagnosis identified at reception, over half of the sample had a history of self-harming and symptoms related to psychiatric disturbance on reception to prison, and, of these, three quarters of them had been referred to a healthcare professional in the prison. Additionally, a third of the people who committed suicide had a history of contact with NHS mental health services. The links between ethnicity, self-harm and suicide are likely to be mediated by a number of variables. This is also likely to be the case for impulsivity. Maden, Chamberlain and Gunn (2000) estimated the

lifetime prevalence of deliberate self-harm as 17%, but also noted ethnic differences, with higher rates of lifetime self-harm for white men (19%) than black men (6%). As a result, participants in this study were asked about their self-harming history, the type of offence they committed, if they had a history of mental health problems, if it was their first time in prison, whether they were on remand or sentence and their ethnicity. Ethnicity was measured using a simple categorical tick box form.

2.5 Statistical Analyses

2.5.1 Normality, Assessment of Homogeneity of Variance/Sphericity

Normality distribution was assessed as well as homogeneity of variance, using the Levene's statistic for between-subjects designs. However, given that groups were of equal sample size, and that t-tests and ANOVA's are both robust statistical procedures (Howell, 2007), violations of this assumption were accepted (Donaldson, 1968).

2.5.2 Effect Sizes

Effect size assesses the proportion of variance in the DV associated with levels of the IV (Tabachnick and Fidell, 2001). Standardised effect sizes were calculated for all statistical tests. T-test effect sizes were calculated by converting t to r (Rosnow & Rosenthal, 2009).

2.5.3 Post Hoc Analyses

Unless otherwise stated, all within subject's effects were investigated further using Bonferroni corrected post hoc pairwise comparisons to keep tight control over the type 1 error rate (Field, 2009).

2.5.4 Statistical Significance

Unless stated otherwise, α level thresholds of $p < .05$ were deemed statistically significant. p values for significant effects are reported throughout this thesis with corresponding keys and the following levels are used $p < .05$, $p < .01$ and $p < .001$. Non-significant results were identified with *ns*.

3.0 CHAPTER THREE

Trait Impulsivity and its Relationship with Self-Harming Behaviours in Two Custodial Settings

Whilst impulsivity has been used to explain differences in personality for both normal and clinical samples; it is more often viewed as a dysfunctional and counterproductive trait (Barratt, Stanford, Felthous, & Kent, 1997; DeWit, 2008; Fite, Raine, Stouthamer-Loeber, Loeber, & Pardini, 2010; Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001). More specifically, Houston, Stanford, Villemarette-Pittman, Conklin, and Helfritz (2003) used the BIS-11 and found that differences in levels of impulsiveness had serious implications for expressive difficulties such as aggression. Furthermore, impulsivity and self-harming behaviour were found to be linked in both community-based and clinical samples (American Psychiatric Association, 2000; Coccaro, Posternak, & Zimmerman, 2005; Gorlyn, 2005; Horesh, 2001; Horesh et al., 1997; Lynam, Miller, Miller, Bornovalova, & Lejuez, 2011; Sanislow, Grilo, Fehon, Axelrod, & McGlashan, 2003; Paris, 2005; Raust et al., 2007; Ripke et al., 2012). Similarly, earlier studies using a variety of methods, have found that impulsivity is able to distinguish traits in offenders and non-offenders and has been found to be a reliable predictor of both delinquent and criminal behaviour (Lynam & Miller, 2004; McGuire, 1995; Pallone & Hennessy, 1996; White et al., 1994). Elevated impulsivity has also been found in a variety of forensic populations (Dear, 2000; Gordon & Egan, 2011; Ireland & Culpin, 2006; Komarovskaya, Loper, & Warren, 2007; Standford & Barratt, 1992). A propensity toward impulsiveness has been associated with aggressive behaviour and recidivism

in various offender samples (Barratt, Stanford, Kent, & Felthous, 1997; Dolan & Anderson, 2002; Prentky, Knight, Lee, & Cerce, 1995), thereby making proper assessment of impulsivity among offenders a crucial undertaking. Additionally, theories of self-harming behaviour (e.g. Mann et al., 1999) have included impulsivity as an important factor that may be particularly relevant to understanding both suicidal and self-harming behaviours (Anestis, Selby, & Joiner, 2007; Zouk, Tousignant, Seguin, Lesage, & Turecki, 2006). Consequently, impulsivity has become one of the most significant concepts for researchers trying to unravel the risk factors related to self-harming behaviours.

The Barratt Impulsivity Scale (BIS), currently in its 11th edition (BIS-11; Patton et al., 1995) is the most extensively used self-report measures of trait impulsivity and is frequently referred to as the ‘gold standard’ (Ireland & Archer, 2008; Spinella, 2007; Stanford et al., 2009). The BIS-11 has been subject to a number of modifications and its widespread use for over 50 years has helped define the way in which impulsivity is conceptualised. In 1959, impulsivity was believed by Barratt to be a unidimensional construct (Barratt, 1959). However, subsequent revisions following thorough examination of several factor analytic studies, concluded that impulsiveness was in fact multidimensional (Barratt 1965; Eysenck & Eysenck, 1977; Patton et al., 1995; Twain, 1957). In particular, the most up-to-date version of the scale (BIS-11), has 30 items and proposes three overarching sub-components of impulsiveness: motor impulsivity (also described as behavioural impulsiveness and refers to a tendency to act with a lack of forethought or prior consideration), attentional impulsivity (also described as cognitive impulsiveness and refers to an inability to focus or concentrate on a task and a tendency to make quick and non-

reflective decisions) and non-planning impulsivity (referred to as having a lack of planning or consideration of the consequences and a failure to prepare for future events). More specifically, attentional impulsivity is comprised of two first order factors: attention and cognitive instability and represents an underlying cognitive process related to different impulsiveness subtraits. Motor impulsiveness is also characterised by two first order factors, motor and perseverance which maps on to Barratt's (1985) original motor impulsivity subtrait. Finally, non-planning impulsiveness, includes the first order factors of self-control and cognitive complexity and supports Barratt's (1985) original non-planning subtrait of impulsivity. This three factor structure has been confirmed in a plethora of studies and they are widely considered to be key features of impulsivity (Gerbing, Ahadi, & Patton, 1987; Luengo, Carrillo-De-La-Pena, & Otero, 1991; Miller, Joseph, & Tudway, 2004; Parker, Bagby, & Webster, 1993; Patton et al., 1995; Someya et al., 2001; Spinella, 2007).

Using the Barratt Impulsiveness Scale (BIS-11), it was discovered that impulsive people are more likely to attempt suicide (Swann et al., 2005), indicating the potential usefulness of the BIS-11 in assessing vulnerability. Similarly, Dougherty et al. (2004) found that adults with a history of attempted suicide tended to score higher on motor components, than those without attempts and Quednow et al. (2006) found that higher scores on attention were associated with an increased risk of self-harming and suicidal behaviours in depressive patients, compared to matched controls. Furthermore, Jallade, Sarfati, and Hardy-Bayle (2005) found that psychiatric patients with a recent suicide attempt, scored higher on all BIS-11 subscales than orthopaedic patients, and these differences remained stable for one week after discharge. It is

particularly important in the current study that the different subcomponents of impulsivity are recognised, as the majority of previous studies have reported only the total scores.

Trait impulsivity has been frequently implicated in the manifestation of a number of psychological disorders, including disorders characterized by self-harming behaviours (e.g. BPD) and self-harming behaviours themselves (DSM-V, 2013; Lynam, Miller, Miller, Bornovalova, & Lejuez, 2011). Whilst it has been recognised that trait impulsivity may be a risk factor for self-harming behaviours, findings regarding the role of trait impulsivity and self-harm have been mixed. However, this may be due to the variation in self-reported measures of impulsivity used in previous studies. Evans, Platts, and Liebenau (1996) found in a sample of hospital patients, those who had self-harmed more than once scored higher on measures of impulsiveness than those who had self-harmed only once, who in turn scored higher on measures of impulsiveness than norms from the general population. Similar evidence for the presence of these factors has been found in samples of students, psychiatric inpatients and adult male prisoners (Patton, Stanford, & Barratt, 1995) and these findings have been replicated in a number of studies (Gerbing, Ahadi, & Patton, 1987; Luengo et al., 1991; Miller et al., 2004; Parker et al., 1993; Patton et al., 1995; Someya et al., 2001; Spinella, 2007; Yang et al., 2007). Importantly for the current research, there has been some disagreement in applying this three factor structure to an offender sample. For example, Haden and Shiva (2008, 2009) evaluated the BIS-11 in male forensic inpatients and found that a two factor model developed by the authors, including non-planning and motor impulsivity, was a better fit for the data. Similarly, Ireland, and Archer (2008) found the original three

factor model was a poor fit for the data and instead developed a new three factor model by creating item parcels. This comprised of non-planning (in the current version of BIS-11), impulsive action (referred to as behavioural impulsivity) and concentration difficulties (referred to as distractibility). As these examples suggest, inconsistencies in the research related to BIS-11 has led to a lack of clarity about the factor structure of impulsivity, particularly in forensic samples.

Similarly, deficits in impulsive traits have been associated with antisocial behaviours; including a tendency to not think before reacting and the propensity to respond with little thought for the consequences (particularly the negative, long term ones). More specifically, research has shown individuals who are highly impulsive are more likely to act thoughtlessly when faced with negative emotions and may be more likely to choose methods such as self-harm as a way of coping with this negative affect, due to its seemingly immediate gratification and short term gains of emotional regulation (e.g. The Theory of Urgency; Cyders & Smith, 2007).

Consequently, individuals who are highly impulsive are found to be less concerned with the long term consequences of self-harm such as scarring, discomfort, the return of the underlying problem and stigma associated (Chapman et al., 2006; Fikke et al., 2013; Klonsky, 2007). Whilst a variety of researchers have found links between high levels of trait impulsivity and both self-harming and suicidal behaviours (Anestis et al., 2012; Carli et al., 2010; Dougherty et al., 2009; Herpetz et al., 1997; Turecki, 2005), there has been some disagreement over this association (Glenn & Klonsky, 2010; Janis & Nock, 2009). Whilst some researchers have found a strong association (Glenn & Klonsky, 2010; Ogle & Clements, 2008), others have found no relationship at all (Bornovalova, Tull, Gratz, Levy, & Lejuez, 2011; Chapman,

Derbridge, Cooney, Hong, & Linehan, 2009). Furthermore, studies have found that impulsivity tends to plateau with age (Casey, Jones, & Hare, 2008). Kulendran, Patel, and Vlaev (2016) found a linear relationship between age and impulsivity; as people grow older, they become less impulsive.

Although some of the literature outlined in this chapter indicates that impulsive personality traits are found to be linked with self-harming behaviours in a range of populations and also to offending behaviour more generally, very little research has addressed the relationship between impulsivity and self-harm in prison populations and specifically, there has been no research to date looking at this relationship in currently self-harming and vulnerable but not currently self-harming groups. This study aims to assess whether we can differentiate vulnerability to self-harming behaviours by looking at three different groups of offenders including those on an ACCT and have self-harmed in the past month, those on an ACCT but have not self-harmed in the past month but may be vulnerable for different reasons and those in the general prison population and are not on an ACCT or identified as vulnerable. This study used one of the most commonly used self-report measures of impulsivity, the BIS-11, to explore its relationship to self-harm. Further, this study aimed use the BIS-11 to be able to differentiate vulnerability in both young and adult prison populations including those who are known to self-harm and those who do not self-harm, in an attempt to further our understanding of the link between impulsivity and self-harming behaviour. More specifically, the study aims to assess whether total impulsivity, as measured by the BIS-11, is differentiated between groups of adult and young offenders who are on an ACCT and currently self-harming adult, those on an ACCT but not currently self-harming and those in the general prison population.

Furthermore, all subcomponents of the BIS-11, i.e. motor, non-planning and attentional impulsivity will be assessed for differences. Total scores and subcomponents of impulsivity, as measured by the BIS-11 will be assessed across sites to see if there are differences in scores of young and adult offender populations.

3.1 Methodology

3.1.1 Participants

A total of 150 adult male offenders residing at HMP Leeds and 75 young male offenders residing at HMYOI Wetherby, took part in the study. As detailed in Chapter 2, there were three testing groups. At Leeds there were 50 participants in each group and at HMYOI Wetherby there were 25 participants in each group (due to the overall prison population being lower than at HMP Leeds and therefore comparable sample sizes were not achievable in the timescales). The demographic breakdown was considered for each group to ensure that there were no inconsistencies across testing groups that may have affected results. The breakdown is detailed in Table 1 for HMP Leeds and Table 2 for HMYOI Wetherby.

Table 2 Demographic characteristics across groups at HMP Leeds

Group		ACCT S/H	ACCT NS/H	GPP
Mean Age M(SD)		30.76 (8.34)	33.18 (8.58)	32.88 (10.35)
Ethnicity N (%)	White	42 (84%)	42 (84%)	39 (78%)
	Asian	2 (4%)	0	5 (10%)
	Black	0	2 (4%)	1 (2%)
	Mixed	4 (8%)	3 (6%)	5 (10%)
	Chinese	1 (2%)	0	0
	Other	1 (2%)	3 (6%)	0
History N (%)	Previously sentenced	37 (74%)	37 (74%)	31 (62%)
	Never been to prison	13 (26%)	13 (26%)	19 (38%)
Status N (%)	Remand	25 (50%)	26 (52%)	26 (52%)
	Sentenced	25 (50%)	24 (48%)	24 (48%)
Mental Health N (%)	History of MH	39 (78%)	35 (70%)	17 (34%)
	No history of MH	11 (22%)	15 (30%)	33 (66%)
Diagnosis N (%)	Depression	10 (26%)	11 (31%)	8 (47%)
	Personality Disorder	0	1 (3%)	1 (6%)
	Schizophrenia	1 (2%)	0	0
	Anxiety	1 (3%)	0	0
	Psychosis	1 (2%)	0	0
	2 or more	26 (67%)	23 (66%)	8 (47%)
S/H History N (%)	Yes	46 (92%)	36 (72%)	9 (18%)
	No	4 (8%)	14 (28%)	41 (82%)
S/H When N (%)	Today	7 (15%)	0	0
	Under a week	19 (41%)	0	0
	Over a week	17 (37%)	0	0
	Over a month	3 (7%)	7 (19%)	1 (8.33%)
	Over 6 month	0	4 (11%)	4 (33.33%)
	In the past year	0	5 (14%)	0
	Over a year ago	0	20 (56%)	7 (58.33%)
Att. Suicide History N (%)	Yes	48 (96%)	39 (78%)	11 (22%)
	No	2 (4%)	11 (22%)	39 (78%)
Att. Suicide When N (%)	Today	3 (6%)	0	0
	Under a week	11 (23%)	0	0
	Over a week	12 (25%)	1 (3%)	0
	Over a month	12 (25%)	4 (10%)	1 (9%)
	Over 6 month	6 (12%)	7 (18%)	0
	In the past year	8 (17%)	3 (8%)	0
	Over a year ago	7 (15%)	24 (61%)	10 (91%)

Table 3 Demographic characteristics across groups at HMYOI Wetherby

Group		ACCT S/H	ACCT NS/H	GPP
Mean Age M(SD)		16.72 (0.61)	16.80 (0.65)	16.92 (0.49)
Ethnicity N (%)	White	19 (76%)	25 (100)	15 (60%)
	Asian	0	0	8 (32%)
	Black	0	0	1 (4%)
	Mixed	5 (20%)	0	1 (4%)
	Chinese	0	0	0
	Other	1 (4%)	0	0
History N (%)	Previously sentenced	3 (12%)	15 (60%)	9 (36%)
	Never been to prison	22 (88%)	10 (40%)	16 (64%)
Status N (%)	Remand	5 (20%)	2 (8%)	3 (12%)
	Sentenced	20 (80%)	23 (92%)	22 (88%)
Mental Health N (%)	History of MH	22 (88%)	10 (40%)	2 (8%)
	No history of MH	3 (12%)	15 (60%)	23 (92%)
Diagnosis N (%)	Depression	10 (45%)	2 (17%)	0
	Personality Disorder	0	4 (33%)	0
	Schizophrenia	0	0	0
	Anxiety	4 (18%)	0	1 (33%)
	Psychosis	0	3 (25%)	0
	2 or more	8 (36%)	3 (25%)	2 (67%)
S/H History N (%)	Yes	25 (100)	20 (80%)	0
	No	0	20	100
S/H When N (%)	Today	4 (16%)	0	0
	Under a week	9 (36%)	0	0
	Over a week	12 (48%)	0	0
	Over a month	0	6 (30%)	0
	Over 6 month	0	6 (30%)	0
	In the past year	0	6 (30%)	0
	Over a year ago	0	2 (10%)	0
Att. Suicide History N (%)	Yes	24 (96%)	8 (32%)	0
	No	1 (4%)	17 (68%)	25 (100%)
Att. Suicide When N (%)	Today	0	0	0
	Under a week	3 (12%)	0	0
	Over a week	9 (38%)	0	0
	Over a month	5 (21%)	3 (38%)	0
	Over 6 month	4 (17%)	1 (12%)	0
	In the past year	0	2 (25%)	0
	Over a year ago	3 (12%)	2 (25%)	0

3.1.2 Measures

The Barratt Impulsiveness Scale (BIS-11) is a 30 item self-reported psychometric which is designed to measure trait impulsivity. The most recently revised Barratt Impulsivity Scale, the BIS-11 (Patton et al, 1995), comprises 3 sub-components of impulsiveness; eleven items assess the motor component impulsiveness (for example 'I do things without planning'), eight items assess the attentional component of impulsiveness (for example 'I don't pay attention'), and 11 items assess the non-planning component of impulsiveness (e.g. 'I plan tasks carefully'). Questions were answered using a four-point Likert scale (rarely/never, occasionally, often and almost always/always), with some items reverse scored to avoid a response bias. Internal consistency for scores range from 0.79 to 0.83 (Patton et al., 1995; Stanford et al, 2009). Scoring of the questionnaire gives a total impulsivity score and then 3 scores based on the subcomponents. The higher the scores, the more trait impulsivity is indicated.

3.1.3 Procedure

University of Leeds Ethics Approval Numbers: 14-0122

Participants were invited to take part in the study over the lunchtime period; when all prisoners are in their rooms for approximately 1.5 hours. Each participant was spoken to by the researcher individually and asked if they would like to take part in the study. This method ensured a good response rate as this is usually an issue in forensic samples. Each participant was given 24 hours to decide whether they wanted to take part. Those who agreed to take part were given an information sheet, a consent form and the test battery which included a number of demographic

questions, the Barratt Impulsivity Scale (BIS) and the Buss Perry Aggression Questionnaire (BPAQ). Participants were left to complete the questionnaire in their rooms and the researcher returned approximately 2 hours later to collect them. Any issues or questions raised by participants were dealt with when the questionnaires were collected in person by the researcher. A debrief was given following participation and if any issues arose, appropriate support was provided and ACCT documents were updated.

3.1.4 Data Analysis

A between subjects design assessed differences between those on an ACCT – currently self-harming, those on an ACCT – not currently self-harming and those in the General Prison Population on Total BIS-11 scores and each of the subscales (Attention, Motor, Non-planning) in each establishment. Data were analysed using a series of one-way between groups ANOVA's. All data was checked for normality before conducting parametric statistics. All between-subjects main effects in the analyses in this chapter were investigated further with Bonferroni post hoc comparisons.

3.2 Results

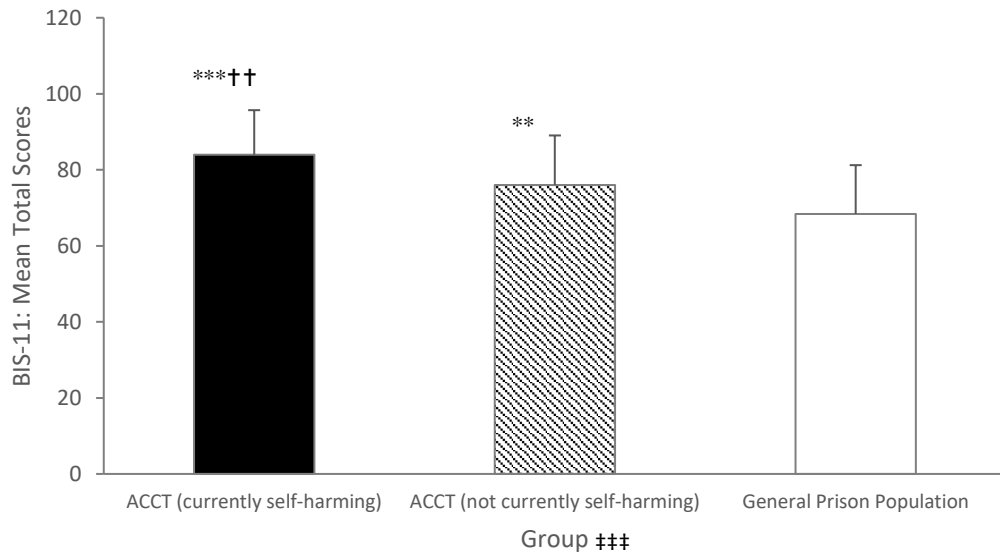
3.2.1 HMP Leeds: Adult Male Offenders - Barratt Impulsivity Scale (BIS)

3.2.1.1 BIS Total Impulsiveness

Analysis of the BIS-11 data with adult male offenders at HMP Leeds revealed a main effect of group for Total scores ($F(2, 147) = 19.20, p < .001, \eta^2 = .21$), Non-

planning impulsivity ($F(2, 147) = 15.80, p < .001, \eta^2 = .18$), Motor impulsivity ($F(2, 147) = 9.04, p < .001, \eta^2 = .11$) and Attentional impulsivity ($F(2, 147) = 14.06, p < .001, \eta^2 = .16$) (See table 4).

Post hoc comparisons using Bonferroni correction indicated that for BIS Total, the mean score for those on an ACCT - currently self-harming was significantly higher than those on an ACCT - not self-harming and both groups on an ACCT were significantly higher than the General Prison Population all (see Fig. 3).



significant main effect using one way ANOVA ($p < .001$)
 †† significantly different from ACCT no currently self-harming ($p < .01$)
 ** significantly different from the General Prison Population ($p < .01$)
 *** significantly different from the General Prison Population ($p < .001$)

Figure 3. BIS-11 Mean Total Scores across groups at HMP Leeds

3.2.1.2 Non-Planning Impulsiveness

Similar to total scores, for BIS Non-planning, post hoc comparisons indicated that the mean score for those on an ACCT - currently self-harming was significantly

higher than those on an ACCT - not self-harming and both groups were significantly higher than the General Prison Population (see table 4).

3.2.1.3 Motor Impulsiveness

Post hoc comparisons of the BIS Motor data indicated that the mean score for those on an ACCT - currently self-harming was significantly higher than both those on ACCT - not currently self-harming and those in the general prison population. However, there was no significant difference between mean scores reported by those on an ACCT - not currently self-harming and those in the General Prison Population (see table 4).

3.2.1.4 Attentional Impulsiveness

Post hoc comparisons of the BIS Attention data indicated that mean scores for those on an ACCT - currently self-harming and those on an ACCT – not currently self-harming were significantly higher than those in the General Prison Population. However, there was not a significant difference between mean scores for those on an ACCT - currently self-harming and those on an ACCT - not currently self-harming (see table 4).

Table 4. Mean scores (Standard Deviations in brackets) for BIS-11 subcomponents at HMP Leeds

BIS Component	Group	Mean (SD)
Non-planning †††	ACCT – currently self-harming	32.50 (5.04) ****††
	ACCT – not currently self-harming	29.48 (5.34) **
	General Prison Population	26.56 (5.46)
Motor †††	ACCT – currently self-harming	28.98 (5.62) ****††
	ACCT – not currently self-harming	25.54 (5.53)
	General Prison Population	24.48 (5.46)
Attention †††	ACCT – currently self-harming	22.46 (4.70) ***
	ACCT – not currently self-harming	20.98 (5.50) ***
	General Prison Population	17.34 (4.65)

††† significant main effect using one way ANOVA ($p < .001$)

†† significantly different from ACCT not currently self-harming, ($p < .01$)

** significantly different from General Prison Population, ($p < .01$)

*** significantly different from General Prison Population, ($p < .001$)

3.2.2 YOI Wetherby: Young male offenders - Barratt Impulsivity Scale (BIS)

3.2.2.1 Total Impulsiveness

Although the data from the young offenders follows a similar pattern to those reported above from the adult male offenders, with ACCT – currently self-harming reporting higher levels of total impulsiveness than those on an ACCT – not currently self-harming and both vulnerable groups reporting higher levels of total impulsiveness than the general prison population, analysis of the total BIS data from young offenders at HMYOI Wetherby revealed that there was not a significant main effect for total BIS-11 scores ($F(2, 72) = 2.90, n.s.$ (see Fig 4).

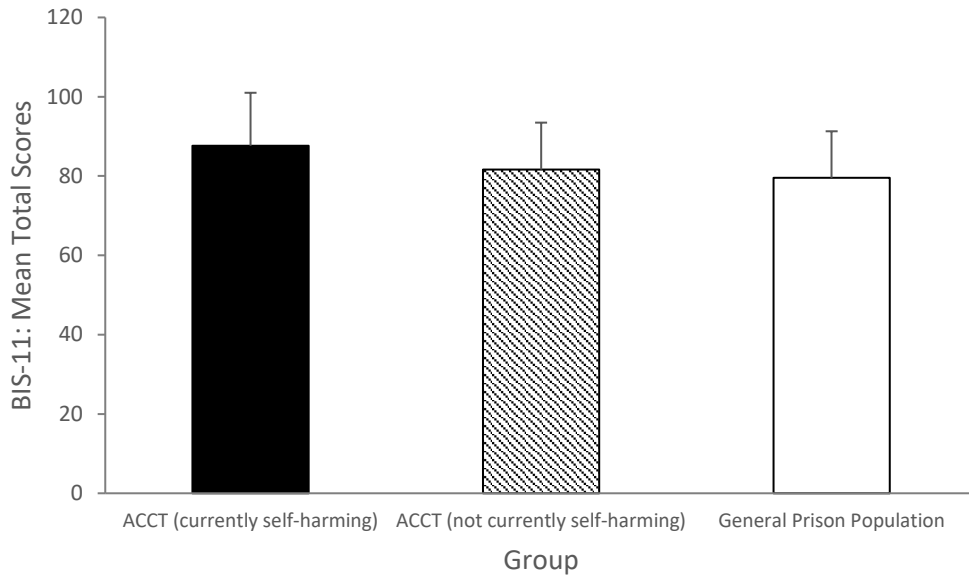


Figure 4. BIS-11 Mean Total Scores across groups at HMYOI Wetherby

3.2.2.2 Non Planning Impulsiveness

Analysis of the Non planning impulsivity data revealed there was no significant main effect of group ($F(2, 72) = 1.33, n.s$), (see table 5).

3.2.2.3 Motor Impulsiveness

Analysis of the Motor impulsivity data revealed there was no significant main effect of group ($F(2, 72) = 2.62, n.s$), (see table 5).

3.2.2.4 Attentional Impulsiveness

Analysis of the Attentional impulsivity data revealed a significant main effect of group ($F(2, 72) = 4.07, p < .05, \eta^2 = .10$). Post hoc comparisons using Bonferroni

correction indicated that the mean score for those on an ACCT - currently self-harming was significantly higher than those in the General Prison Population. There were no other significant differences between groups, (see table 5).

Table 5. Mean scores (standard deviations in brackets) for BIS-11 subcomponents at HMYOI Wetherby

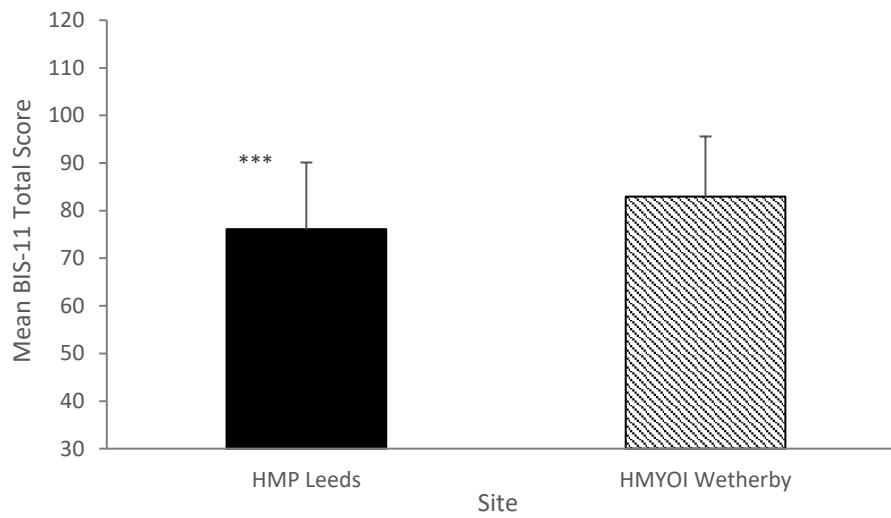
BIS Component	Group	Mean (SD)
Non-planning	ACCT – currently self-harming	32.72 (5.65)
	ACCT – not currently self-harming	30.64 (6.31)
	General Prison Population	30.28 (5.12)
Motor	ACCT – currently self-harming	30.36 (3.49)
	ACCT – not currently self-harming	28.00 (3.22)
	General Prison Population	28.28 (5.01)
Attention ‡	ACCT – currently self-harming	24.56 (4.90) **
	ACCT – not currently self-harming	23.00 (4.80)
	General Prison Population	21.00 (3.43)

‡ significant main effect using one way ANOVA ($p < .05$)

** significantly different from General Prison Population, ($p < .01$)

3.2.3 Comparison Data for Adult Offenders at HMP Leeds and young offenders at HMYOI Wetherby

There was a significant difference between groups for Total impulsiveness ($t(223) = 3.56, p = .001, r = .23$) (see figure 5). There was also a significant difference between groups for Motor ($t(199.34) = 3.81, p = .001, r = .26$), attention ($t(223) = 3.57, p = .001, r = .23$) and non-planning ($t(223) = 2.08, p = .05, r = .14$) (see table 6).



*** significantly different from HMYOI Wetherby ($p < .001$)

Figure 5. BIS-11 Mean Total Scores with young offenders at HMYOI Wetherby and adult offenders at HMP Leeds

Table 6. Mean scores (standard deviations in brackets) for BIS-11 subcomponents at HMP Leeds & YOI Wetherby

		Mean (SD)
Motor	HMP Leeds	26.33 (5.83) ***
	HMYOI Wetherby	28.88 (4.07)
Attention	HMP Leeds	20.26 (5.39) ***
	HMYOI Wetherby	22.85 (4.61)
Non-planning	HMP Leeds	29.51 (5.78) *
	HMYOI Wetherby	31.21 (5.74)

*** significantly different from HMYOI Wetherby ($p < .001$)

* significantly different from HMYOI Wetherby ($p < .01$)

3.3 Discussion

In summary, results from this study show that adult male offenders at HMP Leeds on an ACCT (currently self-harming), self-reported higher levels of impulsive behaviour using the BIS-11 than those on an ACCT (not currently self-harming) and that both vulnerable groups self-reported higher levels of impulsivity than those in the general prison population. Interestingly, whilst the general pattern of results for young male offenders were similar to those of adult offenders, results from the young offenders clearly show very small differences between these groups; with only attentional impulsiveness being able to discriminate between those who are on an ACCT and self-harming self-reporting higher levels of impulsiveness than those in the general population. Comparisons between adult and young offenders revealed that, in general, young offenders are more impulsive than adult offenders.

Analysis of the subcomponents of the BIS-11 scale, reported by adult male offenders, revealed that certain facets of impulsive behaviour were better at discriminating between the three groups in the study. More specifically, the non-planning subscale, measuring behaviours such as a lack of forethought or thinking about the consequences of a behaviour (Barratt, 1985), not only discriminated between those currently self-harming and those in the general prison population, but also between those currently self-harming and those who are vulnerable but not currently self-harming. Furthermore, those who are vulnerable but not currently self-harming reported significantly higher non-planning impulsive behaviour than those in the general population. These data suggest that those who agree to questions such as ‘I plan tasks carefully’ and are ‘I am self-controlled’ are less likely to self-harm

and be vulnerable in comparison to those in the general prison population. Whilst the BIS-11 scale is widely used, most studies report only the total score and the subscales are mostly ignored during analysis. However, research suggests that a considerable proportion of suicide attempts are made without premeditation (Giegling et al., 2009) and although these impulsive suicide attempts are suggested to be different from planned attempts, there have been inconsistent results yielded when trying to compare these two forms of attempted suicide (Brown, Overholser, Spirito, & Fritz, 1991; Polewka et al., 2005, Simon et al., 2001, Witte et al., 2008; Wyder and De Leo, 2007). Similarly, it is well established that self-harm is often an unplanned attempt at getting rid of unwanted emotions and has been linked with deficits in problem solving (e.g. Linehan, 1987; McLeavey, Daly, Murray, O'Riordan, & Taylor 1987; Schotte & Clum, 1987; Townsend et al., 2001; Williams & Pollock, 2000).

Similar to the scores for non-planning, self-reported motor impulsivity, which is related to behaviours such as 'acting on the spur of the moment', also successfully discriminated between those currently self-harming and those in the general prison population and also between those currently self-harming and those who are vulnerable but not currently self-harming. However, unlike the non-planning data, self-reported motor impulsivity did not discriminate between those who are vulnerable but not currently self-harming and those in the general population. These data suggest that the motor impulsivity scale is useful in discriminating between offenders who are currently self-harming and those who have been identified as vulnerable for other reasons but cannot be used to discriminate between those who are vulnerable but not currently self-harming and the general prison population.

Motor impulsivity refers to the tendency to act without thinking (Barratt, 1985) and could explain why self-harm may be used as a short term solution to a ‘problem’ (Chapman et al., 2006; Fikke et al., 2013; Klonsky, 2007). High impulsiveness scores have been consistently found in self-harmers and in particular, adults with a past history of suicide attempt(s) tend to score higher on the BIS-11 Motor than those without attempts (Dougherty et al., 2004).

Finally at HMP Leeds, attentional impulsiveness, which is related to behaviours such as ‘acting on the spur of the moment’, also successfully discriminated between those currently self-harming and those in the general prison population and also between those not currently self-harming and those in the general prison population.

However, unlike the non-planning data, the self-reported attentional impulsivity data did not discriminate between those who are currently self-harming and those who are vulnerable but not currently self-harming. These results suggest that those who are vulnerable and currently self-harming and those who are vulnerable and not currently self-harming are more likely to make quick decisions than those who are not identified as vulnerable and support findings by Quednow et al. (2006).

Importantly, the data with young people at HMYOI Wetherby showed that whilst the BIS-11 was unable to detect differences across groups on the non-planning and motor impulsivity subscales, it was able to detect differences across groups for attentional impulsiveness. In particular, young people who were currently self-harming self-reported higher levels of attentional impulsiveness in comparison to the general prison population. However, this subscale could not detect differences

between those at risk but not currently self-harming and the general prison population or between either of the vulnerable groups. Results at HMYOI Wetherby suggest that those who score high on attentional impulsiveness (or cognitive impulsivity) are more likely to self-harm than the general prison population. As mentioned above, attentional impulsivity refers to the propensity to make quick decisions or an inability to focus attention or concentrate (Barratt, 1985) and therefore fits with the proposal that self-harm is often used as a way of temporarily relieving unwanted feelings or thoughts (Chapman et al., 2006).

Impulsivity is one of the most frequently implicated risk factors for self-harm (Anestis, Selby, & Joiner, 2007) and these findings replicate studies which found that, in a variety of samples (including forensic settings), self-harming behaviour is associated with higher levels of impulsiveness (American Psychiatric Association, 2000; Coccaro, Posternak, & Zimmerman, 2005; Gorlyn, 2005; Horesh, 2001; Horesh et al., 1997; Lynam et al., 2011; Sanislow et al., 2003; Paris, 2005; Raust et al., 2007). However, what makes this study unique is the exploration of whether recent self-harm and vulnerability to self-harm could be differentiated from each other in terms of levels of impulsiveness and whether those who were vulnerable to self-harming (whether recent or not recent) were different to the general prison population. Specifically, the results of the present study indicate that adult offenders who are identified as vulnerable via the ACCT process and have reported to have self-harmed in the past month, score higher than those who are vulnerable but have not self-harmed in the past month and both vulnerable groups were higher on all subtraits of impulsiveness as measured by the BIS-11 than the general prison population. These findings are consistent with previous studies which found that

higher levels of self-harm indicated greater impulsiveness using BIS-11 (Arens, Gaher, & Simons 2012; Claes & Muehlenkamp, 2013; Crowell et al., 2012; Di Pierro, Sarno, Perego, Gallucci, & Madeddu 2012; Dir, Karyadi, & Cyders, 2013; Glenn & Klonsky, 2010; Lynam et al., 2011; Mullins-Sweatt, Lengel, & Grant, 2013; Ogle & Clements, 2008; St Germain & Hooley, 2012).

Overall, young offenders were found to be more impulsive than adult male offenders on total impulsivity and all sub-components of impulsiveness, as measured by the BIS-11. This is not surprising, given that impulsivity and self-harming behaviour are known to be correlated (Apter, Plutchik, & van Praag, 1993), and adolescents are generally believed to be more impulsive than adults (Brown, Overholser, Spirito, & Fritz, 1991; Clabour, Rogers, Miles, & Monaghan 2009). These findings are also consistent with previous findings by Kulendran, Patel and Vlaev (2016) who found that levels of impulsiveness tends to decline with age. Although most reserachers agree that impulsivity is a multi-dimensional construct, the majority of research using the BIS-11 have reported only the total score, ignoring the subscales.

Interestingly, 88% of those on an ACCT – currently self-harming were new to the prison system and it was their first time in prison suggesting a link to the vulnerability of first timers.

This study also highlights the importance of reporting and analysing the subscales in relation to behaviours such as self-harm so that we can explore this multi-faceted construct further. However, in comparison to similar samples, results from the current study demonstrated that self-reported scores of impulsiveness in both adults

and young offenders was considered particularly high. This is in comparison with patients with previous suicide attempts (Quednow et al., 2006; Jallade et al., 2005) and forensic samples (Enticott, Ogloff, Bradshaw, & Fitzgerald, 2008; Kirkpatrick et al., 2007; Dolan & Fullam, 2004; Smith et al, 2006). A review of the data by Stanford et al (2009) found that individuals scoring 72 or above on total BIS-11 scores to be classified as extremely impulsive. A number of previous studies have used a BIS-11 total score of 74 (one standard deviation above the mean), to designate high impulsiveness (Patton et al, 1995). Scores with young people at HMYOI Wetherby demonstrated that even in the general prison population, participants were considered to be highly impulsive (ACCT – currently self-harming, Mean = 87.64, SD = 13.36; ACCT – not currently self-harming, Mean = 81.64, SD = 11.83 and General Prison Population, Mean = 79.56, SD = 11.73). This may be partially due to ceiling effects as both young people and offenders have been found to have higher levels of impulsivity (Clarbour, Rogers, Miles, & Monaghan, 2009). Whilst the BIS-11 may not be useful in being able to discriminate vulnerability to self-harm with young offenders, it may still be a very important risk factor to self-harming behaviours in the young people's estate. Similarly, self-reported impulsiveness at Leeds was considered to be high in both vulnerable groups but not in the general prison population (ACCT – currently self-harming, Mean = 83.94, SD = 11.75; ACCT – not currently self-harming, Mean = 76, SD = 13.04 and General Prison Population, Mean = 68.38, SD = 12.85). Compared with other forensic samples, these scores seem to be relatively high. For example, Haden and Shiva (2008) reported a mean BIS-11 total score of 69.34, a mean non-planning impulsiveness score of 27, a mean motor impulsiveness score of 24.75 and a mean attentional impulsiveness score of 17.59. As can be seen in tables 3 and 4, scores

from this study were higher across all groups of young offenders at HMYOI Wetherby and both vulnerable groups of adult offenders at HMP Leeds scored higher.

Even though impulsivity clearly plays a central role in self-harming behaviours, the comparative significance of trait versus behavioural facets of this behaviour still remains unclear (Corruble, Damy, & Guelfi, 1999; Tice, Bratslavsky, & Baumeister, 2001; Weyrauch, Roy-Byrne, Katon, & Wilson, 2001). Consequently, differing approaches to measuring impulsivity may be useful in exploring the complex interaction of their contribution. Findings across both sites support previous studies which have shown impulsiveness to be a problem for individuals who display self-harming behaviours (Doherty et al., 2004; Jallade et al., 2005; Quednow et al., 2006). However, because there have been few large scale studies exploring the multidimensional nature of impulsivity in prison populations (Ireland & Archer, 2008), it is difficult to make comparisons. Therefore, although there appears to be a link between impulsive behaviour and self-harming behaviour (Evans, Platts, & Liebenau, 1996; Herpertz et al., 1997; Simeon et al., 1992), the theoretical underpinning in relation to this link is limited, in part, by our lack of understanding about the different dimensions of impulsive behaviour and their potential roles in the mediation of self-harming behaviour. Previous research has found that those who self-harm tend to do so as a means of temporarily managing emotions, without thinking about the consequences or alternative solutions (e.g. Chapman et al., 2006; Klonsky, 2007; 2009). Given that reducing negative affect is commonly referred to as a precursor to self-harming, it is likely that high levels of negative urgency may increase vulnerability to this behaviour (Taylor, Peterson, & Fischer, 2012). Two

studies in particular indicate that self-harmers are characterised by high levels of negative urgency, the propensity to act rashly when experiencing distress and lack of deliberation (Glenn & Klonsky, 2010; Lynam et al., 2011). This may be a particularly important facet of impulsiveness in this sample of adult offenders, as non-planning impulsiveness was the only subcomponent of impulsivity that was able to discriminate across all groups. This fits with the suggestion proposed by Moeller et al. (2001), which suggests that individuals who are highly impulsive are predisposed towards unplanned decisions, with little thought to the negative consequences of these actions and may indicate that for adult offenders, this is a particularly important aspect of impulsivity in relation to self-harming behaviour.

In general, results demonstrate the BIS-11's potential usefulness in being able to detect differences across vulnerable groups of adult offenders. In particular, levels of self-reported non-planning and motor impulsivity was able to successfully discriminate between vulnerable groups in adult male offenders. However, the data clearly indicate the BIS-11 questionnaire cannot discriminate between vulnerable young male offenders, perhaps because of the high levels of self-reported impulsivity by all young male offenders and potential ceiling effects. It is interesting though that attentional impulsivity was a component where significant differences were found with young offenders at HMYOI Wetherby and suggests that attentional impulsivity is an element of impulsiveness which needs to be explored further, particularly in young offender samples. Furthermore, the results provide support for impulsivity as a multidimensional concept and one which has shown promise, in the current study, in being correlated with self-harming behaviour in an adult forensic population. It is clear from this study that the Barratt Impulsiveness Scale remains to be an important

tool in the measurement and assessment of impulsivity, particularly for adult offenders. Given the prominence of impulsiveness as a construct, these findings have important potential implications for the risk assessment and treatment of self-harm. Suitable measurement and a better understanding of impulsivity in forensic samples is critical in being able to direct resources where most needed.

4.0 CHAPTER FOUR

Trait Aggression and its Relationship with Self-Harming Behaviours in Two Custodial Settings

Aggression and self-harming behaviours are both important issues to consider, due to the harmful consequences of both behaviours and the frequency with which both exist, particularly within custodial settings. Prison statistics from England and Wales indicate that male prisoner violence has increased by 41% since 2012 (Ministry of Justice, 2017). Similarly, prisoner on prisoner assaults, assaults on staff and serious assaults have increased by 24%, 36% and 31% respectively (Ministry of Justice, 2017). Whilst acts of violence and self-harm initially seem to be conflicting actions (one being external and one being internal), researchers dating back to Freud (1905), have proposed that the two are linked and in fact, may co-exist. In particular, Freud regarded suicide as aggression turned inward and suggested that aggression motivates (or is a trigger for) both self-harming and violent behaviours. Important indications for the co-occurrence of self-harm and aggression began to emerge in the 1970's, with a number of studies finding higher prevalence of one behaviour in populations defined by the presence of the other (Bach-y-Rita, 1974; Inamdar, Lewis, Siomopoulos, Shanok, & Lamela, 1982; Plutchik et al., 1989). Similarly, a higher proportion of people with a history of violence, tended to have a history of self-harm also (Buri, von Bonin, Strik, & Moggi, 2009; Flannery, Singer, & Wester, 2001; Hunt et al., 2006). In further support of this association, there is a significant similarity in risk factors associated with each behaviour. For example, Plutchik and colleagues (Plutchik 1994; Plutchik et al., 1989a; Plutchik & van Praag, 1990a)

suggested that as many as twenty three risk factors were associated with both violent and self-harming behaviours. These include substance misuse, mental health, social isolation and cognitive deficits. More specifically, studies have found increased co-occurrence rates in forensic populations (e.g. Maden et al., 2000; Stalenheim, 2001). Cross sectional studies give further support to this relationship due to the finding that people that score highly on measures of aggression, tend to score higher on measures of self-harm, compared to controls in the general population (Dervic et al., 2006; Grosz et al., 1994; Gvion & Apter, 2011; Mann et al., 2005; Michaelis et al., 2004; Oquendo et al., 2000; Renaud et al., 2008).

Specifically, it is proposed that self-harm and aggression may serve the same function and are therefore preceded by a similar psychological state and as a consequence, the two behaviours can be used interchangeably by some individuals (Nijman & à Campo, 2002; Plutchik, 1995). Furthermore, it has been established that there is a biological link, as serotonergic functioning is an essential part of the emotional regulation of responses and low serotonergic activity has been found to be correlated with suicidal behaviour (Braquehais, Oquendo, Baca-García, & Sher, 2010; Kamali, Oquendo, & Mann, 2001; Mann et al., 1999). The biological foundations of these behaviours follow proposals that aggression is part of a trait-like diathesis for suicidal behaviour (Mann & Currier, 2007). Herpertz, Sass, and Favazza (1997) hypothesise in their framework that a person uses self-harm due to an inability to otherwise openly express anger, and as a result, leads to mounting tension. Despite the wealth of evidence to suggest a co-occurrence of self-harm and aggression, Lubell and Vetter (2006) state “we really do not know whether suicidality causes violence, vice versa, or whether they are interchangeable outcomes

of the same general process” (p.172). However, one of the most compelling reasons as to why self-harming behaviours and aggression may co-exist, is the frequently proposed function of self-harm and suicide as a way of managing emotions (Brown, Comtois, & Linehan, 2002; Chandler, 2014; Klonsky & Glenn, 2009; Holm & Seveinsson, 2010; Laye-Gindhu & Schonert-Reichl, 2005). A person’s inability to control behaviour is thought to stem from deficits in managing emotions and which ordinarily give rise to higher order cognitive functions such as hindsight, forethought, anticipatory behaviour and goal directed action (Barkley, 1997). Selby et al. (2008) suggest that when a person is dealing with difficult negative emotions, aggressive individuals may have a tendency to ruminate or attempt to suppress these emotions. Similarly, negative rumination has been found to increase the chance of displaced aggression (Bushman, 2002).

Trait aggression has, fairly consistently, been found to be linked to self-harm and suicidal behaviours (Greening, Stoppelbein, Luebbe, & Fite, 2010; Haavisto et al., 2005; Hillbrand, Krystal, Sharpe, & Foster, 1994; Plutchik, 1995; Tang et al., 2013; Zhang et al., 2012). Haggard-Grann, Hallqvist, Långström, and Möller (2006), found that just over a quarter of their sample of violent offenders reported severe thoughts of suicidal attempts and self-reported to have self-harmed in the year before their index offence. Furthermore, just over ten percent of the sample reported having acute suicidal ideation or had self-harmed in the twenty four hours prior to their offence. A number of studies have reported a co-occurrence of both aggression and self-harming behaviours. Beasley (1999) found that a significant majority of service users who used self-harm, were also aggressive. Additionally, two case control studies found that service users who engaged in self-harm, were also more likely to engage

in acts of physical and verbal aggression (Hillbrand, 1992; Hillbrand, Kyrstal, Sharpe, & Foster, 1994). Bowers et al. (2008) found that in a sample of acute psychiatric patients, there were significant relationships between aggression towards others (including objects) and self-harming behaviours. Similarly, Bach-y-Rita (1974) found half of all their sample of habitually violent men, also self-harmed on a regular basis. Adrian, Zeman, Erdley, Lisa, and Sim (2010) found that aggression was found to be a predictor of self-harming behaviours in adolescents and this was mediated by the regulation of emotions. Similarly, Ross and Heath (2003) studied a group of adolescents and found that over than two thirds of those who engaged in self-harming behaviours, indicated feeling both anger and hostility prior to self-harming. Daffern and Howells (2007) used the Dynamic Appraisal of Situational Aggression (DASA) scale and the HCR-20 and found that in a sample of personality disordered patients, aggression and self-harm can be predicted by the same negative affect. Furthermore, in a study of over 20,000 psychiatric in-patients admitted over a ten year period, assault on other patients and staff during admission was acknowledged as a predictor for attempted suicide (Neuner, Schmid, Wolfersdorf, & Spiebl, 2008).

The study of aggression, like impulsivity, takes many different perspectives (e.g. Anderson & Busman, 2002; Berkowitz, 1993; Buss, 1961; Little, Jones, Henrich, & Hawley, 2003) and whilst none have been completely successful in establishing a cohesive classification of aggression that incorporates all its forms (e.g. physical versus verbal, direct versus indirect, instrumental versus impulsive and proactive versus reactive), one of the most widely acknowledged definitions is that of Buss (1961), who later went on to develop, arguably one of the most popular self-report

measures of aggression; the Buss-Perry Aggression Questionnaire (BPAQ) (Buss & Perry, 1992). Buss and Perry (1992) reviewed the seven-factor Buss-Durkee Hostility Inventory (BDHI) and conducted a confirmatory factor analysis on three undergraduate student samples. This led to the development of a 29 item questionnaire consisting of four factors or subscales (Physical Aggression, Verbal Aggression, Hostility and Anger). Physical and verbal aggression are believed to be a representation of the motor (or instrumental) component of the behaviour, anger as a representation of the affective or emotional aspect of the behaviour and hostility as a representation of the cognitive thought process underlying the behaviour. However, although some studies have supported the scales four factor structure (e.g. Fossati, Mafei, Acquarini, & Di Ceglie, 2003), a number of studies have found difficulties in replicating it (e.g. Archer, Kilpatrick, & Bramwell, 1995; Harris, 1997; Williams, Boyd, Cascardi, & Poythress, 1996). Whilst the BPAG has shown some value in predicting violence in adult samples (Bushman & Wells, 1998; Diamond & Magaletta, 2006; Diamond, Wang, & Buffington-Vollum, 2005), the same cannot be confidently said about its use with adolescents and it is suggested that the development of aggression in adolescence requires further study, considering the lack of theory underpinning adolescent aggression specifically (Collishaw, Maughn, Goodman, & Pickles, 2004; Martino, Ellickson, Klein, McCaffrey, & Edelen, 2008).

Following on from data presented in chapter 3, aggression and impulsivity are psychological constructs which have consistently been associated with self-harming behaviours, including suicide. There is some suggestion that, due to this overlap, these constructs should be considered together (Mann, Waternaux, Haas, & Malone, 1999; Mann & Currier, 2009; Seroczynski, Bergman, & Coccaro, 1999), whilst

others believe they represent distinctly different constructs (Critchfield, Levy, & Clarkin, 2004; Loney, Kramer, & Milich, 1981). Despite this though, the relationship between aggression, impulsivity, and self-harming is well recognised (e.g. Brent et al., 1993; Brent, Bridge, Johnson, & Connolly, 1996; Carballo et al., 2006; Dumais et al., 2005; Renaud et al., 2008; Zalsman et al., 2006). Furthermore this association has been found to be more significant in younger samples and decreases in importance with age (McGirr et al., 2009). Some theories hypothesise that outwardly directed aggression is a key behavioural mechanism that contributes to differentiating suicidal ideation only from actual attempts. Firstly, outwardly-directed aggression is one indicator of impulse control disorders, which predict suicide planning and attempts among those with suicide ideation (Nock et al., 2009). Further, outwardly directed aggression has been specifically linked with suicide attempts in a number of previous studies (Angst & Clayton, 1986; Conner, Swogger, & Houston, 2009; Swogger, You, Cashman-Brown, & Conner, 2011). These experimental findings have subsequently been summarized and incorporated into models of suicidal behaviour. One such influential theory is that by Mann et al. (2003), which suggests a biologically-based diathesis, involving the serotonergic system at a biological level and manifests as impulsive and aggressive thoughts at a cognitive level, which in turn predisposes individuals to act on suicidal thoughts. In this model, impulsivity and aggression are considered together, as indicators of dysregulated behaviour.

Whilst the literature outlined in this chapter indicate that aggressive traits are linked with self-harm and offending behaviour in general, insufficient research has addressed the relationship between aggression and self-harm in forensic samples,

specifically in both young and adult male offenders. Further, this study aims to look at whether we can differentiate vulnerability to self-harming behaviours by looking at groups of offenders who have self-harmed in the past month, those who self-harmed over a month ago and those who have not been identified as vulnerable to self-harming. This study will use one of the most commonly used self-report measures of aggression, the Buss-Perry Aggression Questionnaire, to explore its relationship to self-harm and its potential to differentiate vulnerability to self-harming behaviour in young and adult offender samples. More specifically, the study aims to assess whether total aggression, as measured by the BPAQ, is differentiated between groups of adult and young offenders who are on an ACCT and currently self-harming adult, those on an ACCT but not currently self-harming and those in the general prison population. Furthermore, all subcomponents of the BPAQ, i.e. verbal aggression, physical aggression, anger and hostility will be assessed for differences. Total scores and subcomponents of aggression, as measured by the BPAQ will be assessed across sites to see if there are differences in scores of young and adult offender populations.

4.1 Methodology

4.1.1 Participants

For full details of participants, see tables 2 and 3 in Chapter 3.

4.1.2 Measures

The BPAQ is one of the most widely used self-reported measures of trait aggression (Buss & Perry, 1992). It is a 29-item instrument consisting of four subscales: Physical Aggression (including nine items, e.g., “if someone hits me, I hit back”), Verbal Aggression (including five items, e.g., “I tell my friends openly when I disagree with them”), Anger (including seven items, e.g., “When frustrated, I let my frustrations show”), and Hostility (including eight items, e.g., “I am sometimes eaten up with jealousy”) along with a Total score of aggression. Participants rate each item according to how accurately each item describes the way they behave when feeling angry or aggressive on a Likert scale rating from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me). Internal consistency reported by Buss and Perry (1992) are as follows: Physical Aggression =.85, Verbal Aggression =.72, Anger =.83, Hostility =.77 and the total score =.89. More recently, Yusainy and Lawrence (2014) reported internal consistency scores of .90, .84, .74, .78, and .80 for total score, physical aggression, verbal aggression, anger and hostility, respectively. Reliability coefficients (Cronbach’s alpha) range from 0.72 to 0.89 (Buss & Perry, 1992).

4.1.3 Procedure

See section 3.1.3 as the BIS-11 and the BPAQ were assessed together using the sample procedure as described in chapter 3.

4.1.4 Data Analysis

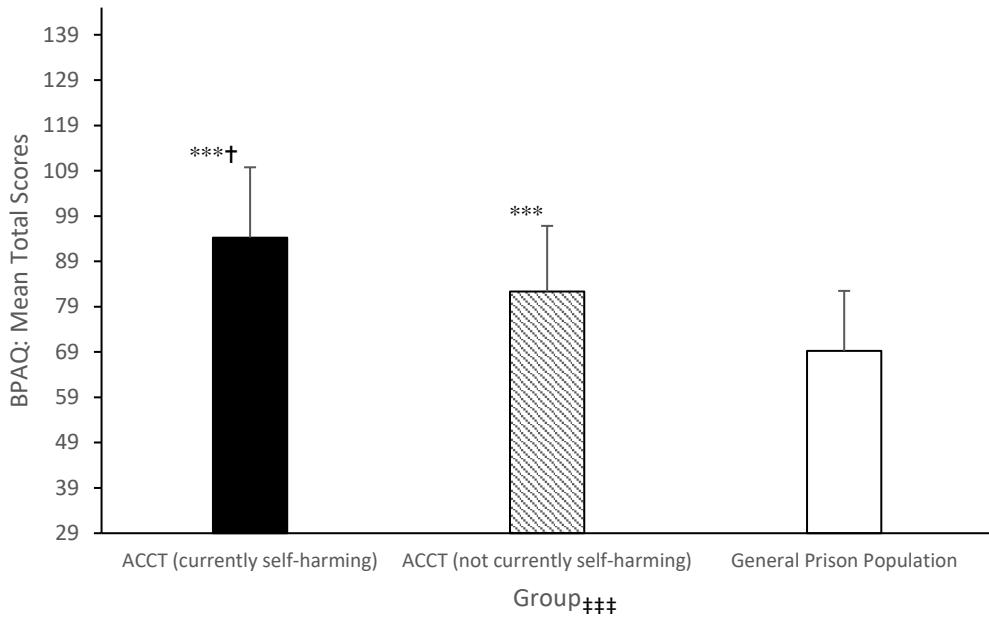
A between subjects design assessed differences between those on an ACCT – currently self-harming, those on an ACCT – not currently self-harming and those in the General Prison Population on Total BPAQ scores and each of the subscales (Verbal Aggression, Physical Aggression, Hostility and Anger) using a series of one-way between groups ANOVA's. All between-subjects main effects in the analyses in this chapter were investigated further with Bonferroni post hoc comparisons.

4.2 Results

4.2.1 HMP Leeds: Adult Male Offenders

4.2.1.1 Buss Perry Aggression Questionnaire (BPAQ) - Total Aggression

Analysis of the BPAQ data at HMP Leeds revealed a significant main effect of group for Total BPAQ ($F(2, 147) = 14.49, p < .001, \eta^2 = .16$). Post hoc tests using Bonferroni correction revealed that for BPAQ Total, the mean score for those on an ACCT – currently self-harming was significantly higher than the mean score for those on an ACCT – not currently self-harming and both groups that were on an ACCT were significantly higher than those in the general prison population (see Figure 6).



‡‡‡ significant main effect using one way ANOVA ($p < .001$)
 † significantly different from ACCT no currently self-harming ($p < .05$)
 *** significantly different from the General Prison Population ($p < .001$)

Figure 6: BPAQ Mean Total Scores for Groups at HMP Leeds

4.2.1.2 BPAQ - Verbal Aggression

Analysis of the BPAQ data at HMP Leeds revealed a significant main effect of group for Verbal Aggression ($F(2, 147) = 7.06, p < .01, \eta^2 = .08$). Post-hoc analyses revealed that the mean score for those on an ACCT – currently self-harming was significantly higher than those on an ACCT – not currently self-harming and those in the general prison population. There was no significant difference between those on an ACCT – not currently self-harming and the general prison population (See Table 7).

4.2.1.3 BPAQ - Anger

Analysis of the BPAQ data at HMP Leeds revealed a significant main effect of group for Anger ($F(2, 147) = 13.75, p < .001, \eta^2 = .16$). Post-hoc analyses of the Anger scores revealed that the mean score for those on an ACCT – currently self-harming and those on an ACCT – not currently self-harming were significantly higher than those on in the general prison population. However, there was not a significant difference between those on an ACCT – currently self-harming and those on an ACCT – not currently self-harming (see Table 7).

4.2.1.4 BPAQ - Physical Aggression

Analysis of the BPAQ data at HMP Leeds revealed a significant main effect of group for Physical Aggression ($F(2, 147) = 4.41, p < .05, \eta^2 = .06$). Post-hoc analyses identified that the mean score for those on an ACCT – currently self-harming was significantly higher than the mean score for those in the general prison population. There was no significant difference between the scores for those on an ACCT – not currently self-harming and the general prison population or between those on an ACCT – currently self-harming and those on an ACCT – not currently self-harming (see Table 7).

4.2.1.5 BPAQ - Hostility

Analysis of the BPAQ data at HMP Leeds revealed a significant main effect of group for Hostility ($F(2, 147) = 18.37, p < .001, \eta^2 = .20$). Post-hoc analyses of the Hostility scores revealed that the mean score for those on an ACCT – currently self-harming

was significantly higher than the mean score for those on an ACCT – not currently self-harming and both groups on an ACCT were significantly higher than those in the general prison population (see Table 7).

Table 7. Participant mean scores (standard deviations in brackets) for the BPAQ at HMP Leeds

BPAQ Component	Group	Mean
Verbal Aggression ††	ACCT – currently self-harming	16.28 (5.17) ****††
	ACCT – not currently self-harming	13.64 (4.56)
	General Prison Population	12.92 (4.36)
Anger †††	ACCT – currently self-harming	21.88 (7.02) ***
	ACCT – not currently self-harming	19.28 (6.84) **
	General Prison Population	15.00 (5.96)
Physical Aggression †	ACCT – currently self-harming	28.02 (7.91) **
	ACCT – not currently self-harming	26.70 (9.25) *
	General Prison Population	23.28 (7.46)
Hostility †††	ACCT – currently self-harming	28.04 (7.68) ****††
	ACCT – not currently self-harming	22.72 (9.57) **
	General Prison Population	18.04 (7.34)

† significant main effect using one way ANOVA ($p < .05$)

†† significant main effect using one way ANOVA ($p < .01$)

††† significant main effect using one way ANOVA ($p < .001$)

††† significantly different from ACCT not currently self-harming, ($p < .01$)

* significantly different from General Prison Population, ($p < .05$)

** significantly different from General Prison Population, ($p < .01$)

*** significantly different from General Prison Population, ($p < .001$)

4.2.2 HMP YOI Wetherby: Young Male Offenders

4.2.2.1 Buss Perry Aggression Questionnaire (BPAQ) - Total Aggression

BPAQ total mean revealed that there was not a significant main effect for total BPAQ scores ($F(2, 147) = 1.18, ns$) (see Fig 7).

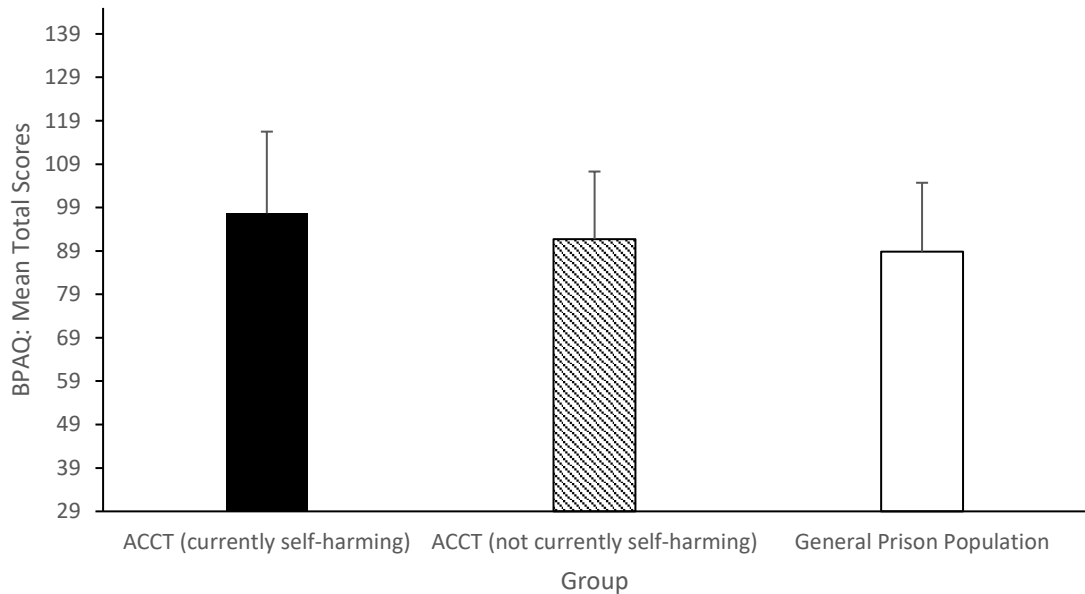


Figure 7: BPAQ Mean Total Scores for Groups at HMYOI Wetherby

4.2.2.2 BPAQ - Verbal Aggression

Analysis of the BPAQ data at HMYOI Wetherby revealed that there were no significant main effects of group for Verbal Aggression ($F(2, 72) = 1.66, ns$) (See Table 8).

4.2.2.3 BPAQ - Anger

Analysis of the BPAQ data at HMYOI Wetherby revealed that there were no significant main effects of group for Anger ($F(2, 72) = 2.12, ns$) (See Table 8).

4.2.2.4 Physical Aggression

Analysis of the BPAQ data at HMYOI Wetherby revealed that there were no significant main effects of group for Physical Aggression ($F(2, 72) = 0.32, ns$) (See Table 8).

4.2.2.5 Hostility

Analysis of the BPAQ data at HMYOI Wetherby revealed a significant main effect for Hostility ($F(2, 147) = 10.32, p < .001, \eta^2 = .22$). Post hoc comparisons using the Bonferroni correction revealed that for Hostility, the mean score for those on an ACCT – currently self-harming was significantly higher than the mean score for those on an ACCT – not currently self-harming and those in the general prison population. However, there was no significant difference between the scores of those on and ACCT – not currently self-harming and those in the general prison population (see Table 8).

Table 8. Participant mean scores (standard deviations in brackets) for the BPAQ at HMYOI Wetherby

BPAQ Component	Group	Mean
Verbal Aggression	ACCT – currently self-harming	16.88 (3.77)
	ACCT – not currently self-harming	15.16 (2.88)
	General Prison Population	16.20 (3.38)
Anger	ACCT – currently self-harming	22.44 (4.93)
	ACCT – not currently self-harming	23.28 (5.71)
	General Prison Population	20.24 (5.50)
Physical Aggression	ACCT – currently self-harming	31.76 (7.07)
	ACCT – not currently self-harming	32.20 (6.25)
	General Prison Population	32.12 (6.45)
Hostility ###	ACCT – currently self-harming	26.60 (5.97) ****††
	ACCT – not currently self-harming	21.08 (4.83)
	General Prison Population	20.28 (5.21)

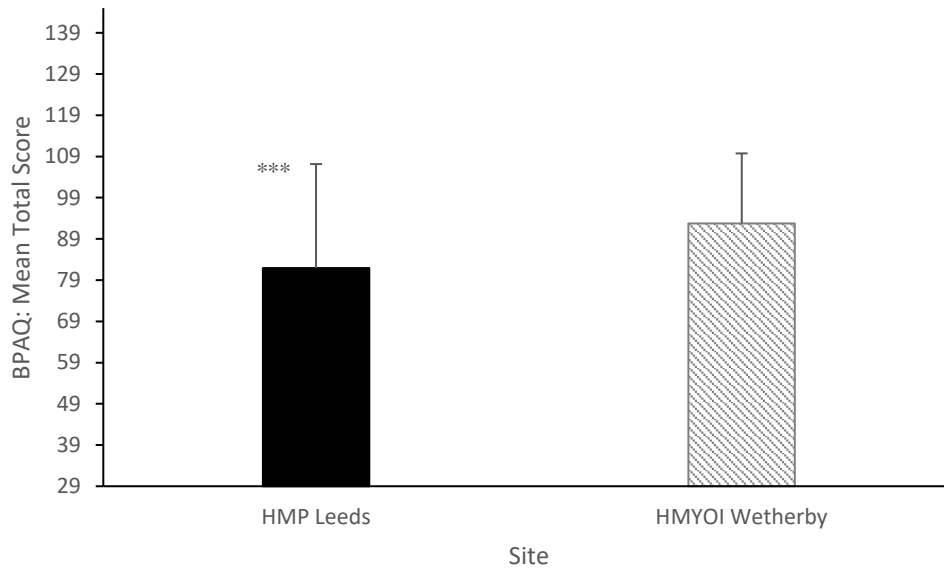
significant main effect using one way ANOVA ($p < .001$)

†† significantly different from ACCT not currently self-harming, ($p < .01$)

*** significantly different from General Prison Population, ($p < .001$)

4.2.3 Comparison Data for HMP Leeds and HMYOI Wetherby

There was a significant difference between groups for Total aggression ($t(203.93) = 3.80, p = .001, r = .26$) (see figure 8). There was also a significant difference between groups for Verbal Aggression ($t(200.41) = 3.22, p = .01, r = .22$), Anger ($t(187.08) = 3.79, p = .001, r = .27$) Physical Aggression ($t(185.31) = 5.91, p = .001, r = .40$) but not Hostility ($t(207.44) = -.28, ns$) (see table 9).



*** significantly different from HMYOI Wetherby ($p < .001$)

Figure 8. BPAQ Mean Total Scores with young offenders at HMYOI Wetherby and adult offenders at HMP Leeds

Table 9. Mean scores (standard deviations in brackets) for BPAQ subcomponents at HMP Leeds & YOI Wetherby

		Mean (SD)
Verbal	HMP Leeds	14.28 (4.90) **
	HMYOI Wetherby	16.08 (3.40)
Anger	HMP Leeds	18.72 (7.17) ***
	HMYOI Wetherby	21.99 (5.47)
Physical	HMP Leeds	26.00 (8.43) ***
	HMYOI Wetherby	32.03 (6.51)
Hostility	HMP Leeds	22.93 (9.17)
	HMYOI Wetherby	22.65 (5.99)

4.3 Discussion

In summary, results from this study show that, in general, adult male offenders at HMP Leeds on an ACCT (currently self-harming), self-reported higher levels of aggressive behaviour using the BPQA than those on an ACCT (not currently self-harming) and that both vulnerable groups self-reported higher levels of aggression than those in the general prison population. Interestingly, whilst the general pattern of results for young male offenders were similar to those of adult offenders, results from the young offenders clearly show very small differences between these groups; with only Hostility being able to discriminate between those who are on an ACCT and currently self-harming self-reporting higher levels of aggression than those in the general population. Comparisons between adult and young offenders revealed that, in general, young offenders are more aggressive than adult offenders, apart from scores for hostility.

Analysis of the subcomponents of the BPQA scale, reported by adult male offenders, revealed that certain facets of aggression were better at discriminating between the three groups in the study. More specifically, hostility; which is related to thoughts of suspicion and resentment and is regarded as the cognitive aspect of the aggression construct (Buss & Perry, 1992), was able to discriminate between all groups in the study. In particular, those on an ACCT currently self-harming and those on an ACCT but not currently self-harming, self-reported higher levels of hostility than those in the general prison population. Furthermore, hostility was able to discriminate between the two vulnerable groups of adult offenders at HMP Leeds with those currently self-harming, self-reporting higher levels of hostility than those

only identified as vulnerable to self-harming but not currently doing so. These data suggest that those who agree to questions such as 'I am suspicious of overly friendly strangers' and 'at times I feel I have gotten a raw deal out of life' are more likely to self-harm and be vulnerable in comparison to those in the general prison population. These findings support the hostility model of self-harm proposed by Herpertz et al. (1997) which suggest that individuals may self-harm due to a failure to otherwise be able to express anger. Furthermore, Ross and Heath (2003) found in a sample of adolescents that self-harmers had higher levels of both intro-punitive hostility (including guilt, self-criticism and self-doubt) and extra-punitive hostility (including resentful judgements towards others). Similarly, older research by Farmer and Creed (1986) and replicated in a Scandinavian study by Brittlebank et al. (1990) found in a sample of patients presenting after an episode of self-harm, there was a positive association between intro-punitive hostility and self-harming behaviours. It is proposed that this tendency to feelings of anger, without having the capacity to be able to deal with these feelings in a proactive way, may lead to behaviour which is directed inwards and resulting in self-harming behaviours.

Similar to the hostility data with adult offenders at HMP Leeds, self-reported verbal aggression, was also able to successfully discriminate between those currently self-harming and those in the general prison population and also between those currently self-harming and those who are vulnerable but not currently self-harming.

Specifically, those on an ACCT currently self-harming and those who are identified as vulnerable but not currently self-harming, self-reporting more verbal aggression than those in the general prison population. However, unlike the hostility data, self-reported verbal aggression did not discriminate between those who are vulnerable

but not currently self-harming and those in the general population. These data suggest that the verbal aggression subscale is useful in discriminating between offenders who are currently self-harming and those who have been identified as vulnerable for other reasons but cannot be used to discriminate between those who are vulnerable but not currently self-harming and the general prison population. Related to verbal aggression, physical aggression was only able to discriminate between those who are currently self-harming with those in the general prison population. Specifically, those on an ACCT currently self-harming, self-reported more physical aggression than those in the general prison population. Verbal and physical aggression relate to the motor components of aggression, with a number of previous studies finding increased aggression to be linked with suicide and self-harm (Greening et al., 2010; Haavisto et al., 2005; Haggard-Grann et al., 2006; Hillbrand, Krystal, Sharpe & Foster, 1994; Plutchik, 1995; Tang et al., 2013; Zhang et al., 2012).

Anger, which is related to the temperament of a person and their ability to control their emotions, with adult offenders at HMP Leeds, was able to discriminate between the two vulnerable groups and the general prison population. More specifically, those who were on an ACCT and currently self-harming and those on an ACCT but not currently self-harming reported higher levels of anger than those in the general prison population. Therefore, groups of vulnerable offenders were more likely to agree to statements on the questionnaire such as ‘when frustrated, I let my irritation show’ and ‘I sometimes fly off the handle for no reason’ than those in the general prison population. This data fits with models which suggest that people who self-harm, do so as a way of managing difficult emotions (Brown et al., 2002; Chandler,

2014; Klonsky & Glenn, 2009; Holm & Seveinsson, 2010; Laye-Gindhu & Schonert-Reichl, 2005) and support findings that propose that anger and self-harming behaviours may support the same underlying function (Nijman & à Campo, 2002; Plutchik, 1995).

Interestingly, and in contrast to results with adult offenders, self-reported scores of aggression for young offenders at HMYOI Wetherby showed that there were no significant differences across groups for total aggression, verbal aggression, anger or physical aggression. Notably though, young offenders at HMYOI Wetherby self-reported scores of hostility were significantly different across groups. More specifically, young offenders on an ACCT and currently self-harming self-reported higher levels of hostility than those who were on an ACCT but not currently self-harming. Further young offenders on an ACCT currently self-harming reported significantly higher levels of hostility than those in the general prison population. Therefore, of special interest in this chapter is why hostility stands out with both adult and young offenders at HMP Leeds and HMYOI Wetherby. Hostility, which is assessed using questions such as ‘sometimes I feel like I have gotten a raw deal out of life’ and ‘I wonder why sometimes I feel so bitter about things’; is thought of as the cognitive element of aggression and is defined as having a negative evaluation of persons and things (Buss, 1961). Similarly, Plutchik (1980) constructed it as a negative thought process that encompasses both anger and disgust and is accompanied by feelings of annoyance, scorn, and resentment towards others. This collection of negative feelings towards others is often regarded as having a ‘hostile attribution’ (Berkowitz, 1996) and can be reflected in negative responses, such as the aggressive ones (Buss & Perry, 1992). Interestingly the only other scale that

discriminates between current self-harm and vulnerability to self-harm in adults is Verbal Aggression. Lending support to our findings, Ross and Heath (2003) investigated a group adolescents in two high schools who had engaged in self-harming behaviour and found that over two thirds of those who had self-harmed also disclosed feelings of hostility and anxiety prior to self-harming. These results support the hostility model of self-harm as outlined by Herpertz, Sass, and Favazza (1997) which proposes that a person self-harms due to an inability to openly express anger in a proactive way, leading to suppression of emotions. This also supports research dating back to Freud (1905), who viewed suicide and self-harm as aggression turned inward. Perhaps having a hostile attribution style, which the vulnerable groups in this study seem to have, means that feelings of anger and resentment are less able to be processed in a more reflective and evaluative way and instead, the individual may ruminate and use self-harming as a means of getting rid of these negative feelings. Additionally, Ross and Heath (2003) found that self-harmers had higher levels of both extra punitive hostility (related to resentful, cynical, and angry thoughts) and intropunitive hostility (related to a tendency towards feelings of guilt, self-doubt, and self-deprecation). This propensity to be more easily frustrated while, at the same time, experiencing feelings of self-doubt and guilt, may result in aiming these negative feelings towards the self.

On the whole, young offenders were found to be more aggressive than adult male offenders on all sub-components of aggressive traits (apart from hostility – where only the general prison population at Wetherby scored higher than the general prison population at Leeds). Whilst the BPAQ is generally considered the ‘gold standard’ for measuring aggression, there has been a lot of criticism regarding the samples that

were used when developing the tool. This is something which we cannot ignore in the current study, in particular, what aggression looks like for young people in custody in particular. Similar to the data for impulsivity outlined in chapter 3, this may be due to ceiling effects as both self-harming and offender populations have been shown to have higher levels of aggression. According to the original paper published by Buss and Perry (1992), the average scores for men was 77.8 for total score, 21.3 for hostility, 17 for anger, 15.2 for verbal aggression and 24.3 for physical aggression and results from this study showed that adult and young male offenders at HMP Leeds and HMYOI Wetherby scored higher on all aspects on average and across all vulnerable groups. Although the BPAQ wasn't able to discriminate between all groups of young offenders at HYOI Wetherby, it is of note that hostility was a component where significant differences were found. Hostility is an element of aggression which needs to be explored further, particularly in young offender samples. One practical aspect which might need to be considered is the wording of the items on the questionnaire and their suitability or relatability to an adolescent, offending sample. However, because there have been few large scale studies exploring the multidimensional nature of aggression in prison populations (and particularly in young offending samples), it is difficult to make comparisons. Therefore, although these findings suggest that there appears to be a link between trait aggression and self-harming behaviour in adults, our theoretical understanding of this association is limited.

Overall, these results provide some support for aggression as a multidimensional concept and one which has shown promise, in the current study, in being correlated with self-harming behaviour in adult male offenders. The same cannot be said for its

use with young offending males and there may be more we need to learn about young people and the development of aggression and its underlying components. However, hostility is of particular interest as it was found to be able to discriminate between groups in young people and adults, suggesting that hostility might be a possible assessment tool measure in young offenders. Hostility in particular, appears to be an important component in the current study as it was able to discriminate across groups at both HMP Leeds with adult offenders and at HMYOI Wetherby with young offenders. In general though, these results support previous research that has found trait aggression to be linked to self-harming behaviours (Haavisto et al., 2005; Hillbrand, Krystal, Sharpe, & Foster, 1994; Tang et al., 2013), including suicidal behaviour (Greening et al., 2010; Zhang et al., 2012). However, the studies above only looked at total aggression scores and therefore, were unable to look at differences in the subscales, which is a particularly interesting aspect of the current study. Of particular note is the fact that as self-harming behaviours in UK prisons have increased, so have violent behaviours (Ministry of Justice, 2017) and whilst this doesn't give evidence of causation, it seems reasonable to assume that there may be a link. Similarly, previous studies have found that a substantial section of individuals with a history of observed aggression, also tended to have a history of self-harm (e.g. Buri et al., 2009; Cairns et al., 1988; Flannery et al., 2001; Hunt et al., 2006; Lidberg et al., 2000; Virkkunen et al., 1989), which might explain why aggression scores are so high in this sample. Taken together, these findings have important potential implications for the risk assessment and treatment of self-harm and suicide in prison.

5.0 CHAPTER FIVE

Exploring the Relationship between Trait Impulsivity and Aggression in Two Self-Harming Custodial Settings

As already discussed extensively throughout this thesis; self-harm and suicide are complex behaviours that are both understood to manifest as a result of several interacting factors including environmental, social and individual difference variables (Hawton & Heeringen, 2009; Barton, Meade, Cumming, & Samuels, 2014). As such, we cannot rely on one particular, overarching model to explain why some people engage in such behaviours. However, there are key variables which have been shown to have an influence on whether someone is more likely to engage in self-harm and both impulsivity (Anestis et al., 2012, 2012; Carli et al., 2010; Dougherty et al., 2009; Herpertz et al., 1997; Turecki, 2005) and aggression (Buri et al., 2009; Cairns et al., 1988; Flannery et al., 2001; Hunt et al., 2006) have shown significant promise in this respect. Research in this field has shown raised co-occurrence rates of these behaviours in a range of populations such as clinical (Bergman & Brismar, 1994; Hasin et al., 1988), psychiatric (Asnis et al., 1994; Fennig et al., 2005; Pfeffer et al., 1983), community (Gould et al., 1998; Suokas et al., 2010) and forensic settings (Maden et al., 2000; Stalenheim, 2001). Finally, cross-sectional studies have offered further backing for co-occurrence, given the common finding that people who score highly on measures of impulsiveness, also score higher on measures of aggression, compared to controls (Brent et al., 2002; Dervic et al., 2006; Grosz et al., 1994; Korn et al., 1997; Mann et al., 2005; Michaelis et al., 2004; Oquendo et al., 2000; Renaud et al., 2008). However, little

research thus far has been conducted in forensic samples to explore the relationship between these factors in offender populations, where levels of impulsivity and aggression are already deemed comparatively high.

Links between impulsivity and aggression are well recognized (Gordon & Egan, 2011) and it is proposed that when emotions are heightened, the inability to inhibit acting on these feelings can result in aggressive behaviour. In an Australian study by Barton et al. (2014), it was found that participants who engage in self-harm differ from offenders who did not self-harm in factors such as having a history of childhood abuse, antisocial personality disorder (related to aggression) and impulsivity. Similarly, in a British study by Rivlin et al. (2013), male offenders who had made serious suicide attempts were different from controls across factors such as current psychopathology (depression, hopelessness), personality traits (impulsivity and aggression, lower self-esteem) and environmental factors (lack of social support, prior criminal offences, adverse life events, being bullied in prison). The association between the two concepts is proposed to be so strong that some authors suggest the two constructs should be considered together (Mann et al., 1999; Mann & Currier, 2009; Seroczynski, Bergman, & Coccaro, 1999), whereas others oppose this and believe they are two distinctive concepts (Critchfield, Levy, & Clarkin, 2004; Loney, Kramer, & Milich, 1981). Similarly, impulsivity, hostility and aggression are terms that are often used interchangeably and sometimes referred to as ‘impulsive aggression’ in self-harm and suicide research (Keilp et al., 2006). Despite the lack of agreement though, the relationship between traits of impulsiveness, aggression and self-harming behaviour is clear in a number of clinical studies (Brent, 1993; Brent, Bridge, Johnson, & Connolly, 1996; Carballo et al., 2006; Dumais et al., 2005a;

Renaud et al., 2008; Zalsman et al., 2006). Furthermore, there is some evidence that this link is even more powerful in younger samples and that the relationship decreases actually decreases with age (McGirr et al., 2008). Impulsive (also known as reactive aggression) has been found to be related to lower serotonin activity in the brain and a development of a pattern of emotional dysregulation when faced with stressful life events and other difficulties, all of which can lead to self-harming behaviours (Conner et al., 2003; Conner, Swogger, & Houston, 2009). Some studies have made an effort to decide which of these constructs are most strongly related to self-harming behaviours (e.g. Keilp et al., 2006), however, one of the main problems in doing so is the complications related to the definitions of these constructs as some use the terms hostility, aggression and impulsivity interchangeably (McGirr et al., 2008; McGirr et al., 2009). In reality though, our understanding of these concepts is much more complex and both impulsivity and aggression are multifaceted constructs and can and do manifest in a number of different ways. Therefore, whilst it has been shown that they are implicated some way in suicidal and self-harming behaviour, none are necessarily a cause of each other and our understanding is limited.

There are a number of psychological models that include both impulsivity and aggression as predictive variables related to self-harming behaviours. The Clinical-Biological Model of Suicidal Behaviour (Mann et al., 1999; 2005) is based on the notion of impulsive aggression, or a tendency to respond to frustration or stress with aggression. This model proposes that vulnerability to suicidal behaviour is inherited and that parental mood disorder and/ or impulsive and aggressive traits are likely transmitted through genetics or a suboptimal family environment such as neglect and

abuse. Similarly, the Two-Stage Model of Outward and Inward Directed Aggression (Apter, Plutchik, & van Praag, 1993; Plutchik, 1995; Plutchik, van Praag, & Conte, 1989) is based on the assumption that self-harm and violence are both expressions of the same underlying function and it is the presence or absence of other factors that determines what direction of the feelings will take. In particular, Plutchik et al. (1989) listed possible triggers that increase aggressive impulses including threats, challenges, insults and feeling a loss of control. However, although some support has been given to the Two-Stage Model of Outward and Inward Directed Aggression (Apter et al., 1993; Plutchik, 1995; Plutchik et al., 1989), support for relationships between inward and outward aggression and psychopathologies, is mixed (Speilberg, Reheiser, & Sydemann, 1995; Whiteside & Abramovitz, 2004). More recent research has highlighted the need to look at the subscales of aggression when studying self-harming behaviours (Giegling et al., 2009). Furthermore, based on the idea that self-harm is used as a way of getting rid of unpleasant emotions, Chapman et al. (2006) proposed the Experiential Avoidance Model. Within this model, it is also proposed that higher levels of impulsiveness may be associated with a likelihood for avoid difficult emotions. Therefore, despite varying perspectives on the reasons for self-harming and suicidal behaviour, most theories are bound together by the notion that self-harm and suicide are ways of escaping, managing and regulating difficult emotions.

Klonsky (2007) conducted a review of the literature and identified seven key functions of self-harm that were repeatedly examined. One of the most widely cited functions in this review refers to the affect-regulation model of self-harm which suggests that self-harm is used as a way of managing negative emotions or arousal

(Favazza, 1992; Gratz, 2003; Haines et al., 1995). In particular, Linehan (1993) proposed that, similar to the Clinical-Biological Model described above, early maladaptive environments teach inadequate strategies for dealing with distress and strong, negative feelings. Individuals who are poor at managing negative emotions such as anger and hostility, are therefore more likely to use self-harm as a dysfunctional emotional management technique. Affect regulation is clearly an important function for self-harming behaviour and this particular function was strongly found in all of the 18 studies examined as part of Klonsky's (2007) review (e.g. Briere & Gil, 1998; Brain et al., 1998; Brown et al., 2002; Coid, 1993; Favazza & Conterio, 1989; Haines et al., 1995; Herpertz, 1995; Jones et al., 1979; Kemperman et al., 1997; Kumar et al., 2004; Nixon et al., 2002; Laye-Gindhu & Schonert-Reichl, 2005; Nock & Prinstein, 2004; Osuch et al., 1999; Penn et al., 2003; Russ et al., 1992; Shearer, 1994; Wilkins & Coid, 1991). In particular, Brown et al. (2002) found that in a sample of women diagnosed with Borderline Personality Disorder, 96% said they self-harmed 'to stop bad feelings', giving more evidence indicative of emotional regulation. Similarly, in a group of psychiatric patients with a mixture of diagnoses, Herpertz (1995) found that over three quarters of patients reported 'tension release' as a reason for self-harming. Furthermore, Penn, Esposito, Schaeffer, Fritz, and Spirito (2003) found that adolescent offenders with a history of self-harm cited the most common reason for self-harming was 'to stop bad feelings'. Therefore, affect regulation as a key function of self-harm appears to be reflected in research in a variety of adult and adolescent samples.

As part of the same review by Klonsky, and related to aggression in particular, the self-punishment model of self-harm proposes that self-harm is used as a way of

directing anger inwards towards oneself. A number of researchers have described that self-directed anger is used in order to self-soothe when faced with emotional distress (Bennun, 1983; Herpertz et al., 1997; Klonsky et al., 2003; Soloff et al., 1994). Additionally, self-reported reasons related to the self-punishment model of self-harm received strong support in 6 studies reviewed as part of Klonsky's paper (e.g. Briere & Gil, 1998; Brown et al., 2002; Nixon et al., 2002; Laye-Gindhy et al., 2005; Penn et al., 2003; Shearer, 1994). Studies by Brown et al. (2002) and Briere and Gil (1998) found that 63% and 83% of those who self-harmed respectively, reported doing so as a way of 'self-punishment'. Likewise, in a sample of adolescents, over half of them said the reason they self-harmed was because 'I was angry at myself' (Laye-Gindhu et al., 2005). It is clear that literature supports both functions as a reason for self-harming, however, affect regulation reasons were overwhelmingly chosen as the primary reason and self-punishment as secondary.

Whilst impulsivity has been shown to be associated with aggression and aggressive behaviour (Barratt, 1993, 1994; Volavka, 1999; Smith & Waterman, 2006), offending in general (Farrington, 1991; Pallone & Hennessy, 1996) and in particular, self-harm and suicidal behaviour, this link is not entirely clear due to the complex nature of the concepts and the associated behaviours. Although this relationship is not fully understood in forensic settings in particular, research has established a link between impulsivity, aggression and self-harming and suicidal behaviours in general and it is evident that several key aspects may be playing a role in the manifestation of these behaviours. These include a tendency towards unpredictable and often disproportionate emotional responses (e.g. Anestis et al., 2011; Linehan, 1993), a tendency to behave impulsively with little regard for the consequences (Anestis et

al., 2011; Mann, Waterneux, Haas, & Malone, 1999) and a tendency to score high on levels of trait aggression (Ribeiro & Joiner, 2009; Selby et al., 2011; Turecki, 2005). Less common in research is the study of trait aggression and impulsivity alongside each other in relation to both self-harming behaviour. Even less well studied is this relationship in young adult and adolescent samples, with these variables primarily being studied in adult populations (Dumais et al., 2005; Horesh et al., 1997) and then applied to younger samples. The aim of the current study hence, is to explore this relationship further in adult male and young male forensic sample, to explore the different contributions of the subscales of impulsivity on aggression.

5.1 Methodology

See methodology chapters 3 and 4 for more details.

5.2 Results

Multiple regressions were conducted to identify independent predictors of the four subscales of the Buss Perry Aggression Questionnaire (1992) using Verbal Aggression, Anger, Physical Aggression and Hostility as the dependant variables. The three subscales of the Barratt Impulsiveness Scale; Motor, Attentional and Non-planning Impulsiveness, were independent or predictor variables.

5.2.1 HMP Leeds: Adult Male Offenders

5.2.1.1 Total Aggression

A multiple regression established that total impulsiveness could statistically significantly predict aggression, $F(1, 148) = 70.77, p < .001$, adjusted $R^2 = .319$. Therefore total impulsiveness accounted for 31.9% of the explained variability in total aggression.

5.2.1.2 Verbal Aggression

A multiple regression established that the sub-components of impulsiveness (non-planning, motor and attention) could statistically significantly predict verbal aggression, $F(3, 146) = 10.91, p < .001$, adjusted $R^2 = .166$. Therefore, the three subcomponents of impulsiveness accounted for 16.6% of the explained variability in verbal aggression. A Pearson's correlation revealed that all subcomponents of impulsiveness were positively correlated with verbal aggression (see table 10).

5.2.1.3 Anger

A multiple regression established that the sub-components of impulsiveness (non-planning, motor and attention) could statistically significantly predict anger, $F(3, 146) = 17.89, p < .001$, adjusted $R^2 = .254$. Therefore, the three subcomponents of impulsiveness accounted for 25.4% of the explained variability in anger. A Pearson's correlation revealed that all subcomponents of impulsiveness were positively correlated with anger (see table 10).

5.2.1.4 Physical Aggression

A multiple regression established that the sub-components of impulsiveness (non-planning, motor and attention) could statistically significantly predict physical aggression, $F(3, 146) = 17.74, p < .001$, adjusted $R^2 = .252$. Therefore, the three subcomponents of impulsiveness accounted for 25.2% of the explained variability in anger. A Pearson's correlation revealed that all subcomponents of impulsiveness were positively correlated with physical aggression (see table 10).

5.2.1.5 Hostility

A multiple regression established that the sub-components of impulsiveness (non-planning, motor and attention) could statistically significantly predict hostility, $F(3, 146) = 23.16, p < .001$, adjusted $R^2 = .309$. Therefore, the three subcomponents of impulsiveness accounted for 30.9% of the explained variability in hostility. A Pearson's correlation revealed that all subcomponents of impulsiveness were positively correlated with hostility (see table 10).

Table 10: Pearson's Correlations using Aggression as the Outcome Variable and Impulsiveness as the Predictor at HMP Leads

	<i>n</i>	BISNP	BISM	BISA
BPVA	150	.19*	.43***	.27***
BPA	150	.38***	.44***	.46***
BPPA	150	.28***	.51***	.37***
BPH	150	.34***	.48***	.52***

* $p < .05$

*** $p < .001$

5.2.2 HMYOI Wetherby: Young Male Offenders

5.2.2.1 Total Aggression

A multiple regression established that total impulsiveness could statistically significantly predict aggression, $F(1, 73) = 27.13, p < .001$, adjusted $R^2 = .261$. Therefore, total impulsiveness accounted for 26.1% of the explained variability in total aggression.

5.2.2.2 Verbal Aggression

A multiple regression established that the sub-components of impulsiveness (non-planning, motor and attention) could statistically significantly predict verbal aggression, $F(3, 71) = 4.28, p < .005$, adjusted $R^2 = .117$. Therefore, the three subcomponents of impulsiveness accounted for 11.7% of the explained variability in verbal aggression. A Pearson's correlation revealed that all subcomponents of impulsiveness were positively correlated with verbal aggression (see table 11).

5.2.2.3 Anger

A multiple regression established that the sub-components of impulsiveness (non-planning, motor and attention) could statistically significantly predict anger, $F(3, 146) = 10.04, p < .001$, adjusted $R^2 = .268$. Therefore, the three subcomponents of impulsiveness accounted for 26.8% of the explained variability in anger. A Pearson's correlation revealed that all subcomponents of impulsiveness were positively correlated with anger (see table 11).

5.2.2.4 Physical Aggression

A multiple regression established that the sub-components of impulsiveness (non-planning, motor and attention) could statistically significantly predict physical aggression, $F(3, 71) = 7.43, p < .001$, adjusted $R^2 = .207$. Therefore, the three subcomponents of impulsiveness accounted for 20.7% of the explained variability in anger. A Pearson's correlation revealed that all subcomponents of impulsiveness were positively correlated with physical aggression (see table 11).

5.2.2.5 Hostility

A multiple regression established that the sub-components of impulsiveness (non-planning, motor and attention) could statistically significantly predict hostility, $F(3, 146) = 2.64, p = .056$, adjusted $R^2 = .062$. Therefore, the three subcomponents of impulsiveness accounted for 6.2% of the explained variability in hostility. A Pearson's correlation revealed that all subcomponents of impulsiveness were positively correlated with hostility (see table 11).

Table 11: Pearson's Correlations using Aggression as the Outcome Variable and Impulsiveness as the Predictor at HMYOI Wetherby

	<i>n</i>	BISNP	BISM	BISA
BPVA	75	.32 *	.35 **	.20 *
BPA	75	.48 ***	.34 **	.49 ***
BPPA	75	.46 ***	.39 ***	.41 ***
BPH	75	.31**	.24 *	.23 *

* $p < .05$

** $p < .01$

*** $p < .001$

5.3 Discussion

This study sought to explore if trait impulsiveness could predict the subscales of trait aggression in adult and young male offending samples. To summarise, data from this study showed that for both adult and young offenders, there is clearly a relationship between impulsivity and aggression; with high scores of self-reported impulsiveness (as measured by the BIS-11; Patton et al., 1995) being related to high scores of self-reported aggression (as measured by the AQ; Buss & Perry, 1992) and overall, impulsivity being shown to be a moderate predictor of aggression. In particular with adult offenders at HMP Leeds, the three subcomponents of impulsivity; motor, non-planning and attentional impulsiveness, were best able to predict hostility, which accounted for over 30% of the variance. With young offenders at HMYOI Wetherby, the three subcomponents of impulsivity were best able to predict anger, accounting for just over 26% of the variance. Whilst these findings were in line with previous research (Brent et al., 2002; Dervic et al., 2006; Grosz et al., 1994; Korn et al., 1997; Mann et al., 2005; Michaelis et al., 2004; Oquendo et al., 2000; Renaud et al., 2008), the literature is contradictory at times and not easy to interpret in a cohesive way, due to the lack of clarity in the terms used and the different ways in which the concepts are measured.

More specifically, with adult offenders at HMP Leeds, a comparison between subtraits of impulsivity and the four subscales of the AQ showed significant positive correlations between all of them, supporting the hypothesis that impulsivity and aggression are related. Furthermore, the three subcomponents of impulsivity were able to account for 16.6% of the variance in verbal aggression, 25.4% of the variance

in anger, 25.2% of the variance in physical aggression and 30.9% of variance in hostility. Therefore in adult offenders, impulsivity was best able to predict hostility and supports previous research in this area (e.g. Buss & Perry, 1992; Gvion & Apter, 2011). Hostility can be defined as a negative appraisal of situations or people (Buss, 1961) and is a complex behaviour that is often accompanied by feelings of anger (Ramirez & Andreu, 2006). In contrast, with young offenders at HMYOI Wetherby, the three subcomponents of impulsivity were able to account for 11.7% of variance in verbal aggression, 26.8% of the variance in anger, 20.7% of the variance in physical aggression and 6.2% of the variance in hostility. Therefore in young offenders, impulsivity was best able to predict anger and supports previous research that suggest that self-harming behaviours are used as a way of managing negative emotions. Interestingly, impulsivity was least able to predict hostility in this group.

There is growing body of evidence which supports the role of executive functions such as impulsivity and aggression as risk factors for self-harming behaviours (Dougherty et al., 2004; Jollant et al., 2005; Keilp et al., 2001). Studies reveal that self-harm and suicide attempts (Hill, Rogers, & Bickford, 1996; Vaughan, Pullen, & Kelly, 2000) as well as threats and actual assaults on staff and other patients/offenders (Davies, 2001; Flannery, Hanson, & Penk, 1994) are common occurrences in both forensic and psychiatric institutions (Nicholls et al., 2004; Seo, Harris, & Rice, 2004; Skeem et al., 2005). Previous studies have found that patients who have a diagnosis of depression and who have attempted suicide, show more aggressive and impulsive behaviours (Malone, Szanto, Corbitt, & Mann, 1995; Pendse, Westrin, & Engstrom, 1999; Weissman, Fox, & Klerman, 1973). Similarly, Oquendo (2004) found that high scores of self-reported impulsivity (as measured by

the BIS-11), hostility (as measured by the Buss-Durkee Hostility Inventory) and aggression (as measured by the Brown-Goodwin Lifetime Aggression Scale) were predictive of later suicide attempts in a two year follow up, in participants with mood disorders (major depressive disorder and bi-polar disorder). Furthermore, studies that look at the prevalence of impulsive and aggressive traits in other diagnostic categories have also suggested that those who have previously attempted suicide are also more likely to be impulsive and aggressive (Burch, 1994; Grosz et al., 1994; Maiuro, O'Sullivan, Michael, & Vitaliano, 1989; Soloff, Lis, Kelly, Cornelius, & Ulrich, 1994; Windle, 1994).

Aggression towards others is also associated with self-harming in offender samples (Angst & Clayton, 1986; Swogger, You, Cashman-Brown, & Conner, 2011).

However, aggression is a multidimensional concept and explorations of aggression should take into account the different subtypes of aggression proposed. One such distinction is that of reactive and proactive aggression and in particular, it is suggested that reactive aggression is linked with impulsive behaviour. Reactive aggression can be defined as aggressive behaviour that occurs as a result of a perceived threat and involves strong emotional urges and impulsive reactions (Berkowitz, 1993). A well-established hypothesis is that individuals who are reactively aggressive (i.e. impulsively aggressive) are also at risk of self-harming and suicidal behaviour and that this link has implications for risk assessment and prevention of such behaviours (Conner, Duberstein, Conwell, & Caine, 2003; Turecki, 2005). Furthermore, it is suggested that reactive aggression may be a particularly important concept among offenders (Conner et al., 2003). Much of the evidence for the reactive aggression self-harming behaviour hypothesis comes from

biological studies that have found imbalances in the serotonergic system in individuals with both reactive aggression and self-harming behaviour (Bortolato et al., 2013). These imbalances may underlie problems at a psychological level such as negative cognitive biases in the interpretation of events that mediate a connection between reactive aggression and suicide and self-harming behaviours and may explain why both outwardly directed and self-directed aggression are often conceptualised as arising from the same propensity to react impulsively (Mann, 2003).

Both theoretical and empirical evidence suggest that inwardly directed aggression such as self-harm and suicide and outwardly directed aggression such as violence towards others, show a significant overlap in their trigger events and in the predisposed risk factors that increase the risk of engaging in these behaviours (Korn, Botsis, & Kotler, 1992; Links, Gould, & Ratnayake, 2003). Reactive aggression is consistently linked to negative affect (Swogger, Walsh, Houston, Cashman-Brown, & Conner, 2010; Tellegan, 1982), which may account for the relationship between reactive aggression and self-harm, especially under stressful conditions.

Furthermore, offenders experience high levels of stress (Mezey, 2007), that might further affect their ability to control aggressive impulses. In support of this, Hillbrand found in a sample of forensic psychiatric patients, the most outwardly violent patients were also the most self-destructive (Hillbrand, 1992, 1995). However, this may only be true in this population (Nicholls, Brink, Desmarais, Webster, & Martin, 2006).

A theme running through each of the theories described in this thesis thus far, is the idea that people engage in self-harming behaviours without a lot of planning and that this behaviour is often as a result of intense negative feelings and emotions. Self-control is believed to be one of the most important aspects of personality due to its role in environmental adaptation (Baumeister & Alquist, 2009; Baumeister, Vohs, & Tice, 2007; Coyne & Wright, 2014; Gailliot et al., 2007) and a number of studies have suggested the potential role of self-control in mediating aggressive behaviour (DeWall, Finkel, & Denson, 2011; Manuel, Sofia, & Cruz, 2015). Tangney, Baumeister, and Boone (2004) found that people with high levels of self-control, also had lower levels of aggression than individuals who had lower levels of self-control. These studies highlight the importance of self-control (as opposed to impulsiveness) on the regulation of emotions and further supports the role of emotional regulation difficulties in aggressive and self-harming behaviours. Furthermore, these findings highlight the need to provide those who are vulnerable or at risk of self-harming a way of managing their emotions and being able to control their behaviours in a more proactive way through psychological interventions. Thinking about impulsivity and its link to aggression against the self and aggression against others together has significant implications for assessment management and prevention strategies as current practices tend to neglect the similarities and instead focus on the differences. There is potential from this research that risk identification and management could be streamlined.

6.0 CHAPTER SIX

Impulsive Decision Making and its Relationship with Self-harming Behaviours in Two Custodial Settings

Impulsivity has been acknowledged as being a significant underlying factor in self-harming behaviours and more frequently, behavioural tests of impulsivity are being used, together with self-report measures, in order to explore the different facets of impulsivity that are related to self-harming (e.g. Dick et al., 2010; Dougherty et al., 2005a, 2009; Gorlyn, Keilp, Tron, & Mann, 2005; Reynolds et al., 2006, 2008).

Whilst previous research has explored impulsive behaviour using computer based, objective measures, relatively few studies have investigated impulsive behaviour via computer testing in forensic samples. Given the automated nature of the tasks and therefore the reduced ability for participants to modulate responses (issues of deception and social desirability are therefore equally reduced), this is surprising.

Although a number of studies have reported differences in performance on behavioural measures of impulsivity in self-harming samples (e.g. Dougherty et al., 2004; Horesh, 2001) there have been no studies to date which have explored this link in a forensic self-harming sample.

Discussions regarding the multi-faceted nature of impulsiveness have led researchers to call into question the number and types of factors that impulsive behaviour consists of. Gullo, Loxton, and Dawe (2014) identify four domains of impulsiveness which they propose are related to impulsive-responses, impulsive-choices, reflection and decision making (Fineberg et al., 2014). Similarly, a number of studies have identified two key components of impulsive behaviour; difficulties in inhibiting

responding (referred to throughout this thesis as response inhibition and discussed further in chapter 7) and impulsive decision making without consideration of, in particular, negative, consequences (referred to throughout this thesis as impulsive decision making and discussed further throughout this chapter, in particular). As touched upon briefly above, impulsive choice refers to an inclination towards smaller, immediate rewards as opposed to larger delayed gains (Kirby, Petry, & Bickel, 1999). One method of testing this is by using a Delay Discounting (DD) task. DD is thought to reflect an inability to tolerate a delay before receiving a reward and can be used to help us to understand why some people may choose a smaller immediate reward over a larger reward given after a delay. Whilst it is normal for the value of rewards that are delayed to be discounted (with the value of the delayed reward decreasing as the delay increases), impulsive individuals discount delayed rewards more rapidly than non-impulsive people, selecting immediate smaller rewards more frequently and demonstrating that the value of the delayed reward is smaller to them than controls. More specifically, this rate of discounting it is often used to assess the degree of impulsivity or self-control someone has (Green & Myerson, 2004; Metcalfe & Mischel, 1999; Peters & Büchel, 2011; Reynolds, 2006). In particular, in groups of depressed participants, it was found that those who engage in self-harming behaviours, discounted at a faster rate than controls (Dombrovski et al., 2011).

Another way of measuring impulsive decision making is by using the Information Sampling Task (IST), also referred to as The Reflection task (Clark et al., 2006). The IST, from the Cambridge Neuropsychological Test Automated Battery (CANTAB), was designed to specifically measure reflection impulsivity and decision making or

choice (Clark et al., 2009). It is believed to be a more consistent and reliable measure than previous such tasks (e.g. the Matching Familiar Figures Test (MFFT; Kagan, 1966) or the Iowa Gambling Task (IGT; Bechara et al., 1994). Reflection impulsivity is defined as the tendency to make decisions without considering all available information and without thinking of the consequences of such decisions. In contrast then, reflective decisions are those which are based on consideration of a large amount of information when available (Verdejo-Garcia, Lawrence, & Clark, 2008). It is thought that inadequate reflection can bias decisions towards more immediately rewarding or salient options (Clark, Robbins, Ersche, & Sahakian, 2006). Specifically, impulsivity is found in people who require or access only a limited amount of information before making a decision (Bechara, 2005). This task measures reflection impulsiveness by calculating the likelihood of the participant selecting the correct answer at the point of decision, based on their sampling of information prior to making that decision (referred to as the probability of being correct). Clark, Rosier, Robbins, and Sahakian (2009) were the first to measure reflection impulsivity using the IST in drug users. Whilst there are no studies to date looking at reflection impulsivity in self-harming young and adult male offenders, risky decision making and impulsivity have consistently been found to be associated with these groups (e.g. Bouchard, Brown, & Nadeau, 2012; Hirschi, 2004; Mamayek, Loughran, & Paternoster, 2015). On this basis, it might be estimated that those who self-harm have difficulty in evaluating short term goals against long term (often negative) consequences, are more likely to make risky decisions by not sampling enough information in order to make good choices. This links back to models of self-harm such as the Experiential Avoidance Model (Chapman et al., 2006) and issues around deficits in problem solving, which has been seen to be

heightened in offending samples in general (e.g. McMurrin, Egan, Richardson, & Ahmadi, 1999; McMurrin, Fyffe, McCarthy, Duggan, & Latham, 2001).

The current study will therefore explore impulsive decision making in three groups of young and adult male offenders to see if any of the key measures are able to discriminate between vulnerable groups and the general prison population.

6.1 Methodology

6.1.1 Participants

A total of 45 adult male offenders residing at HMP Leeds and 45 young male offenders residing at HMYOI Wetherby, took part in the study. At both Leeds and Wetherby, the three testing groups used throughout this thesis were used; those on an ACCT – currently self-harming, those on an ACCT – not currently self-harming and those in the general population. Those on an ACCT – currently self-harming had been identified as having self-harmed or attempted suicide in the last month, whereas those on an ACCT – not currently self-harming were identified as having self-harmed or attempted suicide over a month ago or were identified as vulnerable for another reason (such as having a previous history of self-harm or suicide attempts, low mood or experiencing known triggers such as a recent court date, bereavement or relationship breakdown). Those in the general population were not on an ACCT and were not identified as vulnerable. This group was considered to be the control group. There were 15 participants in each group at each site, therefore, the total number of participants across the two sites is 90.

6.1.2 Measures

In addition to the self-report measure of impulsivity used in chapter 3 (thought to reflect more stable, trait behaviours), behavioural measures of impulsivity were used in to measure fluctuating behavioural changes in impulsivity. These measures used in this chapter and chapter 7 were selected in order to measure, arguably, the two most prominent facets of behavioural impulsivity in the literature; impulsive choice and response inhibition. Participants completed all four computer tasks on a laptop. The behavioural tasks used were:

6.1.2.1 Delay Discounting Task (DDT; Johnson & Bickel, 2002)

The DDT assesses decision making by calculating the extent to which delayed rewards are devalued over time, in relation to more immediate and instantaneous rewards. During the task, participants were asked to choose between smaller, immediate hypothetical monetary rewards or larger, delayed monetary rewards. Greater disregard to delayed rewards is indicative of more impulsive behaviour.

Participants were instructed both verbally and also through on-screen instructions as to how to complete the task. Completion of the task was dependant on participant responses, but took no longer than 15 minutes. During the task, choices are presented on the screen using two large command buttons, one on the left side and one on the right side. The left button always displayed the smaller immediate reward (e.g. £5.00 now), and the right button always displayed the larger delayed amount of £1000 (e.g. £1000 in one week). The participant used a mouse to click over the appropriate box in order to choose between available options. In the middle of the two options a circle was presented which was green when the command buttons could be selected

and red when the command buttons could not be selected. After each selection was an audible sound and the circle became red for 2 seconds whilst the next options were presented. After this 2 second pause the circle turned green again and the participant was able to make a choice. This forced participants to wait and assess choices before responding. There was no programmed limit on the time a participant had available to make his next choice. Each participant made choices between immediate rewards and a delayed reward of £1000. The smaller immediate reward varied following a double limit algorithm. Essentially this algorithm presents immediate reinforcer values at random, and based upon participant responses, funnels presentations down so that the immediate reinforcer choice equates to the subjective value of the larger £1000 reward after the delay, a point of indifference. The task always started with the smallest delay (1 day) and ran to the largest delay (25 years). The delay to the £1000 varied after an indifference point was reached. Indifference points were determined for 1 day, 1 week, 1 month, 6 months, 1 year, 5 years and 25 years.

Methods for analysing the rate of decay of the indifference curve have been suggested, including applying a hyperbolic equation or by determining the area under the curve. The hyperbolic discounting method suggests that deferred rewards are devalued relative to their delay (Ainslie, 1991). Mazur's (1988) equation ($V = A / (1 + kD)$), is used to determine the quantifiable degree of time-based discounting a person shows. Using this equation, V is the value (subjective) of the delayed reward, which is defined as the point at which the delayed reward is valued as equal to the immediate reward. A denotes the nominal amount of delayed reward, or the actual monetary amount. k is a free parameter that is defined as a person's sensitivity to

changes in delay and D is the length of the delay to the reinforcer (see figure 9). Using this equation, as the value of k increases, the discounted value of the hypothetical reward decreases more rapidly as a function of the delay in time. The hyperbolic curve model has received support for its use in studies of delay discounting in humans (Madden et al., 1999; Kirby, 1997; Vuchinich & Simpson, 1998; Ohmura, Takeahashi, Kitamura, & Wehr, 2006).

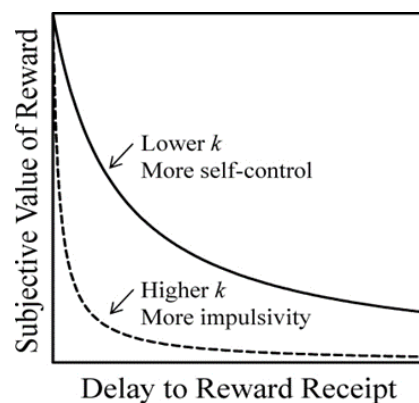


Figure 9. Hypothetical discounting plot depicting both steep discounting (higher k , dashed curved line; i.e., impulsivity) and less steep discounting (lower k , solid curved line; i.e., self-control). Taken from Reed and Martens, 2011.

Another method of analysing DD data, particularly when the hyperbolic curve does not fit the data, is to examine the area under the empirical discounting curve (Myerson, Green, & Warusawitharana, 2001). This method, rather than applying an equation to generate the curve, uses the actual indifference points to plot the curve. This method is therefore particularly beneficial in cases where the participant doesn't discount hyperbolically. To calculate the area under the curve (AUC), the normalised indifference points are plotted on a graph (with delay on the x axis and subjective

value on the y axis) and trapezoids are drawn on the graph by taking vertical lines from each indifference point to the x axis. The total AUC is the sum of the area of the trapezoids and the steeper the discounting, the smaller the AUC will be.

Impulsive individuals would therefore have a smaller AUC. The AUC method has been widely used in both animal and human studies on impulsive choice (e.g. Krebs & Anderson, 2012; Ohmura, Takahashi, Kitamura, & Wehr, 2006; Odum & Rainaud, 2003; Slezak & Anderson, 2009)

6.1.2.2 The Information Sampling Task (IST; Clark, Robbins, Ersche, & Sahakian, 2006)

The IST task measures reflection impulsivity, or a person's preference to gather or evaluate sufficient information in order to make a decision. Choosing to make a decision with less information can reflect either an inability to delay responding to gather more information, or an increased conviction in the decision at a point of relative uncertainty.

Participants on this task are presented with a series of trials with an array of 25 grey boxes arranged in a 5 x 5 matrix. The grey boxes conceal an underlying assortment of squares (either red or blue) on each trial. The participant is asked to decide which of the underlying colours (red or blue) are in the majority. The subject is able to open as many boxes as they wish to make that decision. Once opened, boxes remained visible for the duration of the trial to obviate working memory demands. Correct decisions were awarded a number of points, with trials blocked into two conditions. In the Fixed Win (FW) condition, a correct decision yielded 100 points and an incorrect decision meant that 100 points were lost, irrespective of the number of

boxes opened. In the Decreasing Win (DW) condition, the number of available points decreased with every box opened. Each participant began with 250 points at the start of each trial and the amount available to win decreased by 10 points for every box opened. Consequently, the DW condition introduced a conflict between reinforcement and certainty: to maximize reinforcement the subject must tolerate high uncertainty, whereas sampling information until a point of high certainty would win very few points. Similar to the fixed win condition, participants lost 100 for an incorrect decision, regardless of the number of boxes opened. Feedback about the total points won so far was given to participants in both conditions during the inter-trial interval. The length of the inter-trial varied from 1 to 30 seconds and this depended on the speed at which the previous trial was completed. This feature was included to counteract delay-adverse responding so that fast trial completers had to tolerate greater delays before the start of the next trial. The order in which the task conditions were presented was counterbalanced across participants.

Outcome measures of performance in each condition included average number of boxes opened before making a decision, number of incorrect judgements, total points won and latency of box opening (number of boxes opened divided by the time it took to make a decision). In addition, the probability of being correct at the point of decision was calculated on each trial, giving more information about the level of uncertainty tolerated during decision making.

6.1.3 Procedure

Each participant was spoken to by the researcher individually and asked if they would like to take part in the study. Those who agreed to take part were given an

information sheet and a consent form to sign and were taken to complete the tasks in a private interview room with the researcher present. The information sheet and consent form have been designed specifically for use within the current study, taking into account the limited literacy levels of this population. For all of the tasks, participants were instructed verbally on how to complete the task, and also through on-screen instructions. The computer tasks were administered in 2 separate sessions so as to account for boredom of participants. Delay Discounting and Go-No Go (presented in chapter 7) were delivered separately to the Information Sampling Task and the STOP task (presented in chapter 7) and the order the tasks were performed was counterbalanced. A debrief was given following participation and if any issues arose, appropriate support was provided. If a participant revealed that they had felt pressure to take part in the study, they were able to withdraw with no consequences. At any point during the study, if participants wanted to withdraw their participation, they were able to do so and their responses will be removed from the database. During the study each participant created a unique identifying code, therefore their data could be easily be removed from the study upon request. Participants who were on an ACCT were monitored following participation by the researcher and the Safer Prisons Team and any signs of increased vulnerability was reported. The researcher, along with the Safer Prisons Team were able to increase the participants' observation if necessary or decide whether to exclude a participant due to vulnerability altogether. If participants were on constant watch, they were automatically excluded from the study.

6.1.4 Data Analysis

Data was assessed using one way ANOVA's to test differences across groups at each site and Bonferroni post hoc comparisons ($p < .05$) were conducted to assess where the differences lied. Independent samples t-tests were used to assess differences between scores for the key dependant variables with adult offenders (at HMP Leeds) compared to young offenders (at HMYOI Wetherby). R^2 was used in the DD task in order to assess the fit of the model.

6.2 Results

6.2.1 HMP Leeds – Adult Male Offenders

6.2.1.1 *Impulsive Choice - Delay Discounting*

Analyses of k revealed significant group differences ($F(2, 42) = 8.51, p < .005, \eta^2 = 0.29$). Post hoc comparisons indicated that those on an ACCT - currently self-harming displayed steeper discounting than the general prison population. There were no significant differences between those on an ACCT – currently self-harming compared to those on an ACCT – not currently self-harming or those on an ACCT not currently self-harming and the general prison population (see figure 10). R^2 for all groups indicate a good fit for the data (see table 12).

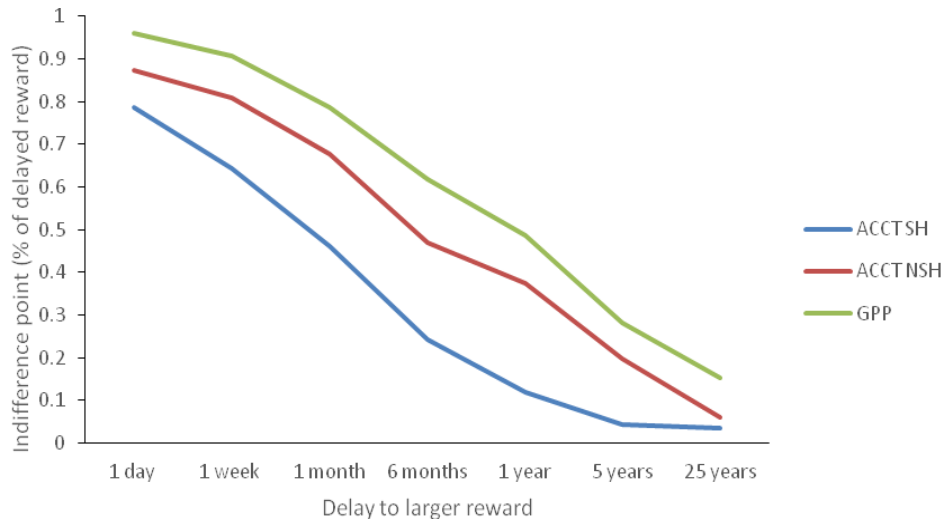


Figure 10. Choice behaviour between groups at HMP Leeds

Analyses of AUC also revealed significant group differences ($F(2, 42) = 8.73, p < .05, \eta^2 = 0.29$). Post hoc comparisons indicated that the mean total area under the curve for those on an ACCT - currently self-harming was significantly smaller than those in the general prison population, but there were no significant differences between those on an ACCT - currently self-harming compared to those on an ACCT - not currently self-harming. Further, there were no significant differences found between those on an ACCT - not currently self-harming compared to those in the general prison population. A smaller area under the curve indicates greater levels of impulsiveness (see table 12).

Table 12. Mean Scores (Standard Deviations) for Delay Discounting at HMP Leeds

Dependant Variable	Group	Mean (SD)
K ‡‡	ACCT – currently self-harming	-0.61 (0.12) **
	ACCT – not currently self-harming	-0.49 (0.18)
	General Prison Population	-0.37 (0.16)
R²	ACCT – currently self-harming	0.87 (0.08)
	ACCT – not currently self-harming	0.79 (0.14)
	General Prison Population	0.82 (0.06)
Total AUC ‡‡	ACCT – currently self-harming	0.05 (0.03) ***
	ACCT – not currently self-harming	0.17 (0.13)
	General Prison Population	0.26 (0.20)

‡‡ significant main effect using one way ANOVA ($p < .01$)

** significantly different from General Prison Population ($p < .01$)

*** significantly different from General Prison Population ($p < .001$)

NB. Larger k represents steeper discounting of delayed rewards and therefore indexes more impulsive decision-making

6.2.2 HMP Leeds – Male Adult Offenders

6.2.2.1 Impulsive Choice - Information Sampling Task (IST)

Analyses of p correct at HMP Leeds indicated the probability of being correct at the point of making a decision was significantly different between groups for both fixed win ($F(2, 42) = 23.36, p < .001, \eta^2 = .53$) and decreasing win conditions ($F(2, 42) = 69.51, p < .001, \eta^2 = .79$). More specifically, for both fixed win and decreasing win conditions, p correct was significantly lower at the point of making a decision for those on an ACCT – currently self-harming than those on an ACCT – not currently self-harming and both vulnerable groups reported a significantly lower probability of being correct than those in the general prison population (see table 13).

Analyses of the number of boxes opened showed that there was a significant difference between groups for box fixed win ($F(2, 42) = 36.05, p < .001, \eta^2 = .63$) and

decreasing win conditions ($F(2, 42) = 58.50, p < .001, \eta^2 = .74$). More specifically, for both fixed win and decreasing win conditions, those on an ACCT – currently self-harming opened significantly less boxes than those on an ACCT – not currently self-harming and both vulnerable groups opened significantly less boxes than those in the general prison population (see table 13).

Similarly, analyses of the number of incorrect judgements revealed that there was a significant difference between groups for both fixed win ($F(2, 42) = 5.58, p < .01, \eta^2 = .21$) and decreasing win ($F(2, 42) = 27.21, p < .001, \eta^2 = .56$). More specifically, for the fixed win condition, those on an ACCT – currently self-harming made significantly more incorrect judgements than those in the general prison population. There were no other significant differences between groups. For the decreasing win condition, those on an ACCT – currently self-harming, made significantly more incorrect judgments than those on an ACCT – not currently self-harming and both vulnerable groups made significantly more incorrect judgements than those in the general prison population (see table 13).

For total points won there was a significant effect of group for both the fixed win ($F(2, 42) = 5.58, p < .01, \eta^2 = .21$) and decreasing win conditions ($F(2, 42) = 14.53, p < .001, \eta^2 = .41$). Post hoc comparisons for the fixed win condition revealed that those on an ACCT – currently self –harming scored significantly less than those in the general prison population. However, there weren't any other significant differences between groups. For the decreasing win condition, post hoc comparisons revealed that those on an ACCT – currently self-harming scored significantly more

than those in the general prison population and those on an ACCT – not currently self-harming also scored significantly more than the general prison population. There were no differences between the vulnerable groups (see table 13).

In the fixed win condition, there were no significant differences in the mean latency to open boxes between groups ($F(2, 42) = 0.49, p = ns$). However, in the decreasing win condition, there were significant differences in the mean latency to open boxes between groups ($F(2, 42) = 10.61, p < .001, \eta^2 = .34$). More specifically, those on an ACCT – currently self-harming showed higher latency than those on an ACCT – not currently self-harming. Similarly, those on an ACCT – currently self-harming show higher latency than those in the general prison population. There were no other significant differences (see table 13).

Table 13. Mean Scores (Standard Deviations) for IST at HMP Leeds

Dependant Variable/Group	Fixed Win	Decreasing Win
P Correct	‡ ($p < .001$)	‡ ($p < .001$)
ACCT – currently self-harming	0.73 ***	0.62 ****†††
ACCT – not currently self-harming	0.81***	0.76 ***
General Prison Population	0.97	0.96
Boxes Opened	‡ ($p < .001$)	‡ ($p < .001$)
ACCT – currently self-harming	11.79 (5.83) ****†††	7.11 (4.67) ****†††
ACCT – not currently self-harming	17.84 (1.92) **	13.39 (3.49) ***
General Prison Population	22.98 (1.19)	20.66 (1.14)
Incorrect Judgments	‡ ($p < .01$)	‡ ($p < .001$)
ACCT – currently self-harming	2.47 (2.07) **	2.93 (1.49) ****†
ACCT – not currently self-harming	1.40 (0.99)	1.67 (0.72) **
General Prison Population	0.73 (0.96)	0.27 (0.46)
Total Points Won	‡ ($p < .01$)	‡ ($p < .001$)
ACCT – currently self-harming	606.67 (413.11) **	1019.33 (343.73) ***
ACCT – not currently self-harming	820.00 (197.12)	894.00 (300.54) **
General Prison Population	953.33 (192.23)	499.33 (139.97)
Latency Box Opening		‡ ($p < .001$)
ACCT – currently self-harming	1.71(0.73)	2.79 (1.89) ****†
ACCT – not currently self-harming	1.80 (0.41)	0.98 (0.88)
General Prison Population	0.99 (0.97)	0.94 (0.60)

‡ significant main effect using one way ANOVA (p value indicated in brackets)

** significantly different from GPP ($p < .01$)

*** significantly different from GPP ($p < .001$)

†† significantly different from ACCT not-currently self-harming ($p < .05$)

††† significantly different from ACCT not-currently self-harming ($p < .001$)

6.2.3 HMP YOI Wetherby – Young Male Offenders

6.2.3.1 Impulsive Choice - Delay Discounting

At HMYOI Wetherby, there was not a significant main effect of group for k ($F(2, 42) = 1.37, p = ns$) but there was a significant effect of R^2 on group ($F(2, 42) = 5.08, p < .05$) (see table 14), indicating that this model was not a good fit (see figure 11).

In this instance, area under the curve seemed to be more appropriate (Myerson, Green, & Warusawitharana, 2001) and there was a significant effect of group for AUC ($F(2, 42) = 9.38, p < .001, \eta^2 = .31$). Post hoc comparisons using Bonferroni correction indicated that the mean area under the curve for those on an ACCT - currently self-harming and those on an ACCT - not currently self-harming was significantly smaller than those in the general prison population. There were no significant differences between those on an ACCT - currently self-harming compared to those on an ACCT - not currently self-harming. A smaller area under the curve indicates greater levels of impulsiveness (see table 14).

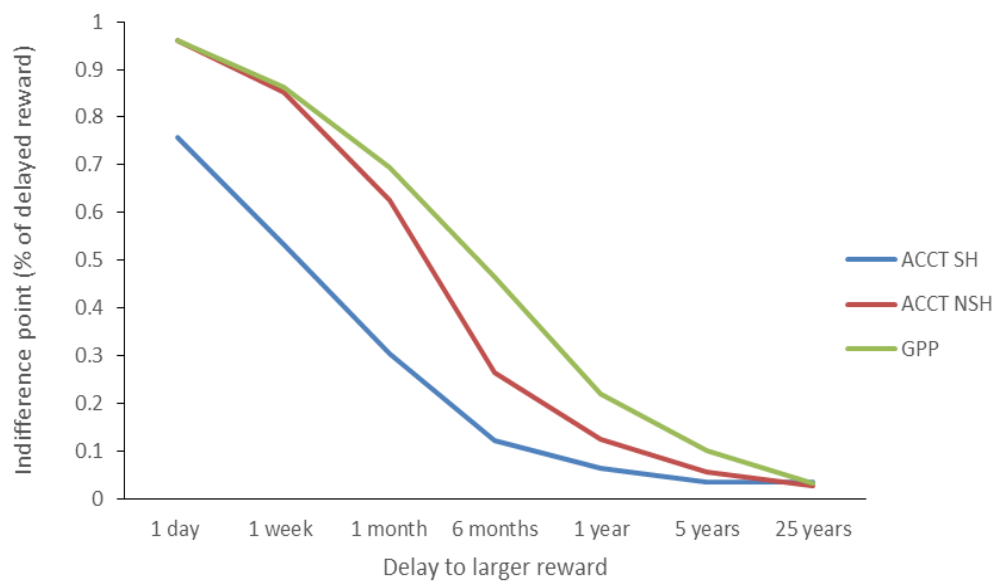


Figure 11. Choice behaviour between groups at HMYOI Wetherby

Table 14. Mean Scores (Standard Deviations) for DD at HMYOI Wetherby

Dependant Variable	Group	Mean (SD)
k	ACCT – currently self-harming	-0.59 (0.19)
	ACCT – not currently self-harming	-0.66 (0.08)
	General Prison Population	-0.59 (0.11)
R² ‡	ACCT – currently self-harming	0.80 (0.18) ††
	ACCT – not currently self-harming	0.94 (0.03)
	General Prison Population	0.87 (0.09)
AUC ‡‡‡	ACCT – currently self-harming	0.04 (0.04) ***
	ACCT – not currently self-harming	0.06 (0.02) *
	General Prison Population	0.10 (0.04)

‡ significant main effect of group using one way ANOVA ($p < .05$)

‡‡‡ significant main effect of group using one way ANOVA ($p < .001$)

* significantly different from GPP ($p < .05$)

*** significantly different from GPP ($p < .001$)

†† significantly different from ACCT not-currently self-harming ($p < .01$)

6.2.4 HMYOI Wetherby – Male Young Offenders

6.2.4.1 Impulsive Choice – Information Sampling Task

Analyses of p correct at HMYOI Wetherby revealed that there was a significant difference between groups in both the fixed win ($F(2, 42) = 18.30, p < .001, \eta^2 = .47$) and decreasing win conditions ($F(2, 42) = 76.48, p < .001, \eta^2 = .79$). More specifically, in the fixed win condition, the probability of being correct for those on an ACCT – currently self-harming and those on an ACCT – not currently self-harming was significantly lower than those in the general prison population. In the decreasing win condition, the probability of being correct was significantly lower for those on an ACCT – currently self-harming compared to those on an ACCT – not currently self-harming and both vulnerable groups had a significantly lower probability of being correct than those in the general prison population (see table 15).

Analyses of the number of boxes opened showed that there was a significant difference between groups for box fixed win ($F(2, 42) = 34.05, p < .001, \eta^2 = .62$) and decreasing win conditions ($F(2, 42) = 96.92, p < .001, \eta^2 = .82$). More specifically, for both fixed win and decreasing win conditions, those on an ACCT – currently self-harming opened significantly less boxes than those on an ACCT – not currently self-harming and both vulnerable groups opened significantly less boxes than those in the general prison population (see table 15).

Similarly, analyses of the number of incorrect judgements revealed that there was a significant difference between groups for both fixed win ($F(2, 42) = 4.68, p < .05, \eta^2 = .18$) and decreasing win ($F(2, 42) = 17.51, p < .001, \eta^2 = .45$). More specifically, for the fixed win condition, those on an ACCT – currently self-harming made significantly more incorrect judgements than those in the general prison population. There were no other significant differences between groups. For the decreasing win condition, those on an ACCT – currently self-harming, made significantly more incorrect judgments than those on an ACCT – not currently self-harming and those in the general prison population. There were no other significant differences (see table 15).

For total points won there was a significant effect of group for both the fixed win ($F(2, 42) = 4.68, p < .05, \eta^2 = .18$) and decreasing win conditions ($F(2, 42) = 7.70, p < .01, \eta^2 = .27$). Post hoc comparisons for the fixed win condition revealed that those on an ACCT – currently self –harming scored significantly less than those in the general prison population. However, there weren't any other significant

differences between groups. For the decreasing win condition, post hoc comparisons revealed that those on an ACCT – currently self-harming scored significantly more than those in the general prison population and those on an ACCT – not currently self-harming also scored significantly more than the general prison population. There were no differences between the vulnerable groups (see table 15).

There were no significant differences of group for latency box opening for either fixed win ($F(2, 42) = 3.23, p=ns$) or decreasing win conditions ($F(2, 42) = 1.15, p=ns$) (see table 15).

Table 15. Mean Scores (Standard Deviations) for IST at HMYOI Wetherby

Dependant Variable/Group	Fixed Win	Decreasing Win
P Correct	‡ ($p < .001$)	‡ ($p < .001$)
ACCT – currently self-harming	0.72 (0.10) ***	0.58 (0.07) ****††
ACCT – not currently self-harming	0.77 (0.06) **	0.73 (0.06) ***
General Prison Population	0.87 (0.03)	0.87 (0.06)
Boxes Opened	‡ ($p < .001$)	‡ ($p < .001$)
ACCT – currently self-harming	11.04 (4.14) ****††	5.92 (2.45) ****††
ACCT – not currently self-harming	14.99 (2.77) ***	11.59 (2.41) ***
General Prison Population	19.95 (1.23)	17.34 (1.82)
Incorrect Judgments	‡ ($p < .05$)	‡ ($p < .001$)
ACCT – currently self-harming	2.53 (1.81) *	3.20 (1.74) ****††
ACCT – not currently self-harming	1.73 (1.03)	1.13 (1.06)
General Prison Population	1.13 (0.64)	0.73 (0.59)
Total Points Won	‡ ($p < .05$)	‡ ($p < .01$)
ACCT – currently self-harming	593.33 (361.48) *	1036.67 (378.09) *
ACCT – not currently self-harming	753.33 (206.56)	1175.33 (354.74) **
General Prison Population	873.33 (127.99)	737.33 (155.17)
Latency Box Opening		
ACCT – currently self-harming	1.01 (0.28)	1.63 (0.57)
ACCT – not currently self-harming	0.70 (0.07)	1.30 (1.97)
General Prison Population	0.82 (0.49)	0.95 (0.68)

‡ significant main effect of group using one way ANOVA (p value indicated in brackets)

* significantly different from GPP ($p < .05$)

** significantly different from GPP ($p < .01$)

*** significantly different from GPP ($p < .001$)

†† significantly different from ACCT not self-harming ($p < .01$)

††† significantly different from ACCT not self-harming ($p < .001$)

6.2.5 Comparisons between Sites on Key Dependant Variables

6.2.5.1 Delay Discounting

Young offenders demonstrated steeper discounting than adult offenders for k

($t(81.47) = 3.66, p < .001, r = .38$) and AUC ($t(49.80) = 3.90, p < .001, r = .48$) (see

table 16).

6.2.5.2 Information Sampling Task

There was no difference between adult offenders and young offenders for the probability of being correct in the fixed win condition ($t(76.71) = 1.87, p = .07, r = .21$) or the decreasing win condition ($t(88) = 1.75, p = .08, r = .18$) (see table 16).

Table 16. Comparisons on DD and IST between HMP Leeds and HMYOI Wetherby

		Mean (SD)	
DD	k	HMP Leeds	-0.49 (0.18) ***
		HMYOI Wetherby	-0.62 (0.14)
	AUC	HMP Leeds	0.16 (0.16) ***
		HMYOI Wetherby	0.07 (0.04)
IST	P Correct (Fixed Win)	HMP Leeds	0.84 (0.14)
		HMYOI Wetherby	0.79 (0.13)
	P Correct (Decreasing Win)	HMP Leeds	0.78 (0.16)
		HMYOI Wetherby	0.73 (0.13)

n = 45 at each comparison site

*** significantly different from HMYOI Wetherby ($p < .001$)

6.3 Discussion

In summary, the DD task showed that adult male offenders on an ACCT (currently self-harming), discounted rewards faster than those in the general prison population. Using the IST, adult offenders on an ACCT (currently self-harming) demonstrated that they made significantly more risky decisions than those in the general prison population. Similarly, results from the DD task with young male offenders showed that vulnerable participants on an ACCT made more impulsive decisions than those in the general prison population and that vulnerable young people on an ACCT were less able to tolerate delays in rewards, compared to those in the general prison population. Overall, these results suggest that whilst the DD task is able to

discriminate between those currently self-harming and the general prison population, the IST was better at being able to discriminate across both vulnerable groups and the general prison population. As with the self-report measures, impulsivity (indicated by risky decision making) was higher in young offenders compared to adults using both the DD task and IST.

Broadly speaking, DD refers to a person's inability to endure a delay before receiving a reward (Cox & Dallery, 2016; McKerchar & Mazur, 2016) and can be used to help us understand why some people may choose a smaller immediate reward over a greater reward given after a longer delay. Specifically, adult offenders at HMP Leeds who were on an ACCT and currently self-harming were found to discount rewards at a faster rate than those in the general prison population, using the hyperbolic k model. Similarly, using AUC to measure the rate of discounting, those on an ACCT self-harming were found to discount faster than those in the general prison population. At HMYOI Wetherby, the hyperbolic model was not a good fit for the data, however, similar to HMP Leeds, AUC with young offenders was able to discriminate between both vulnerable groups and the general prison population. More specifically, those on an ACCT currently self-harming and those on an ACCT not currently self-harming both discounted at a faster rate than those in the general prison population. Although both young and adult offenders produced a similar pattern of results. Results from this task therefore support the idea that impulsive individuals are more likely to choose immediate rewards, over longer term gains.

Whilst literature highlights that those who self-harm are more likely to choose to do so as it is immediately rewarding (i.e. it provides a solution to a problem), DD has been relatively understudied in relation to self-harm and suicide risk, despite its potential conceptual relevance. Results from this study replicate previous studies and provide some evidence that both adult and young offenders who self-harm are more likely to discount rewards that are delayed at a faster rate than the general prison population (Green & Myerson, 2004; Metcalfe & Mischel, 1999; Peters & Büchel, 2011; Reynolds, 2006). This could mean that those who self-harm or are vulnerable to self-harming behaviour do not feel that there is much value in rewards that are based in the future rather than the present, so their behaviour or actions are more likely to be influenced and controlled by immediate events and rewards rather than longer term goals and rewards. In delay discounting, an important hypothesis is that the value of a reward is discounted as a function of the delay (Green, Myerson, & McFadden, 1997; Green & Myerson, 2004). This could suggest that those who are vulnerable to and currently self-harming may be more sensitive to strong emotional states and it is this that they are responding to because their attention is focussed on it. Therefore, self-harm is used as a way of removing current salient negative emotions without valuing or considering longer term consequences of that self-harming behaviour. Literature has supported the idea that those who self-harm, do so as a way of removing negative affect, but often regret the action afterwards.

Although models of suicidal behaviour typically focus on relief or escape from distress rather than monetary rewards, they resemble DD by highlighting the importance of immediate outcome, which takes precedence over any future event (Dombrovski et al., 2011; van Heeringen, Bijttebier, & Godfrin, 2011). In particular, previous studies have linked suicidal ideation with impairments in future-directed

thinking and time perception (Krysinska, Heller, & De Leo, 2006) and with oversensitivity to immediate reward (van Heeringen et al., 2011). For example, higher discounting rates could be related to alterations in the perception of time, such that the delays feel longer to some people and therefore the value of the reward reduces more rapidly. Indirect support is also provided by functional magnetic resonance imaging studies of suicidal behaviour, which have consistently noted abnormal activation in dorsolateral and orbitofrontal cortices, brain regions linked with temporal horizon and reward processing (van Heeringen et al., 2011). These findings provide converging evidence that a link between DD and suicidal behaviour could shed light on neurobiological mechanisms and more specific risk factors for self-harm as well as inform the study of self-harming and suicidal behaviour within this high-risk population.

Relating to a different aspect of decision making, the IST is designed to measure reflection impulsivity and refers to the amount of information a person chooses to use before making a decision (Clark et al., 2009). Results in this task were almost identical for both adult and young offenders. The key dependant variables on this task at both sites indicated that those on an ACCT (currently self-harming) chose to sample less information (number of boxes opened), made more risky decisions (lower probability of being correct) and therefore, made significantly poorer choices (incorrect judgements) compared to those on an ACCT (not currently self-harming) and both vulnerable groups made more risky decisions (according to these variables) than those in the general prison population. This could be related to an acceptance of risk in groups who are vulnerable to self-harming. Most notably, in the decreasing win (DW) condition (where participants are encouraged to make more risky

decisions), the probability of being correct and the number of boxes opened was significantly less in both vulnerable groups compared with the general prison population and in this condition, there were significant differences between those who had recently self-harmed to those who were vulnerable but had not recently self-harmed. Interestingly though, the DW data indicates that although those who are vulnerable to and are currently self-harming are riskier in their decision making, this did result in more points being won, meaning that their risky strategy worked for them. Therefore, this may relate to sensitivity to reward and the reduction of it and could relate to statements made about DD and reward sensitivity.

Specifically, impulsivity is found to be associated with a person choosing to use only a small amount of information before a decision is made (Bechara, 2005). Similarly, it is thought that inadequate reflection on decision can prejudice responses towards more instantly rewarding options, without thinking of the consequences (Clark, Robbins, Ersche, & Sahakian, 2006) and similar to the discussion above, could explain why self-harming is used as a temporary solution to a problem. According to Dickman's (1990) theory, a common feature of impulsivity is the tendency to contemplate less before taking action and this lack of thinking before making a decision may be associated with a rapid discounting of delayed rewards. Some people may also differ in their propensity to reflect on, or fully consider the available information, when making decisions or selecting goals (Kagan, 1966). Specifically, highly impulsive behaviour is associated with choosing to use limited information before making a decision (Bechara, 2005), whereas low levels of impulsive behaviour are associated with more reflective decisions that are based on taking in larger amounts of information before a decision is made (Verdejo-García et al.,

2008). Whilst there are not any directly relatable studies to compare these findings to, reflection impulsivity is denoted by the tendency to make decisions without considering all available information and without thinking of the consequences of such and there is lots of research to suggest that individuals who self-harm do so in order to temporarily relieve negative feelings, without thinking of the consequences. In support of this idea, previous research has found that people who engage in self-harming behaviours often spend less than 5 minutes contemplating an act of self-harm (Nock & Prinstein, 2005). Furthermore, individuals who self-harm have also been found to be more likely to engage in other impulsive behaviours such as drug and alcohol abuse, binge eating, sexual promiscuousness and gambling (Evans & Lacey, 1992; Herpertz, Sass, & Favazza, 1997; Zlotnick et al., 1996).

Those who use self-harming behaviour are known to act impulsively and this impulsive behaviour may explain a number of deficits reported in these populations, for example, problem solving deficits and a propensity to choose to make decisions that are based on little information (e.g. Biggam & Power, 2002; McMurrin et al., 1999; McMurrin et al., 2001) and difficulties in delaying rewards (e.g. Krueger et al., 1996; Newman, Kosson, & Patterson, 1992). The current data clearly indicates that impulsive decision making is a prominent feature, particularly in those who are currently self-harming. Impulsive decision making was also found to be more discriminatory across groups of young offenders, compared to adults

7.0 CHAPTER SEVEN

Response Inhibition and its Relationship with Self-Harming Behaviours in Two Custodial Settings

An inability to inhibit responses is a particular aspect of behaviour which strongly indicates deficits in controlling impulses (Nigg, 2000). In contrast, being able to inhibit behaviour, when and where appropriate, is central to executive functioning (Barkley, 1997; Patterson & Newman, 1993). In particular, Barkley (1997) suggests a relationship between problems in inhibitory control and deficits in central cognitive functions such as working memory, internalisation of thoughts, dysregulation of emotions, and an inability to break down behaviours. Correspondingly, longitudinal studies have found that response inhibition and self-control highly correlate with positive consequences in later life, such as having well managed personal finances and engaging in healthy behaviours (Diamond, 2013; Moffitt et al., 2011; Nigg et al., 2006). Given the high prevalence of self-harming behaviours in psychological disorders such as bulimia nervosa (Wu et al., 2013), Attention Deficit Hyperactivity Disorder (ADHD; Lijffijt et al., 2005) and substance abuse disorders (Rubio et al., 2007; de Wit, 2009), where high scores of self-reported impulsiveness have also been linked to poor inhibitory control (Logan et al., 1997), it is possible that deficits in inhibitory control are associated with a number of both indirect and direct self-harming behaviours. To support this idea, research suggests that most people who self-harm do so on a regular basis, despite reporting negative outcomes afterwards. It is proposed that self-harm may be chosen as a solution to person's problems, with little thought given to the longer term consequences and this may indicate an

underlying deficit inhibitory control (Chamberlain, Blackwell, Fineberg, Robbins, & Sahakia, 2005).

There are two main types of response inhibition are commonly tested using the Stop Signal Task (SST) or the Go/No-Go (GNG) task. The SST measures a person's ability to cancel an ongoing response or behaviour. The cancellation of ongoing responses or behaviour induce neuronal inhibition of motor actions, whereas the Go/No-Go requires action selection and action restraint mechanisms for the withholding of a prepotent response (Ye et al., 2014). SST is an extensively used neurocognitive task, designed to assess action cancellation; a process which is thought to underlie impulsive behaviours (Logan, Schachar, & Tannock, 1997). It requires a primary go task and a secondary stop task (Logan, 1994). Logan developed the race model which proposes that response inhibition is dependent on a race between the processes underlying response execution and the inhibitory process itself. In this task, inhibitory processes are triggered by a stop signal (usually auditory) which instructs the person to inhibit a response (Logan, 1994; Logan & Cowan, 1984). The process (response execution or inhibition) which finishes first, determines performance. There are only a few studies that have specifically explored deficits in inhibitory control using the SST in people who self-harm (Fikke et al., 2011; Glenn & Klonsky, 2010), and they have resulted in mixed findings. Specifically, Glenn and Klonsky (2010) found no differences in response inhibition between college graduates who self-harmed and those who did not, whereas Fikke et al. (2011) found that adolescents who engaged in 'low severity' self-harm were less able to inhibit responses compared to those who engaged in 'high severity' self-harm.

The Go/No-Go task (Helmers et al., 1995; Newman et al., 1985, 1990; Patterson et al., 1987), assesses a person's ability to withhold a response to a stimulus that was previously paired with reward and/or a punishment. Impulsive individuals are more likely to struggle to withhold responses and therefore are more likely to make more errors in responding (Newman et al., 1987). Some forensic populations, such as male psychopaths and juvenile delinquents, have been found to be more likely to make increased errors of commission (incorrectly responding), but similar errors of omission (incorrectly withholding responding) on this task, when compared to control populations (Le Marquand et al., 1998; Newman et al., 1990; Patterson et al., 1987). These deficits may both be related to different facets of impulsive behaviours and despite negative consequences, highly impulsive samples may be unable to control their behaviour. Despite its use in clinical populations, the Go/No-Go measure has not been used in the UK prison population.

Although it has been shown that some samples have difficulty controlling their ability to inhibit behaviour, there is scant knowledge about these behaviours in the samples and groups used specifically in this thesis. Therefore the current study was designed to assess response inhibition in vulnerable and currently self-harming, vulnerable but not currently self-harming and general prison population groups of young and adult male offenders.

7.1 Methodology

7.1.1 Participants

For full details of participants, see 6.1.1 in Chapter 6.

7.1.2 Measures

Two behavioural measures of response inhibition were used in this study; the Stop Signal Task and the Go-No Go Task. These were measured across 2 groups of vulnerable adult and young male offenders and the general prison population (as in other chapters). There were 15 participants in each of the three groups at both sites. Therefore, there were 90 participants in total.

7.1.2.1 The Stop-Signal Task (SST; Verbruggen, Logan, & Stevens, 2008)

The SST is a task of behavioural impulsivity and measures a person's ability to inhibit responses. In this task, participants were asked to react as fast as possible (by pressing the right and left arrow keys which were marked accordingly), to either a white square or a white circle (referred to as the primary task stimuli), which was presented in the center of a plain black computer screen for 1250 milliseconds. In a quarter of all the trials presented, the primary task stimuli was followed up by an 75 millisecond auditory stop signal (bleep noise) and indicated to participants that they must withhold their response (STOP trial). In this task, there were 32 practice trials, followed by four blocks of 64 trials. Each trial started with the presentation of a fixation cross in the middle of the screen, followed by the primary task stimulus after 250 milliseconds. A 2000 millisecond interval was given in between each trial. Between each block of trials there was a 10 second gap in which participants received feedback on their performance on the last set of trials.

The key outcome variables on this task included the mean Stop Signal Delay (SSD) and the mean Stop Signal Reaction Time (SSRT). Stop Signal Delay (SSD; the delay

between the start of the primary task stimulus and the auditory stop signal) varies based on the participant's behaviours following a staircase tracking procedure. When the delay between the primary task stimulus and the stop signal (SSD) increases, the probability of responding incorrectly on stop signal trials increases (i.e. it becomes harder to inhibit the response), therefore a lower mean SSD indicates greater impulsive responding. Using this principle, Logan and Cowan (1984) established the horse race model which works on the premise that there are two ongoing processes which race against each other during the task. One is a go process which is triggered by the presentation of the task stimuli and the other is a stop process which is triggered by the auditory stop signal. Using this model, if the stop process finishes before the go process, subjects are able to inhibit their response. However, if the go process finishes before the stop process, subjects have failed to inhibit their response. Using the horse-race model, an estimate of the latency of the stop process (known as SSRT) is given by subtracting SSD from the mean go reaction time. The Stop Signal Reaction Time (SSRT) is the maximum amount of time that can pass between the presentation of the stimulus and the stop-signal, such that a behavioural response can still be inhibited and is the main dependent variable used to assess response inhibition. A (smaller) SSRT indicates greater inhibitory control and a quicker stop process, whereas a slower (or larger) SSRT indicates less inhibitory control and a slower stop process (Logan et al., 1984; Logan et al., 1997). Poor inhibitory control, according to this model can result in either responding too slowly to the stop signal or responding too quickly to the go signal.

In addition, Mean Signal Response Time (RT) (ms), Mean No-Signal RT (ms), Mean Percentage of Correct Responses on No Signal Trials and Mean Percentage of

Missed Responses on No Signal Trials, are also recorded. Mean No- signal RT represents the mean of all responses (i.e., including the longer tail of the go RT distribution) whereas mean signal-respond RT represents the mean of those responses that were fast enough to finish before the stop signal (i.e., excluding the longer tail of the go RT distribution; see Logan & Cowan, 1984; Osman et al., 1986). Consequently, mean signal-respond RT should increase when SSD increases. This prediction has been confirmed by several studies (see e.g., De Jong et al., 1990; Hanes & Schall, 1995; Logan et al., 1984; Osman et al., 1986).

7.1.2.2 Go/No-Go Task (GNG; e.g. Fox, McLean, Turner, Parrot, Rogers, & Sahakian, 2002)

The Go/No-Go task, originally described by Donders (1868/1969), is another type of behavioural measure used to assess a person's ability to inhibit responses that are prepotent. The task was programmed and administered in E-Prime (version 1.0) and consisted of 5 blocks, each of which involved 36 symbols appearing rapidly in the centre of the screen. Half of the symbols were considered 'targets' and half of them were considered 'non targets' and comprised of either letters (A-G) or numbers (2 – 9). Participants were told to press the spacebar as quickly as possible only when they saw the target stimulus for that block (the go stimulus e.g. a letter) and inhibit responding to the other stimulus (the no-go stimulus e.g. a number). The target stimulus switched from numbers to letters (or vice versa) at the start of every block and these were counterbalanced between participants. The first block was a practice run. This task used the traditional Go/No-Go design, with a single go stimulus and a single no-go stimulus in each condition (Kiehl, Liddle, & Hopfinger, 2000; Liddle et al., 2001; Watanabe et al., 2002).

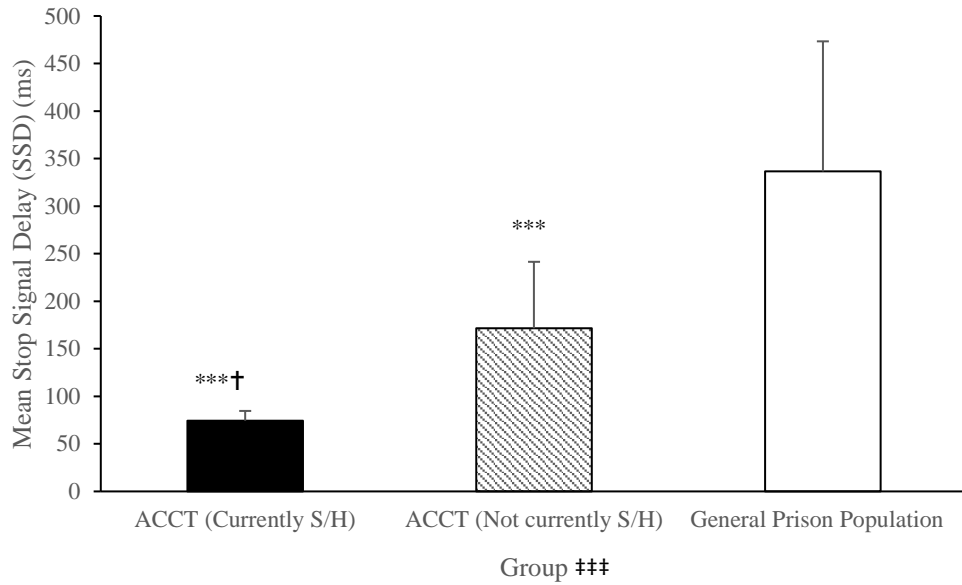
Outcome measures on this task included the percentage of correct go responses, the percentage of correct no-go responses, mean correct latencies (i.e. how long it took to press the space bar for a go response) and incorrect response latencies (i.e. how long it took to press the space bar for a no-go response). The key outcome variable is the percentage of correct no-go responses. Impulsive behaviour is indicated by a tendency to make fewer correct No-Go responses (Ba, Zhang, Salvendy, Cheng, & Ventsislavova, 2016; Brown & Perreault, 2017; Newman & Kossen, 1986; Schwebel et al., 2007; Tom, Fox, Trepel, & Poldrack, 2007).

7.2 Results

7.2.1 HMP Leeds – Male Adult Offenders

7.2.1.1 Stop Signal Task (SST)

Analyses revealed that at HMP Leeds there was a significant difference between groups for Stop Signal Delay (SSD) ($F(2, 42) = 33.40, p < .001, \eta^2 = .61$). More specifically, those on an ACCT – currently self-harming had lower stop signal delays than those on an ACCT – not currently self-harming and both vulnerable groups had lower stop signal delays than the general prison population. (See figure 12).



n = 15 in each group

significant main effect using one way ANOVA ($p < .001$)

† significantly different from ACCT currently self-harming ($p < .05$)

***significantly different from the General Prison Population ($p < .001$)

Figure 12: Stop Signal Delay (SSD) (ms) across groups at HMP Leeds

Analysis of Stop Signal Reaction Times (SSRT) also revealed a significant difference between groups ($F(2, 42) = 41.09, p < .001, \eta^2 = .66$). More specifically, those on an ACCT – currently self-harming had a significantly higher reaction time than those on an ACCT – not currently self-harming and both vulnerable groups had a higher reaction time than those in the general prison population (see figure 13).

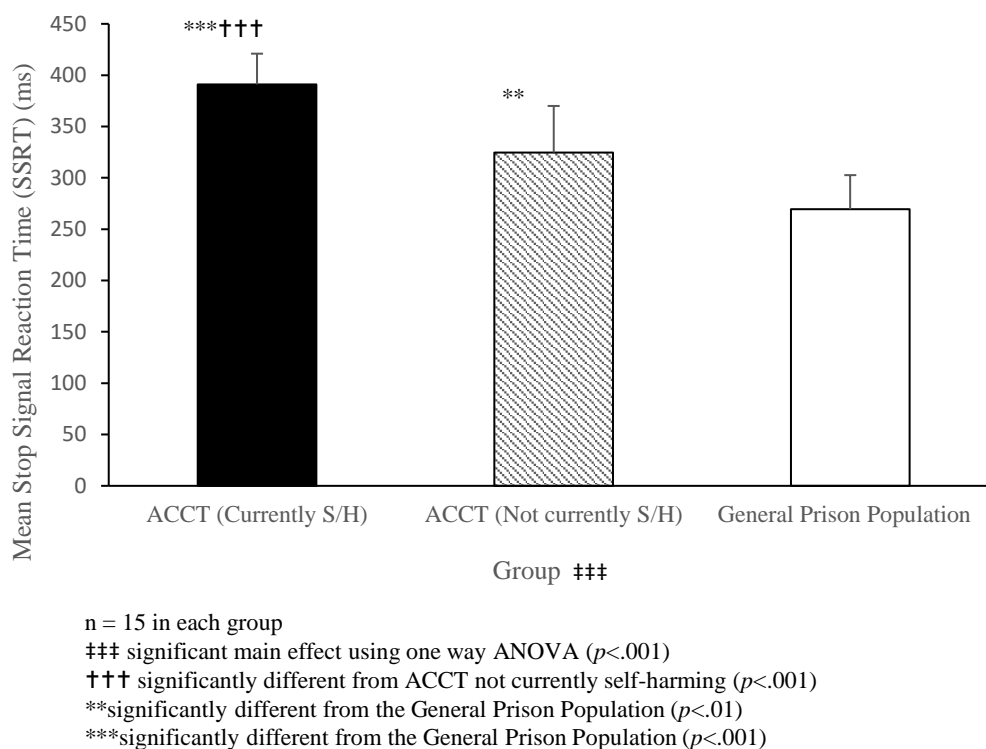


Figure 13: Stop Signal Reaction Time (SSRT) (ms) across groups at HMP Leeds

Mean signal response times revealed a significant difference of group ($F(2, 42) = 5.28, p < .01, \eta^2 = .20$). More specifically, those on an ACCT – currently self-harming responded quicker to a signal than those in the general prison population. There were no other significant differences (see table 17).

Mean no signal response times also revealed a significant difference of group ($F(2, 42) = 14.49, p < .001, \eta^2 = .41$). More specifically, both those on an ACCT – currently self-harming, and those on an ACCT – not currently self-harming responded to stop signals quicker than the general population. However, there were no significant differences between the two vulnerable groups (see table 17).

There were no significant differences of group for mean % correct response ($F(2, 42) = 1.71, p=ns$) or for mean % Missed Responses on No Signal Trials ($F(2, 42) = 3.14, p=ns$) (see table 17).

Table 17. Mean scores (standard deviations) for SST at HMP Leeds

Dependant Variable	Group	Mean (SD)
Mean Stop Signal Delay (SSD) (ms) ###	ACCT – currently self-harming	74.36 (10.29) †***
	ACCT – not currently self-harming	171.59 (69.89) ***
	General Prison Population	336.60 (136.71)
Mean Stop Signal Respond RT (SSRT) (ms) ###	ACCT – currently self-harming	390.99 (29.94) †††***
	ACCT – not currently self-harming	324.63 (45.38) **
	General Prison Population	269.46 (33.17)
Mean Signal Respond RT (ms) ##	ACCT – currently self-harming	481.21 (30.13) **
	ACCT – not currently self-harming	510.34 (33.26)
	General Prison Population	564.25 (114.48)
Mean No Signal Respond RT (ms) ###	ACCT – currently self-harming	469.15 (32.23) ***
	ACCT – not currently self-harming	496.73 (41.17) **
	General Prison Population	607.84 (118.32)
Mean % Correct Response on No Signal Trials	ACCT – currently self-harming	96.11 (1.13)
	ACCT – not currently self-harming	98.41 (0.86)
	General Prison Population	94.88 (9.10)
Mean % Missed Responses on No Signal Trials	ACCT – currently self-harming	0.19 (0.32)
	ACCT – not currently self-harming	0.28 (0.44)
	General Prison Population	2.91 (5.84)

significant main effect using one way ANOVA ($p<.01$)

significant main effect using one way ANOVA ($p<.001$)

† significantly different from ACCT not-currently self-harming ($p<.05$)

††† significantly different from ACCT not-currently self-harming ($p<.001$)

** significantly different from the General Prison Population ($p<.01$)

*** significantly different from the General Prison Population ($p<.001$)

7.2.1.2 Go/No-Go Task (GNG)

At HMP Leeds analyses revealed that there was no significant effect of group for % Correct Go trials ($F(2, 42) = 1.39, p=ns$) (see table 18).

For % Correct No-Go there was a significant main effect of group ($F(2, 42) = 6.86, p<.01, \eta^2 = .25$). More specifically, those on an ACCT – currently self-harming made significantly less % Correct No Go responses than those in the general population. Similarly, those on an ACCT – not currently self-harming also score significantly less than those in the general prison population (see table 18).

For Correct Response Latency there was a significant main effect of group ($F(2, 42) = 9.30, p<.001, \eta^2 = .31$). In particular, those on an ACCT – currently self-harming, and those on an ACCT – not currently self-harming had a significantly lower Correct Response Latency than those in the general prison population (see table 18).

For Incorrect Response Latency there was a significant main effect of group ($F(2, 42) = 15.84, p<.001, \eta^2 = .44$). In particular, those on an ACCT – currently self-harming, and those on an ACCT – not currently self-harming had a significantly lower Incorrect Response Latency than those in the general prison population (see table 18).

Table 18. Mean Scores (Standard Deviations) for Go/No-Go at HMP Leeds

Dependant Variable	Group	Mean (SD)
% Correct Go Responses	ACCT – currently self-harming	86.20 (24.30)
	ACCT – not currently self-harming	91.75 (7.51)
	General Prison Population	95.09 (2.51)
% Correct No-Go Responses ##	ACCT – currently self-harming	82.04 (6.20) **
	ACCT – not currently self-harming	84.72 (14.47) *
	General Prison Population	94.16 (3.02)
Correct Response Latency ###	ACCT – currently self-harming	407.01 (35.39) **
	ACCT – not currently self-harming	406.45 (29.70) **
	General Prison Population	445.18 (16.05)
Incorrect Response Latency ###	ACCT – currently self-harming	350.28 (67.36) ***
	ACCT – not currently self-harming	341.78 (55.24) ***
	General Prison Population	465.24 (76.16)

significant main effect using one way ANOVA ($p < .01$)

significant main effect using one way ANOVA ($p < .001$)

* statistically different from General Prison Population ($p < .05$)

** statistically different from General Prison Population ($p < .01$)

*** statistically different from General Prison Population ($p < .001$)

7.2.2 HMYOI Wetherby – Male Young Offenders

7.2.2.1 Stop Signal Task (SST)

Analyses revealed that at HMYOI Wetherby there was a significant difference between groups for Stop Signal Delay (SSD) ($F(2, 42) = 35.48, p < .001, \eta^2 = .63$).

More specifically, those on an ACCT – currently self-harming had lower stop signal delays than those in the general prison population. Similarly, those on an ACCT – not currently self-harming also had lower stop signal delays than those in the general prison population (see figure 14).

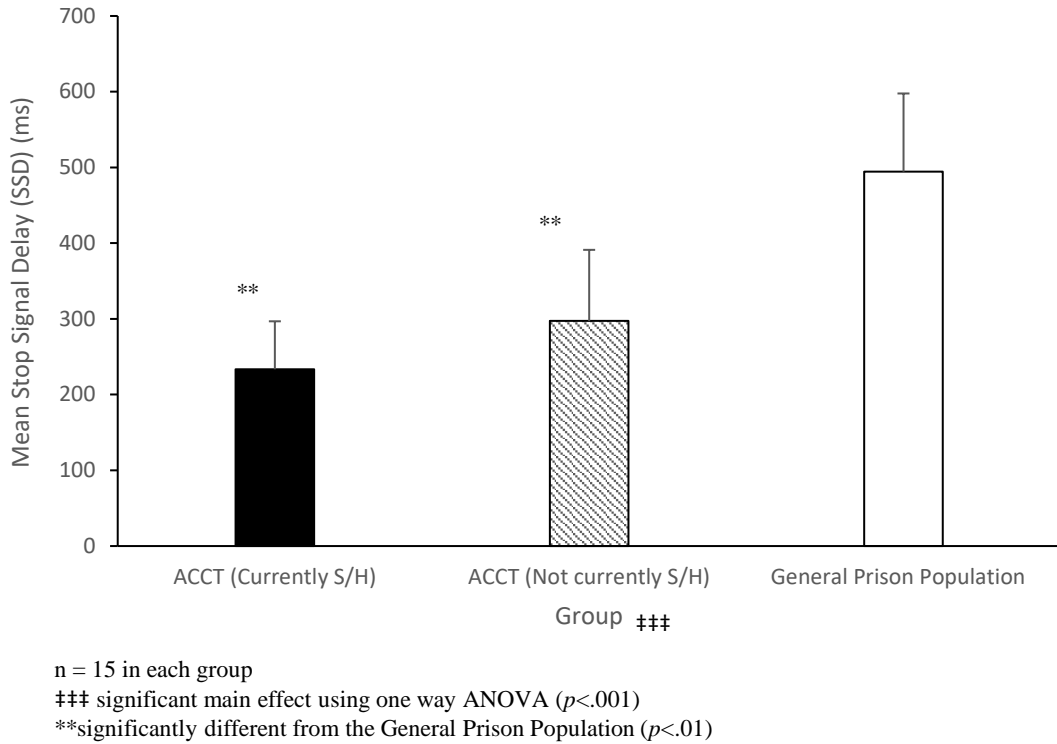
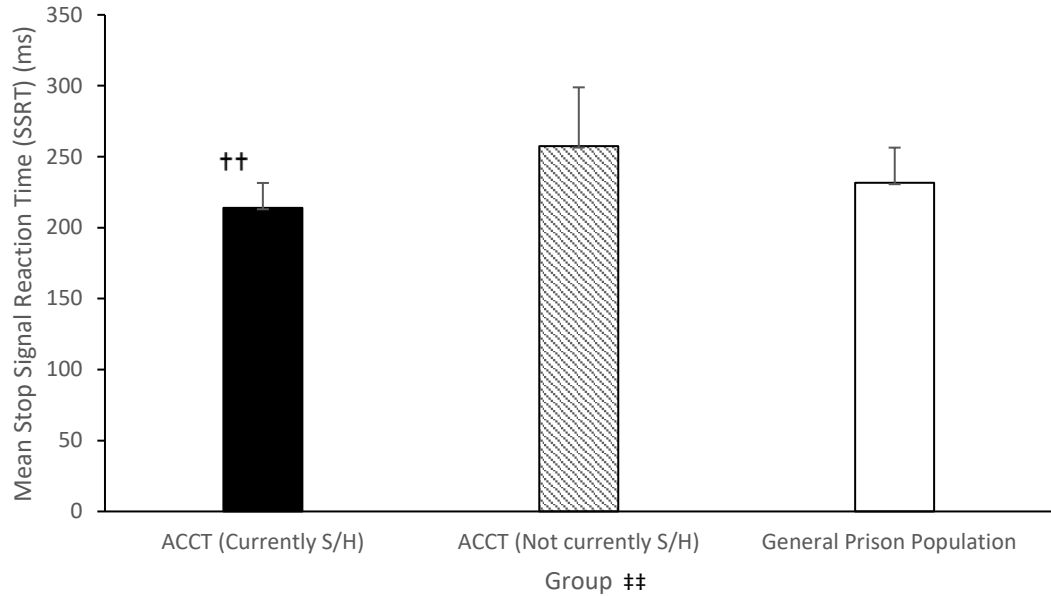


Figure 14: Stop Signal Delay (SSD) (ms) across groups at HMYOI Wetherby

For Stop Signal Reaction Time (SSRT) there was also a significant difference between groups ($F(2, 42) = 8.16, p < .05, \eta^2 = .28$). More specifically, those on an ACCT – currently self-harming had a significantly slower reaction time than those on an ACCT – not currently self-harming. There were no other significant differences between groups (see figure 15).



n = 15 in each group

‡‡ significant main effect using one way ANOVA ($p < .01$)

†† significantly different from ACCT not currently self-harming ($p < .01$)

Figure 15: Stop Signal Reaction Time (SSRT) (ms) across groups at HMYOI Wetherby

Mean signal response times revealed a significant difference of group ($F(2, 42) = 37.44, p < .001, \eta^2 = .64$). More specifically, those on an ACCT – currently self-harming responded quicker to a signal than those on and ACCT – not currently self-harming and both vulnerable groups responded quicker to a signal than those in the general prison population (see table 19).

Similarly for mean no signal response times, there was also a significant difference of group ($F(2, 42) = 36.51, p < .001, \eta^2 = .63$). More specifically, those on an ACCT – currently self-harming responded to no signals quicker than those on an ACCT – not currently self-harming and both vulnerable groups responded quicker to a no signal response than those in the general population (see table 19).

For the mean % of correct responses on no signal trials there was a significant effect of group ($F(2, 42) = 4.39, p < .05, \eta^2 = .17$). Post hoc comparisons showed that those on an ACCT – currently self-harming had a significantly lower % of correct responses than those in the general prison population. For the mean % missed responses on no signal trials there were no significant differences between groups ($F(2, 42) = 2.06, p = ns$) (see table 19).

Table 19. Mean scores (standard deviations) for SST at HMYOI Wetherby

Dependant Variable	Group	Mean (SD)
Mean Stop Signal Delay (SSD) (ms) †††	ACCT – currently self-harming	233.44 (63.38) ***
	ACCT – not currently self-harming	297.36 (93.81) ***
	General Prison Population	494.45 (103.22)
Mean Stop Signal Respond RT (SSRT) (ms) ††	ACCT – currently self-harming	213.97 (17.56) ††
	ACCT – not currently self-harming	257.47 (41.43)
	General Prison Population	231.63 (24.79)
Mean Signal Respond RT (ms) †††	ACCT – currently self-harming	415.36 (45.81) ***††
	ACCT – not currently self-harming	509.97 (69.49) ***
	General Prison Population	644.14 (94.63)
Mean No Signal Respond RT (ms) †††	ACCT – currently self-harming	449.76 (52.05) ***††
	ACCT – not currently self-harming	555.34 (94.44) ***
	General Prison Population	725.57 (110.65)
Mean % Correct Response on No Signal Trials †	ACCT – currently self-harming	97.28 (2.16) *
	ACCT – not currently self-harming	98.50 (2.19)
	General Prison Population	99.21 (0.52)
Mean % Missed Responses on No Signal Trials	ACCT – currently self-harming	0.14 (0.39)
	ACCT – not currently self-harming	0.61 (0.98)
	General Prison Population	0.28 (0.35)

†† significant main effect using one way ANOVA ($p < .01$)

††† significant main effect using one way ANOVA ($p < .001$)

†† significantly different from ACCT not-currently self-harming ($p < .01$)

* significantly different from General Prison Population ($p < .05$)

*** significantly different from General Prison Population ($p < .001$)

7.2.2.2 Go/No-Go Task (GNG)

At HMYOI Wetherby analyses revealed that there was a significant effect of group for the Percentage of Correct Go Responses ($F(2, 42) = 5.52, p < .05, \eta^2 = .21$). More specifically, those on an ACCT – currently self-harming made significantly less Correct Go responses than those on an ACCT – not currently self-harming. There were no other significant differences between groups (see table 20).

In the Percentage of Correct No-Go Responses there was a significant main effect of group ($F(2, 42) = 8.85, p < .05, \eta^2 = .30$). More specifically, those on an ACCT – currently self-harming successfully completed less No Go trials than those on an ACCT – not currently self-harming, and those in the general population (see table 20).

The Correct Go trial Response Latency revealed a significant main effect of group ($F(2, 42) = 16.15, p < .001, \eta^2 = .43$). In particular, those on ACCT currently self-harming were faster than both those in the general prison population and those on an ACCT – not currently self-harming (see table 20).

There was not a significant main effect of group for Incorrect Response Latency ($F(2, 42) = 1.48, p = ns$) (see table 20).

Table 20. Mean scores (standard deviations) for Go/No-Go at HMYOI Wetherby

Dependant Variable	Group	Mean (SD)
% Correct Go Responses ††	ACCT – currently self-harming	85.56 (7.38) ††
	ACCT – not currently self-harming	93.80 (5.09)
	General Prison Population	89.07 (7.68)
% Correct No-Go Responses ††	ACCT – currently self-harming	74.07 (10.82) †††
	ACCT – not currently self-harming	84.81 (5.59)
	General Prison Population	88.43 (5.13)
Correct Response Latency †††	ACCT – currently self-harming	375.59 (62.02) ††††
	ACCT – not currently self-harming	433.26 (29.40)
	General Prison Population	460.63 (23.25)
Incorrect Response Latency	ACCT – currently self-harming	346.16 (88.82)
	ACCT – not currently self-harming	377.46 (70.90)
	General Prison Population	402.24 (105.33)

†† significant main effect using one way ANOVA ($p < .01$)

††† significant main effect using one way ANOVA ($p < .001$)

† significantly different from ACCT not-currently self-harming ($p < .05$)

†† significantly different from ACCT not-currently self-harming ($p < .01$)

** significantly different from General Prison Population ($p < .01$)

*** significantly different from General Prison Population ($p < .001$)

7.2.3 Comparisons between Sites on Key Dependant Variables

7.2.3.1 Stop Signal Task

Adult offenders had a lower SSD ($t(88) = -4.974, p < .001, r = .47$) and a higher SSRT ($t(68.60) = 8.94, p < .001, r = .54$) than young offenders (see table 21).

7.2.3.2 Go/No-Go Task

Adult offenders had a higher percentage of correct no-go responses than young offenders ($t(87) = 2.01, p = .05, r = .04$) (see table 21).

Table 21. Comparisons between HMP Leeds and HMYOI Wetherby

			Mean (SD)
SST	SSD	HMP Leeds	194.18 (139.71) ***
		HMYOI Wetherby	341.75 (141.73)
	SSRT	HMP Leeds	328.36 (61.77) ***
		HMYOI Wetherby	234.36 (34.15)
G/NG	% Correct No-Go Responses	HMP Leeds	87.09 (10.51) *
		HMYOI Wetherby	82.44 (11.32)

n = 45 at each comparison site

* significantly different from HMYOI Wetherby ($p < .05$)

*** significantly different from HMYOI Wetherby ($p < .001$)

7.3 Discussion

In summary, using the SST; SSD and SSRT indicate good impulsivity discrimination between adult offender groups, with those who are identified as vulnerable and currently self-harming having a lower SSD and a higher SSRT than those who are vulnerable but not currently self-harming and both vulnerable groups having lower SSD's and higher SSRT's than those in the general prison population. In the young offender sample though, only SSD was able to discriminate between those who are vulnerable and currently self-harming and the general prison population. However, the reverse is found for reaction times where young offenders RT's discriminate between all groups but adults less so. Importantly, this is the only task used in this thesis that find adults to be more impulsive than young offenders. Using the G/No-Go task with adult offenders, there were no significant differences between the groups for the percentage of correct go responses but adult offenders who were identified as vulnerable (both groups) had a significantly lower percentage of correct no-go responses than those in the general prison population (considered the key dependant variable in this task). Young offenders identified as vulnerable and

currently self-harming had a significantly lower percentage of correct go responses and correct no-go responses than those who were vulnerable but not currently self-harming and furthermore, the percentage of correct no-go responses was able to discriminate between those vulnerable and currently self-harming and the general prison population.

The SST is used to assess motor inhibition, a process thought to underlie impulsive behaviour (Logan, Schachar, & Tannock, 1997). In particular, the SST measures restraint and cancellation, involving both 'go' and 'stop' signals (Logan & Cowan, 1984; Logan, Cowan, & Davis, 1984). Results with adult offenders at HMP Leeds show that the key impulsivity variable, Stop Signal Reaction Time (SSRT), were found to be higher (meaning they struggled more to inhibit responses) in those on an ACCT currently self-harming compared with those on an ACCT not currently self-harming and both vulnerable groups took longer to inhibit a stop response than those in the general prison population. Whilst there was a significant difference found between groups with young offenders at Wetherby, the results were not as expected, with those vulnerable to but not currently self-harming indicating higher levels of impulsivity than those who were currently self-harming.

Results with adult offenders at HMP Leeds were consistent with previous findings which suggest that individuals who engage in self-harming behaviours may be regarded as having deficits in the inhibitory control of behaviour (Favazza & Conterio, 1989; Pattison & Kahan, 1983). One reason why we may have found inhibitory control deficits in those vulnerable and taking part in self-harming

behaviours may be due to the finding that those who self-harm often experience a rapid and dramatic reduction in tension following an act of self-harm (Bockian, 2002; Gratz, 2003; Klonsky et al., 2003; Mangnall, 2006). As inhibitory control (self-control) requires the ability to be able to control ones thoughts, behaviours and/or emotions, if a person has self-harmed before and experienced this rapid reduction in negative emotion, it may be difficult to inhibit this response, given its positive (albeit short term) outcomes. This idea also supports the previously mentioned Experiential Avoidance Model of self-harm (Chapman et al., 2006), proposing that self-harm is negatively reinforced as a way of removing unwanted emotions. Therefore, due to deficits in inhibiting responses, a person may choose to self-harm as an immediate response to having negative thoughts or experiencing unwanted emotions.

The Go/No-Go task measures the capacity of a person to be able to stop or inhibit a pre-potent response. In short, impulsive individuals typically have a problem 'stopping' responding. Total Correct No Go is the key dependent variable as it relates to a person's ability to inhibit a prepotent response. Adult offenders at HMP Leeds who were identified as vulnerable (both those currently self-harming and those who were not) were not able to inhibit responses on no-go trials as well as those in the general prison population. This was in the context of no differences in performance of the go trials, indicating a specific inability to withhold a pre-potent response. This index of higher impulsivity in the vulnerable adult groups in comparison to the general prison population was further supported by faster response time in these vulnerable groups than the general prison population during both go and no-go trials. Also, young offenders at HMYOI Wetherby on an ACCT currently

self-harming were not able to inhibit responses on no-go trials as well as those in the general prison population or those on an ACCT not currently self-harming. In summary, this task seems to be better at discriminating self-harming young offenders than self-harming adult offenders.

An inability to inhibit responses could be linked to earlier research on emotions and their relationship to self-harm. More specifically, previous studies have reported self-harm to be related to problems in emotional management (Gratz & Roemer, 2008; Heath, Toste, Nedecheva, & Charlebois, 2008). Furthermore, people who have a history of self-harm, report recurring intense negative feelings and using self-harm as a way of coping with this negative emotional experience (Klonsky et al., 2003; Klonsky, 2007; Nock & Prinstein, 2004). One possible interpretation of inhibition deficits found in those who self-harm or are vulnerable to self-harm compared with the general prison population is that those who self-harm may be more emotionally dysregulated than non-injurers and therefore less able to inhibit urges to regulate these emotions by self-harming and therefore use self-harm as a way to decrease these negative experiences. Whilst impaired response inhibition has been reported in a number of impulsive-compulsive disorders such as ADHD (Boonstra, Oosterlaan, Sergeant, & Buitelaar (2005); Chamberlain et al., 2010; Cubillo et al., 2012), it has not been studied at all in self-harming, forensic samples, so direct comparisons or observations are difficult to make.

The current study used behavioural measures of impulsivity which have not been used in similar forensic samples before. Overall, findings from this study are consistent with previous research which indicates that self-harm and suicide attempts

are associated with higher impulsive behaviours on laboratory-based tasks (Dougherty et al., 2004; Jollant et al., 2005). Similarly, Dougherty et al. (2004) found that adults with previous suicide attempts performed more impulsively on a behavioural task measuring motor impulsiveness, than those with no history of suicide attempts. Furthermore, Horesh (2001) found that adolescents who reported 'severe' suicidal behaviour, performed worse on tasks of motor impulsivity than those who reported less 'severe' suicidal behaviour (this was measured using a continuum from suicidal ideation to mild and serious suicide attempts). Although there have been some studies looking at the link between performance on behavioural measures of impulsivity in self-harming and suicidal samples, there have been no studies to date which have explored this link in a forensic self-harming sample. Therefore the current novel study clearly identifies that behavioural tasks measuring choice impulsiveness (such as DD and IST tasks) and behavioural inhibition (such as the SST and GNG tasks) and may be useful in assessing risk of self-harm in adult male offenders. Whilst there were some differential outcomes between vulnerable groups with young offenders at HMYOI Wetherby, the results were less clear and suggests that more needs to be done to explore how impulsivity is conceptualised and manifested in a young offending population, as it seems that this could be very different to how it is observed and experienced in an adult offending sample.

8.0 CHAPTER EIGHT

General Discussion

Recent figures have further emphasised the fact that reducing the occurrence of self-harm and suicides in the Prison Service is a key priority, given that self-inflicted deaths have increased by 13% and self-harm incidents by 26% in the 12 month period to June 2016 (Ministry of Justice, 2016). Of particular interest, incidents of self-harm by male prisoners has increased by 33% since 2015 and while female self-harmers are more prolific than males, male self-harmers have more than four times the proportion of self-harm incidents that require hospitalisation (8.4% for males, 2.1% for females in the most recent period). It is clear from this that we need to implement changes to the way we assess, manage and treat those at risk of self-harming behaviours. To the author's knowledge, this study is the first to examine the relationships of impulsivity and aggression to self-harming behaviours among groups of adult and young male offenders who are vulnerable and currently self-harming, those who are identified as vulnerable but not currently self-harming and those in the general prison population. Differentiations between these vulnerable groups are key in being able to direct resources to those at critical need of support and intervention. These findings offer a significant contribution to the field and can add to previous models of self-harming behaviours such as the Experiential Avoidance Model (Chapman et al., 2006).

8.1 Impulsivity

Although there is still some debate over the definition of impulsivity and its associated facets, there is consensus among scholars that impulsivity is a

multidimensional construct. It has also been argued as to whether impulsivity is a trait or a state (e.g. Corruble et al., 1999; Tice et al., 2001; Weyrauch et al., 2001) and this distinction is still not clear. This thesis explores both aspects of impulsive behaviour, using the BIS-11 to assess trait impulsiveness in Chapter 3 and behavioural tasks to assess different aspects of impulsive decision making and response inhibition in chapters 6 and 7, respectively.

8.1.2 Trait impulsivity

Using the BIS-11 scale in Chapter 3 to measure trait impulsivity, results showed that adult male offenders who were identified as at risk and currently self-harming, self-reported higher scores of impulsivity than those identified as vulnerable but not currently self-harming and that both vulnerable groups self-reported higher scores of impulsivity than those in the general prison population (control). These results are not surprising as previous research has found that impulsivity is one of the most commonly associated factors to self-harming behaviours (American Psychiatric Association, 2000; Anestis et al., 2007; Coccaro et al., 2005; Gorlyn, 2005; Horesh, 2001; Horesh et al., 1997; Lynam et al., 2011; Sanislow et al., 2003; Paris, 2005; Raust et al., 2007; Ripke, 2005). However, whilst these results support previous findings using the BIS-11 in self-harming samples, the groups used in the current thesis have never been explored before and so this data adds to our understanding of self-harming behaviour in a significant way.

Interestingly, further exploration of the subcomponents of impulsivity as measured by the BIS scale, found that in particular, non-planning impulsiveness was able to discriminate between both the vulnerable groups and the general prison population. More specifically, results from this thesis indicated that those who were identified as vulnerable and currently self-harming reported significantly higher levels of non-planning impulsiveness than those who were vulnerable and not currently self-harming and both vulnerable groups reported higher levels of non-planning impulsiveness than those in the general prison population. Although it has been previously reported that non-planning is linked to other groups of male offenders (Berman, 2004), offenders in residential drug treatment (Lang & Belenko, 2000), and mentally disordered offenders (Cullen et al., 2011; McCarthy & Duggan, 2010), this is the first time it has been reported in these particular vulnerable groups. Non-planning impulsiveness (a 2nd order factor) comprises of two, first order factors; self-control and cognitive complexity (Patton et al., 1995). Self-control is assessed using questions such as ‘I plan tasks carefully’ and ‘I plan trips well ahead of time’ (both items are reverse scored), whereas cognitive complexity is assessed using questions such as ‘I get easily bored when solving thought problems’ and ‘I am more interested in the present than the future.’ To frame this factor in a different way, these items could be thought of as measuring how much effort or thought a person chooses to put in before making a decision. It may indicate that individuals that are vulnerable to self-harming may be more likely to give up, quit or put in less effort when faced with a difficult situation. Haines and Williams (2003) support this view and found that prisoners who self-harmed used behaviour that was avoidant and further maintains the EAM proposal which states that “individuals who engage in self-harm have strong experiential avoidance repertoires or response tendencies” (Chapman et

al., 2006, p.384). Decision making is a complex and essential cognitive feature in which choices are made, preferably after reflecting on the consequences of that choice (Buelow & Suhr, 2009). However, impulsive individuals often do not think about the consequences of a chosen behaviour and instead, rely on cues that are more salient and in the present time frame (Donohew et al., 2000). When applying this to self-harming behaviour, it suggests that people who are currently self-harming or vulnerable to such behaviour, do so without considering the impact of such behaviours in the longer term. In this respect, self-harming is best understood as a maladaptive coping strategy as it works, but only for a limited amount of time and the temporary relief that occurs as a result of self-harming serves as a reinforcer, making it more likely, without intervention, that the person will use self-harm the next time they are faced with a difficulty. This is consistent with the EAM (Chapman et al., 2006) which suggests that self-harm is used as a way of relieving strong negative emotions. However, although self-harming may give temporary relief from negative emotions, it is not a healthy coping mechanism in the long run and one way of reducing the risk of self-harm is to give alternative ways of managing difficult emotions to those vulnerable to such behaviours. In further support of this, there is evidence to suggest that non-planning impulsivity may co-exist and overlap with deficits in social problem solving skills, whereby high levels of non-planning impulsiveness limit a person's ability to stop and think before making a decision as to how to respond to a situation (McMurrin, Huband, & Duggan, 2008). Whiteside and Lynam (2001) suggest that risky behaviours as a result of a lack of premeditation, result from a dysfunctional decision making process which may suggest that this is a useful treatment target.

Whilst motor impulsivity was also able to differentiate between adult offenders who were currently self-harming and those in the general prison population and also between both vulnerable groups, unlike non-planning impulsiveness, it was not able to differentiate those who were vulnerable and not currently self-harming from the general prison population. Motor impulsivity refers to acting on the spur of the moment and similar to non-planning impulsiveness, those who score highly on this aspect of the BIS are more likely to act (or behave) without thinking. More specifically, motor impulsiveness comprises of two, first order factors; motor and perseverance (Patton et al., 1995). The motor aspect is assessed using questions such as ‘I do things without thinking’ and ‘I act on the spur of the moment’, whereas perseverance is assessed using questions such as ‘I can only think about one thing at a time’, ‘I change jobs’ and ‘I am future oriented’ (reverse scored). Applying this to self-harming behaviour, it could be that those who are at risk of self-harming may be controlled by internal and/or external stimuli immediately (e.g. mood/ feelings and environmental stimuli) and in turn they are reactive, rather than considered in their behaviour. Again, this is consistent with the EAM (Chapman et al., 2006) in which self-harm is conceived as a means to relieve negative emotions which are salient stimuli to the person at risk. It also suggests that those who score highly on this particular aspect of the construct (i.e. those who are currently self-harming), are clearly not considering the long term impact of their behaviour and this is something which needs to be targeted in treatment. The development of executive functions plays an important role in the ability to regulate impulsive actions and to make positive decisions (Crews & Boettiger, 2009; Crone & Van der Molen, 2004; Romer, 2010). Whilst exploring the association between impulsivity and decision making is made more challenging due to the complexity of these constructs, given the negative

impact these factors can have on risky behaviour, it warrants further exploration. It is perhaps the lack of concern or understanding about the consequences of behaviour, rather than just acting out, which requires the most attention when working with offenders who are vulnerable to self-harming.

Similarly, although attentional impulsiveness was also able to discriminate between adult offenders who were currently self-harming and those in the general prison population and also between those who are vulnerable but not currently self-harming and those in the general prison population, it was not able to discriminate between those who are currently self-harming and those who are vulnerable but not currently self-harming. Attentional impulsivity refers to a person's inability to concentrate or focus attention. It is split into two first order factors of attention and cognitive instability and is measured using questions such as "I don't 'pay attention'", "I have 'racing' thoughts" and "I often have extraneous thoughts when I am thinking". Broken down, this suggests that people who score highly on this particular component of the BIS-11, struggle to manage these intrusive (often negative) thoughts and one way getting rid of these thoughts, even temporarily, may be to self-harm. The idea that self-harmers may be more likely to have intrusive negative emotions is consistent with previous research (e.g. Batey, May, & Andrade, 2010; Guerry & Prinstein, 2010; Nicolai, Wielgus, & Mezulis, 2016). Additionally, if people at risk are also high in motor impulsivity, they may be more likely to react to these intrusive emotions and/or thoughts and then because they don't plan or put effort in to choosing behaviours, they may react in a poorly considered manner, for example by self-harming, rather than seeking help or developing alternative strategies to manage these emotions. Research has shown that people generally have

a limited understanding of the cognitive processes involved in the evaluation, problem-solving processes and initiation of behaviour (Nisbett & Wilson, 1977) and in particular, the mental processes involved in thinking about, planning, and enacting self-harming, may be outside a person's conscious awareness. Whilst people are capable of accurately reporting that they have engaged in self-harm, it is unlikely that they can correctly identify the cognitive processes underlying the behaviour.

Whilst results with young male offenders followed the same pattern as with adult male offenders, smaller differences were detected. This could also suggest a ceiling effect because all groups were highly impulsive, compared with adult offenders in this thesis and compared with previous research in similar samples. Furthermore, only attentional impulsivity was able to discriminate between those identified as vulnerable and currently self-harming and those not identified as being vulnerable. Whilst BIS-11 takes into account the multi-faceted nature of the construct and includes different aspects of impulsivity (e.g. non-planning, motor, attention), Fossati et al. (2002) remark that there is little differentiation between these factors in adolescents and that differentiation increases with age. Adolescents might find it particularly difficult to pinpoint the thoughts that they experienced prior to self-harming and this may be useful in identifying triggers. Adolescence has disreputably been related to a tendency to participate in risky behaviours (Chambers & Potenza, 2003; Ernst & Paulus, 2005) and the development of executive functions such as the ability to inhibit behaviour and control thoughts, does not appear to be fully developed until our mid-twenties (Weinberger et al., 2005; Zelazo, 2006). Snoyman and Aicken (2011) also found that attentional impulsiveness was elevated in younger offenders and these differences would need to be taken into account when designing

interventions for younger offenders. It is likely that the attentional and behavioural features of impulsiveness are counter to the acquirement of good social problem solving skills in adolescents and these shortfalls continue into adulthood, increasing the likelihood of interpersonal deficits and manifesting in behaviours such as self-harming (McMurran et al., 2002).

Of particular importance, self-reported non-planning and motor impulsivity, were able to discriminate between vulnerable groups in adult male offenders. Whilst the BIS-11 may not be useful in being able to discriminate vulnerability to self-harm with young offenders, it may still be a very important risk factor to self-harming behaviours in the young people's estate, as on all facets apart from non-planning impulsivity, they scored higher than their adult counterparts. Interestingly though, attentional impulsivity was a component where significant differences were found in young offenders who were currently self-harming and those in the general prison population, suggesting that this facet of impulsivity in particular needs to be explored further in young offending samples and something which may need to be specifically targeted in treatment. Given that those who are engaging in or vulnerable to self-harming are more impulsive than the general prison population, the next logical step would be to explore under what conditions these thought patterns and behaviours might be more likely in adult offenders. Harris and Rice (1997) suggest that the focus should not be on the treatment of impulsiveness directly, but rather to address the conditions that make impulsive decision making and behaviour more likely. As stated previously, individuals who engage in self-harming behaviours have also been found to have deficits in affect regulation (Claes et al., 2010; Franklin et al., 2010; Herpertz, 1995) and this is associated with an increased risk to behave

impulsively. Interestingly, (lack of) Premeditation and (lack of) Perseverance are two facets of the UPPS-P measure (Whiteside & Lynam, 2001), which relate closely to non-planning and motor aspects of the BIS-11. In addition though, this questionnaire measures positive and negative urgency to predict positive mood-based impulsive actions and negative mood-based impulsive actions, respectively (Cyders & Smith, 2007; Cyders et al., 2007) and would be useful to use in the groups used throughout this thesis. Whilst the current study didn't measure emotional management deficits specifically, previous research clearly indicates the fact that there are implications with individuals vulnerable to self-harming and it is suggested that intense emotions limit cognitive ability and interfere with rational decision making (Steinberg, 2007) and make decisions based on instant gratification more likely (Cyders & Smith, 2008).

Overall, these results highlight the value of the Barratt Impulsivity Scale (BIS-11) as a potential risk assessment tool for adult offenders in particular, to be used alongside or in addition to, existing risk assessment practices, such as the ACCT process.

However, whilst it is clear that the BIS-11 is an important tool for assessing impulsiveness, supplementary research using the BIS-11 and its subscales in similar groups of vulnerable offenders to that used in this thesis (as has been done in Bipolar Disorder; Swann, Steinberg, Lijffijt, & Moeller, 2008), would be useful.

Furthermore, several explorations of the BIS-11 have found that a two factor higher order structure, to include both motor and non-planning subcomponents, provided the best fit in male and female prison samples (e.g. Haden & Shiva, 2009; Ireland & Archer, 2008; Steinberg, Sharp, Stanford, & Tharp, 2013). This is also consistent with the proposal by Swann et al. (2002) who suggest there are two types of

impulsiveness: one relating to an inability to wait for a reward (non-planning) and another relating to a propensity towards a rapid response style (motor impulsivity). This is consistent with preclinical data representing different neural pathways involved in impulsive choice and impulsive action (e.g. Cardinal, Pennicott, Lakmali, Robbins, & Everitt, 2001; Dalley et al., 2007; Winstanley, Dalley, Theobald, & Robbins, 2004).

8.1.3 Behavioural Impulsivity

Results with adult offenders, showed that those who were identified as vulnerable and currently self-harming, self-reported higher levels of choice impulsive behaviour using the DD and IST tasks than those in the general prison population. Similarly, results with young offenders found that overall, vulnerable participants on an ACCT made more impulsive decisions than those in the general prison population and that vulnerable young people on an ACCT were less able to inhibit responses compared to those in the general prison population. However, the differences between these groups were comparatively small and the measures were less able to discriminate between vulnerable groups and the general prison population than with adult offenders at HMP Leeds. For response inhibition, using the SST, results with adult offenders found that vulnerable offenders who were currently self-harming struggled more to inhibit responses, compared with those who were identified as vulnerable but not currently self-harming and both vulnerable groups took longer to inhibit a stop response than those in the general prison population. Whilst there was a significant difference found between groups with young offenders, the results were not as expected, with those currently self-harming and those vulnerable to self-harm

being no different to the general prison population, but interestingly those vulnerable to but not currently self-harming were more impulsive than those who were currently self-harming. Using the Go No-Go task, adult offenders who were identified as vulnerable (both those currently self-harming and those who were not) were not able to inhibit responses on no-go trials as well as those in the general prison population. This index of higher impulsivity in the vulnerable adult groups in comparison to the general prison population was further supported by faster response time in these vulnerable groups than the general prison population during both go and no-go trials. Furthermore, young offenders who were identified as vulnerable and currently self-harming were not able to inhibit responses on no-go trials as well those who were vulnerable but not currently self-harming or those in the general prison population.

Results from this aspect of the thesis can help us to explain why people who are vulnerable to self-harming behaviours are more likely to choose a more immediate or short term reward without focussing on the future consequence of making more risky decisions and therefore, why self-harming may be used as a temporary solution to reduce undesirable feelings (Bickel & Marsch, 2001; Clark et al., 2006; Coffey et al., 2003; Dick et al., 2010; Kirby et al., 1999; McCloskey et al., 2009; Monterosso et al., 2007; Peters & Büchel, 2011; Swann et al., 2009). As paradoxical as it may seem, self-harm has been shown to be effective in regulating emotion (in the moment) and that effectiveness makes it hard to stop. Moreover, it seems that impulsive people are more likely to make decisions with less information (e.g. Bechara, 2005; Verdejo-García et al., 2008) and consequently, self-harm, especially if used previously, may be seen as the 'only option' and could potentially be linked with poor problem solving (e.g. Linehan et al., 1987; McLeavey et al., 1987; Schotte

& Clum, 1987; Townsend et al., 2001; Williams & Pollock, 2000). In support of this proposal, previous research has established that people who engage in self-harming behaviours often spend less than 5 minutes considering an act of self-harm (Nock & Prinstein, 2005). Additionally, results from this study provide some evidence that individuals who self-harm are less likely to consider solutions to problems which have longer term outcomes and this is linked to delay discounting (e.g. Green & Myerson, 2004; Metcalfe & Mischel, 1999; Peters & Büchel, 2011; Reynolds, 2006). An inability to inhibit responses, like using self-harm as a solution, could be linked to previous research on emotions and their association to self-harm. More explicitly, a number of studies have reported self-harm to be related to problems in emotional regulation and using self-harm is a way of coping with this negative emotional experience (Heath et al., 2008; Gratz & Roemer, 2008; Klonsky et al., 2003; Klonsky, 2007; Nock & Prinstein, 2004). Whilst the decision making process is something that clearly warrants further exploration, it is important to note that there are both cognitive and affective elements to this and these will need to be measured in future research (Christakou, Brammer, Giampietro, & Rubia, 2009; Hooper et al., 2008).

Overall, these findings may be able to add to the Experiential Avoidance model of self-harm proposed by Chapman et al. (2006) which suggests that self-harming is used as a way of avoiding negative affect. Additionally, data in this thesis suggests that those who are vulnerable to self-harming may be more emotionally dysregulated and therefore less able to inhibit urges to regulate these emotions by self-harming and therefore use self-harm as a way to decrease these negative experiences.

Suggesting ways to manage emotions in a more effective way may be a possible solution to managing these vulnerable and at risk offenders.

8.2 Aggression

Aggression was measured and reported in chapter 4 of this thesis using the BPAQ (Buss & Perry, 1992). Results in this thesis add to previous research in this area that have found an association between aggression and increased risk of suicide and self-harm (e.g. Greening et al., 2010; Haavisto et al., 2005; Haggard-Grann et al., 2006; Hillbrand et al., 1994; Plutchik, 1995; Tang et al., 2013; Zhang et al., 2012).

However, interestingly, these results provide novel findings to the study of aggression and self-harming as some aspects of aggression measured in this thesis was able to differentiate between vulnerable and currently self-harming, vulnerable and not currently self-harming and those in the general prison population.

Analysis of the subcomponents of the BPQA scale, reported by adult male offenders, revealed that, like impulsivity, certain facets of aggression were better at discriminating between the three groups in the study. More specifically, hostility, was able to discriminate between all groups of adult offenders and was the only subcomponent of aggression that was able to differentiate between groups. In particular, adult offenders who were identified as vulnerable and currently self-harming, self-reporting higher levels of hostility than those identified as vulnerable but not currently self-harming and both vulnerable groups self-reported higher levels of hostility than those in the general prison population. In young offenders, those who were currently self-harming scored higher than those who were vulnerable but not currently self-harming and the general prison population. Hostility is

characterised by thoughts of ill-will, perceived injustice and negative cognitions about others (Berkowitz, 1993) and is assessed in the BPAQ using questions such as 'I wonder why I feel so bitter about things' and 'at times I feel I have gotten a raw deal out of life'. Thought of in a different way, individuals who score highly on this aspect of the AQ are perhaps more likely to think that controlling their thoughts and actions is outside of their control and could be linked with a tendency towards rumination and an external locus of control. Hostility is referred to as the cognitive component of impulsivity and Selby, Anestis, and Joiner (2008) believe that when experiencing intense negative affect, individuals at risk of self-harming may ruminate on these emotions or use thought suppression as an attempt to stop ruminating. Similarly, ruminating about a provocation or hostile attribution increased the likelihood of displaced aggression, such as self-harming behaviours (Bushman, 2002). There have been a number of studies which suggest an association between having an external locus of control and an increased risk of suicide (Evans, Owens, & Marsh, 2005; Lauer, de Man, Marquez, & Ades, 2008; Topol & Reznikoff, 1982). Research also shows that hostility is a risk factor for more hidden forms of aggression such as self-directed aggression (e.g. Archer & Webb, 2006; Crick, 1995; Eckhardt et al., 2004) and has been found to be useful in predicting suicide attempts (Brezo, Paris, & Turecki, 2001), with some researchers conceptualising self-harming behaviours as hostility directed inwards (Schneidman, 1969). Therefore, results in this thesis highlight hostility as a potentially important factor in self-harm assessment. It also suggests the need to give those at risk of and vulnerable to self-harming behaviours alternative ways of managing emotions, rather than internalising negative emotions.

Trait anger, as measured by the AQ (Buss & Perry, 1992), refers to the affective or expressive component of aggression and is assessed using questions such as “sometimes I fly off the handle for no good reason” and “I sometimes feel like a powder keg ready to explode”. Undeniably, many researchers (e.g. Liebowitz, 1987) view self-harm as anger that is directed inwards, which may account for the significant differences found in this thesis between those who are currently self-harming and those who are vulnerable but not currently self-harming and the general prison population. Research puts forward the idea that aggression is accompanied by underlying emotional (anger) and cognitive (hostility) processes (Buss & Perry, 1992). Hill and Dallos (2012) suggest that self-harm is anger that is directed inwards and it has been proposed that aggression directed inwards (i.e. self-harming) is used as an avoidance technique to regulate anger in the short term (Gardner & Moore, 2008). The way in which individuals regulate anger may be an important consideration in understanding its relationship to self-harming behaviour. This fits with the EAM proposed by Chapman et al. (2006) who suggest that when faced with negative emotions such as anger, self-harm is used as a way of getting rid of this unwanted emotion. Self-harm thus provides temporary relief from emotions that are perceived as overwhelming by the individual. In support of this model, further research has found that self-harm is often used as a way of managing negative affect more generally (e.g. Chapman & Dixon-Gordon, 2007; Klonsky, 2011) and it is suggested that having a predisposition towards negative emotions seems to make it more likely that a person will self-harm (e.g. Dear, 2008). Another alternative perspective to that of emotional regulation is the proposition that self-harm is used as a way of punishing oneself (Klonsky, 2008; Miller & Fritzon, 2007) and it is hypothesised that being brought up in an invalidating environment (e.g. Linehan,

1993) may contribute to the self-reported inwardly-directed anger and hostile attributions amongst individuals who self-harm (e.g. Herpertz et al., 1997; Klonsky et al., 2003). It could also be that those vulnerable to self-harming may be less able to put their feelings into words and therefore, use self-harming as a way of inwardly directing the emotion. Alexithymia is the term used to describe the phenomena of not being able to put feelings into words. Henderson (1974) suggested that self-harming can be seen as a dysfunctional care-eliciting behaviour. Hawton et al. (1999) found that repeated self-harm was associated with trait anger and those that engaged in such behaviour had higher levels of anger and histories of antisocial behaviour than those who did not (Laye-Gindhu & Schonert-Reichel, 2005). In this respect, it may be that people self-harm as a way of communicating what cannot be spoken and therefore, those who cannot put their feelings into words may need treatment to help them to be able to articulate how they are feeling (Allen, 2008b). Results outlined in the current thesis also give additional support to the idea that self-harming is used as a dysfunctional coping strategy.

Physical aggression, which is an external expression of aggression, was only able to discriminate between those who are currently self-harming with those in the general prison population. Physical aggression is the self-reported tendency for a person to use physical force when angry or distressed and high scores on this aspect of the AQ suggest that the person may find it challenging to manage urges to use physical aggression when faced with a problem. Physical aggression is measured on the AQ by asking questions such as “at times I can’t control the urge to hit someone” and “I have become so mad that I have broken things”. Whilst self-harm and physical aggression seem to be completely disparate behaviours, it has been proposed that

they are linked (e.g. Freud, 1905/1953, 1917/1953; Lubell & Vetter, 2006; Plutchik, 1994; Plutchik et al., 1989a; Plutchik & van Praag, 1990) and from a psychodynamic perspective, suicide is viewed as aggression turned inwards. However, as Lubell and Vetter (2006) point out: “we really do not know whether suicidality causes violence, vice versa, or whether they are interchangeable outcomes of the same general process” (p.172).

Similar to the hostility data with adult offenders at HMP Leeds, self-reported verbal aggression, was also able to successfully discriminate between both vulnerable groups with those who were currently self-harming scoring higher than those who were vulnerable but not currently self-harming. This facet of aggression was also successfully discriminated between those currently self-harming and those in the general prison population. Verbal aggression on the AQ concerns being argumentative and is assessed using questions such as “I tell my friends openly when I disagree with them” and “when people annoy me, I may tell them what I think of them”. Because verbal aggression is considered to be a ‘milder’ form of aggression than physical aggression, it could be that verbal aggression, like anger and hostility, is related to other mechanisms such as rumination and poor communication skills (e.g. Borders, Earleywine, & Jajodia, 2010; Nock, 2009) and importantly, were the only facets of aggression that could discriminate between those currently self-harming and those vulnerable or at risk.

Interestingly, although the general pattern of results were similar to those of adult offenders, there were no differences found between groups in young offenders, apart

from the subcomponent of Hostility. Specifically, hostility was able to distinguish between those who were vulnerable and currently self-harming and those in the general population, with vulnerable and currently self-harming adult offenders self-reporting higher levels of aggression than those in the general population.

Comparisons between adult and young offenders revealed that, in general, young offenders are more aggressive than adult offenders, which again, fits with previous research (Clarbour et al., 2009) and similar to the impulsivity data, may be indicative of ceiling effects.

Results in this thesis, together with previous research (e.g. Brown, Comtois, & Linehan, 2002; Chandler, 2014; Chapman et al., 2006; Chapman & Dixon-Gordon, 2007; Holm & Seveinsson, 2010; Klonsky, 2007; Klonsky & Glenn, 2009; Laye-Gindhu & Schonert-Reichl, 2005; Mannion, 2009; Miller & Fritzon, 2007; Snow, 2002), seem to suggest that people who self-harm may do so as a way of managing difficult thoughts and emotions (in this case, anger and hostility) and support findings that propose that anger and self-harming behaviours may support the same underlying function (Nijman & à Campo, 2002; Plutchik, 1995; Robertson, Daffern, & Bucks, 2012). This may be particularly compounded in men, who are known to have difficulties, in comparison to women, in emotional awareness (Barrett, Lane, Sechrest, & Schwartz, 2000). Whilst this thesis only measured the negative thoughts and emotions hostility and anger, existing research has emphasised the importance of negative affect in the development and enactment of aggression (Miller & Lynam, 2006; Rothbart, Ahadi, & Hershey, 1994). It is proposed that this tendency to feelings of anger, without having the capacity to be able to deal with these feelings in a proactive way, may lead to behaviour which is directed inwards and can result in

self-harming behaviours. Alternatively, it might be proposed that it might not necessarily be about a person's ability to manage negative emotions that is key in influencing aggression and risk of self-harming, but instead their ability to flexibly utilise alternative regulatory strategies (Werner & Gross, 2010). These results suggest that interventions are needed to provide alternative ways to manage and regulate angry outbursts that may lead to self-harming behaviours, for example, relaxation techniques. In particular, given that hostility involves rumination and feelings of resentment towards others, cognitive based therapies (e.g. DBT; Linehan, 1993) that work to increase mindfulness and interpersonal effectiveness skills while decreasing rumination and interpersonal conflict may greatly benefit prisoners who have a tendency to externalise their emotions. Mindfulness may be helpful in both decreasing over engagement (e.g. rumination) and avoidance behaviour by bringing the attention back to the 'here and now' with a non-judgemental attitude (Hayes & Feldman, 2004). Current literature provides evidence for the use of mindfulness as a way of managing aggressive thoughts, feelings and behaviours (Singh et al., 2012; Williams, Dugan, Crane, & Fennell, 2006).

Furthermore, results have highlighted the co-occurrence of aggression and self-harm and suggest that prisoners who are aggressive may also be at an increased risk of engaging in self-harming behaviours (e.g. Shaw et al., 2004; Fruehwald et al., 2004; Fazel et al., 2008; Hayes, 2010; Humber et al., 2011, 2013; Webb et al., 2012). So, although aggression directed inwards and aggression towards others is often separated for the purposes of risk assessment and treatment, these findings suggest that perhaps if someone is vulnerable to hurting themselves, they may also be vulnerable to hurting other and perhaps the two could be considered together. In a

review by Hillbrand (2001), it was suggested that although self-harming and aggression often co-occur, the risk assessment and management of these two behaviours is usually separated. It could therefore be suggested that these risks may be able to be assessed and managed together in this group (e.g. Apter et al., 1991; Garrison et al., 1993; Hillbrand, 1995; Nicholls et al., 2006). Thinking jointly about aggression towards others and aggression towards the self together, has important consequences for the risk assessment and treatment of self-harm. Given the well documented and significant increase in violence, self-harm and suicide rates in UK prisons (Ministry of Justice, 2017) in recent years, suitable measurement and a better understanding of aggression in forensic samples is critical. Existing practices tend to highlight the differences in the management and needs of prisoners who commit violence and those who are more self-destructive, however, these findings along with previous studies (e.g. Buri et al., 2009; Cairns et al., 1988; Flannery et al., 2001; Hillbrand, 2001; Hunt et al., 2006; Lewinsiohn, Rohde, & Seeley, 1994; Lidberg et al., 2000; Mann et al., 1999; Virkkunen et al., 1989) have found that a significant proportion of individuals with a history of aggression tended to have a history of self-harm. This suggest that externally directed and inwardly directed aggression may not be as distinct as once was thought and knowledge of one might inform assessment of the other; providing a more holistic approach to assessment and treatment.

Another aim of this thesis was to explore whether trait impulsiveness was associated with subscales of trait aggression in adult and young male offending samples, and whilst this has never been done before exploring the subscales of the measures, previous studies have reported an association between impulsivity and aggression

(e.g. Brent et al., 2002; Dervic et al., 2006; Dougherty et al., 2004; Grosz et al., 1994; Jollant et al., 2005; Keilp et al., 2001; Korn et al., 1997; Mann et al., 2005; Michaelis et al., 2004; Oquendo et al., 2000; Renaud et al., 2008). Results showed that for adult offenders, there were significant correlations with impulsivity for all subcomponents of aggression, however, impulsivity showed the strongest relationship with hostility (accounting for over 30% of the variance). In contrast, whilst there were significant correlations with impulsivity for all subcomponents of aggression, the strongest association with impulsivity in young offenders was anger (accounting for just over 26% of the variance). Mindfulness as a way of controlling aggression has been endorsed as part of the “third wave” of cognitive-behavioural techniques (e.g. Howells, 2010; Wright et al., 2009). It is possible that mindfulness can be used to reduce a person’s impulse control that is characteristically connected to aggression-triggering actions (e.g. Caspi, 2000; Gottfredson & Hirschi, 1990; Moffitt et al., 2011) and be used to teach individuals to be less avoidant of intense emotions (Linehan, 1993; Hayes et al., 2011; Williams, Dugan, Crane, & Fennell, 2006). As suggested by Howells et al. (2010), the integration of mindfulness techniques into already established programmes or interventions, may be particularly useful in situations where the person responds impulsively to emotions. Therefore, the risk factors associated with aggression such as impulsivity and negative emotions such as anger, may potentially be manageable through mindfulness.

Overall, these results support previous research that suggests a relationship between inwardly driven aggression (such as self-harm and suicide) and outwardly directed aggression such as violence (e.g. Angst & Clayton, 1986; Korn et al., 1992; Links et al., 2003; Swogger et al., 2011). Reactive aggression has been linked to negative

affect (e.g. Swogger et al., 2010; Tellegan, 1982) and may account for the relationship between reactive aggression and self-harm, especially under stressful conditions. Current models suggest that impulsivity and aggression may contribute to an increased risk in self-harm and suicide due to an increased risk in reacting emotionally, on impulse (e.g. Mann et al., 1999). Hillbrand (1992, 1995, 2001) proposed that inward and outward directed aggression co-occur owing to a number of shared biological, psychological and social risk factors, as well as protective factors. Since aggression and impulsivity are so pervasive in self-harming behaviours, and in offending behaviour in general, they are an obvious target for intervention (Gvion & Apter, 2011). These results therefore may highlight the possibility of using interventions which are designed to target impulse control in violent and aggressive offenders (for example the Thinking Skills Programme (TSP) or the young offender equivalent, Juvenile Estate Thinking Skills Programme (JETS)), may also be useful with offenders who are at risk of self-harming. The link between impulsivity and aggression is well documented and self-reported mindfulness and impulsivity are strongly related to each other (Bowlin & Baer, 2012; Brown & Ryan, 2003). It has been argued that mindfulness can be used effectively to decrease aggression and self-harm through learning ways to managing impulses. (Brown, Ryan, & Creswell, 2007; Teper & Inzlicht, 2013). Therefore, individuals who are able to mindfully manage their emotions may be better attuned to when self-control is required before impulsive reactions occur.

8.3 Limitations and Future Directions

Results outlined in this thesis should be considered alongside its limitations. Whilst the BPAQ and the BIS-11 are generally considered the ‘gold standards’ for measuring self-reported trait aggression and impulsivity, respectively, there have been lots of criticism with regards to the samples with which the tools were established and developed using and the proposed factor structures (e.g. Stanford et al., 2009; Haden & Shiva, 2008). This is something which we cannot ignore in this thesis, in particular, what aggression and impulsivity look like for young people in custody. Further, given that reducing negative affect is commonly referred to as an antecedent to self-harming behaviour, it is likely that high levels of negative urgency may increase vulnerability (Taylor, Peterson, & Fischer, 2012) and our results suggest that the assessment of negative urgency may be important when assessing risk for future self-harming behaviour. Two studies of particular note indicate that self-harmers are often considered as having high levels of negative urgency; the tendency to act impulsively when feeling distress and lack of consideration for the consequences (e.g. Glenn & Klonsky, 2010; Lynam et al., 2011; Whiteside & Lynam., 2001). This may be a particularly important facet of impulsiveness in this sample of adult offenders, as non-planning impulsiveness was the only subcomponent of impulsivity that was able to discriminate across all groups and impulsivity was best able to predict hostility. This also fits with the proposal by Moeller et al. (2001), who put forward the idea that individuals who are highly impulsive are predisposed towards unplanned decisions, with little thought to the negative consequences of these actions and may indicate that for adult offenders, this is a particularly important aspect of impulsivity in relation to self-harming behaviour. Using self-report measures such as the UPPS-P (Cyders et al., 2007;

Whiteside & Lynam, 2001), which measures urgency specifically (both positive and negative), may be useful in further studies in order to explore more affective aspects of impulsive behaviour.

An additional limitation is the reliance on self-report to measure aggression. Future studies may benefit from using objective, behavioural or observational measures in combination with self-report. Given the distinction between reactive and proactive aggression, the STAXI (Spielberger, 1991), which provides a measure of anger experience (State and Trait Anger) and anger expression (Anger Out, Anger In and Anger Control), may also be a useful measure to test within the current samples and groups. A study that included both measures subjective and objective measure, could highlight which typology appears to have more promise in distinguishing individuals at high risk of self-harming behaviours.

The current study focused on self-harm in general, as identified by the ACCT process, irrespective of suicidal intent. This approach to define self-harm is consistent with the Prison Service definition and the national guidance (National Collaborating Centre for Mental Health, 2004; Royal College of Psychiatrists, 2010), however, it doesn't take into account the distinction that other researchers make between suicidal and non-suicidal self-harm (e.g. Klonsky, 2011). As such, it might be that different conclusions would arise if the current study had incorporated suicidal intent into the design of the groups (e.g. distinctions made between premeditated and more impulsive and unplanned acts). Future research could therefore explore this further. However, whilst self-harm and suicide attempts may

be separated by the intent to end one's life, this information may be irrelevant to the staff that are in charge of dealing with any sort of self-harming behaviour, irrespective of intent. This viewpoint is taken by Lanes (2009), who states that whilst it is important to note that self-harmers can be further separated into those who self-harm with and without suicidal intent, this does not qualify as a basis for judging the possible consequences of the threatened or enacted self-harm and as the final result is likely to be similar in terms of management cost and impact, given that prison management are ultimately concerned with preventing both self-harm and suicides (Daniel, 2006), it may make sense to group all self-harming behaviours together, regardless of their intent (Horton et al., 2014).

Whilst affect regulation as a function of self-harm is the most prominent explanation, it is also suggested that self-harming behaviours also serve at least 6 other functions (Klonsky, 2007). This could have several implications, including proposals that whilst it is clear that self-harming behaviour is multi-functional, they may not be mutually exclusive. For example, different functional models may share overlapping concepts but describe differing aspects of the same behaviour. Further research in this area should acknowledge that whilst multiple functions may still co-occur and overlap, some functions may serve a more primary function and may be more likely to indicate repeated and longer term self-harming behaviours. Therefore, it would be useful to assess which risk factors and functions best predict repeated and long term self-harm and consequently, what aspects are most likely to reinforce this behaviour. In particular, this study focused solely on the negative emotions of anger and hostility (expressed through aggression and measured by the BPAQ) but future research would benefit from exploring other negative emotions such as sadness,

frustration and loneliness, which may also play a central role in the affect regulation model but serve different functions to anger and hostility or aggression as a whole.

Furthermore, future research should explore not only why self-harm reduces negative affect but also how. One hypothesis is that self-harm may be used as a distraction from acute negative emotions in a similar way to how distraction is used to cope with depression (Just & Alloy, 1997). In this instance, it is suggested that people who self-harm feel more able to deal with physical as opposed to psychological pain. Other theories suggest a biological basis, suggesting that releasing of endorphins has an important part to play in alleviating acute negative affect (Favazza & Conterio, 1988; Richardson & Zaleski, 1986). Therefore, exploring the biological basis for self-harm is essential to enhance our understanding of why some people self-harm.

8.4 Implications for Practice and Intervention

Whilst in 2007, Her Majesty's Prison Service introduced a risk management system called ACCT (Assessment, Care in Custody and Teamwork; Ministry of Justice, 2011) to improve the care given to prisoners at risk of self-harm or suicide, it does not incorporate a standardised diagnostic test to estimate the risk of future self-harm. Clearly, with the increases in self-harming across the male estate, there are still significant improvements that need to be made in assessing and treating these vulnerable prisoners. The findings in this thesis suggest that the process of reception screening may need further development to ensure that the correct risk factors are being identified. This study offers hope in the predictive properties of both the BIS-11 and the BPAQ, particularly in adult male offenders. However, the limited

evidence for the use of screening instruments for self-harm in prisons led Perry, Marandos, Coulton, and Johnson (2010) to conclude that there is a clear need for additional psychometric research on the validity of suicide and self-harm behaviour screening tools in offender populations. Furthermore, the behavioural tasks used showed potential in highlighting vulnerability to self-harming and, due to their sensitivity to changes over time, show promise in being used to evaluate changes in behaviour following intervention to target impulsive behaviour.

Currently, the treatment of self-harming behaviours is often symptom based (targeting mental health problems such as depression or low mood), however, this research suggests that taking a more functional approach could be more effective. A theme across each of the theories described in this chapter is the idea that people often engage in self-harming behaviours without a lot of planning and that this behaviour is often as a result of intensive negative emotions. Self-control is considered to be one of the most important aspects of personality due to its role in environmental adaptation (Baumeister & Alquist, 2009; Baumeister, Vohs, & Tice, 2007; Coyne & Wright, 2014; Gailliot et al., 2007). Several studies have suggested the potential role of self-control in aggressive behaviour (e.g. DeWall, Finkel, & Denson, 2011; Manuel et al., 2015). The findings in this thesis highlight the overbearing need to provide those who are vulnerable or at risk of self-harming a way of managing their emotions and being able to control their behaviours in a more proactive way through, potentially existing, psychological interventions already being delivered in the Prison Service, but currently being used to target another behaviour. Thinking about impulsivity and its link to aggression against the self and aggression against others together has significant implications for the assessment

management and prevention strategies used to reduce self-harming behaviours, as current practices tend to neglect the similarities and instead focus on the differences. There is potential from this research that risk identification and management of both behaviours could be streamlined and that current programmes that focus on aggression and managing emotions such as anger, for example CALM (Controlling Anger and Learning to Manage it) and TSP (Thinking Skills Programme) or the juvenile version JETS (Juvenile Estate Thinking Skills), could be developed for use with those at risk of self-harming. Although future studies will be needed to confirm our findings and determine the mechanisms through which impulsivity, aggression and self-harming behaviours are linked, this thesis offers an insight into an area which had not been explored in the current sample and our findings raise the opportunity to use existing therapeutic approaches but perhaps in a more effective and holistic way. In relation to the treatment of self-harm amongst young offenders, Welfare and Mitchell (2005), developed a programme called 'Access' and combined physical activity and targeted self-esteem, impulsivity, locus of control and externalising behaviours including aggression and self-harm and it may be that this programme could be developed for use with adults and rolled out across the young people's estate.

Emotion regulation clearly has a central role in theories of self-harm and is described in great detail in Linehan's (1993) theory. The conceptualization of emotion regulation emphasizes the functional nature of emotional responses, with emotion dysregulation referring to maladaptive responses to emotions. Specifically, Gratz, and Roemer (2004) broadly define emotion regulation as the awareness, understanding, and acceptance of emotions, as well as the ability to control

behaviour in the context of emotional distress. Within adult samples, mindfulness-based interventions are growing in popularity and are gaining an increasingly supportive evidence base (Baer, 2003). Therefore, mindfulness techniques could potentially be used to teach increased impulse control and decreased emotional reactivity to difficult feelings and thoughts, in vulnerable groups of offenders.

Despite all this, there are complicating factors which need to be considered, given that the focus is on reducing self-harming in custodial settings. Custodial settings differ from clinical settings in that prison officers (who deal with the prisoners on a daily basis) have relatively little training in dealing with mental health issues (Ivanoff & Hayes, 2001; Short et al., 2009). It is then perhaps due to this lack of training that prison staff has been found to view self-harming as manipulative (DeHart et al., 2009; Dickinson, Wright, & Harrison, 2009; Fish, 2000; Haycock, 1989; Kenning et al., 2010; Short et al., 2009). High incidents of violence and assaults on staff by prisoners with a history of self-harm is also likely to hinder treatment (Young, Justice, & Erdberg, 2006). Therefore, improvements in staff training and support is essential if we are to tackle this issue seriously.

This research highlights the importance of both static and dynamic risk factors in risk management and treatment of vulnerable offenders. Given what we know about the overlap between outwardly and inwardly directed aggression, it may be useful to develop a more comprehensive treatment package for professionals working in prison settings in order that they can spot the signs of increased risk and put appropriate treatment in place to manage such difficult behaviours, perhaps using

existing and already validated programmes that are typically used to target offending behaviours.

8.5 Final Conclusion

In conclusion, individuals high on aggression and impulsiveness are more likely to react to salient stimuli, both internal and external, which could include negative emotions and negative intrusive thoughts. These individuals are highly likely to use self-harming in order to manage these negative urges and in the same respect, are less likely to engage in effortful cognitive processes. Therefore, they are much more likely to engage in behaviours which are 'salient' to them, than to seek out or choose to use more cognitively demanding interventions or strategies. These findings strongly support the notion that interventions with individuals who are currently self-harming should not only focus on the prevention of self-harming behaviours but also work to address the negative emotional states associated with this behaviour. As suggested by the EAM, the examination of emotional regulation and distress tolerance would be valuable in understanding how self-harmers manage their heightened negative emotions. Critically, attempts to understand self-harm in prison have largely been atheoretical in nature (Johnson, Gooding, & Tarrier, 2008) and consequently, whilst possible risk factors have been identified, it has been in the absence of a clear understanding of the underlying rationale as to why some factors (such as increased aggression and impulsivity) create an increased risk in some but not others (Liebling, 2005; O'Connor et al., 2006). Clearly there remains a need for more studies to consider not only individual risk factors associated with self-harming, but also look at the interaction between risk factors for the commencement and maintenance of self-harm in prison and existing models such as the Experiential

Avoidance Model (Chapman et al., 2006), ought to be used to guide future research. This thesis has contributed a unique step forward in being able to successfully differentiate groups of vulnerable offenders, using existing measures. Our theoretical understanding of this link is limited, in part, by our lack of knowledge about the different dimensions of impulsive behaviour and there potential roles in the mediation of self-harming behaviour. Nonetheless, this thesis gives rise to the possibility of using existing programmes in a new and more holistic way.

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Appendices

Appendix I Information Sheet

Thank you for taking the time to decide if you would like to take part in the study. Here are some important things to help you make your choice.

The study will look at how you think and feel in order to find out more about people who self-harm or have tried to take their own life. You don't have to have felt this way or have self-harmed in the past, in order to take part in this research. This will involve asking questions about your thoughts, personality and asking you to do brief computer tasks.

What will I need to do?

- The study will involve you filling out questionnaires, and completing short computer tasks.
- You will be asked to answer questionnaires over your lunch period which I will collect. The computer tasks will take place over 2 sessions and will last approximately 30 minutes each.

What will I get from being part of this study?

- You are not likely to benefit directly from the work, but by taking part it is likely you will help in improving future treatment programmes.
- If you agree or disagree to take part it will not affect your parole, care or life in prison in any way.
- Although you will not receive payment or reward for participation in this study, you will not lose any earnings from times you were taking part in the computer tasks.

Will anyone else see information about me from the study?

- All information you give will remain confidential; nobody will be able to link you to the answers you give.
- All your answers will be stored on a secure computer, or in a locked file. Any information that leaves HMP will not show your name or any link to you.
- Results of the study may be used in publications so that staff in other prisons can use it to improve their treatment of drug problems. No personal information will be used in the publications so no one will know that you have taken part in this study.
- The researcher has to tell staff if you tell them you plan to self-harm, harm someone else, or pose a threat to security.

What if I change my mind later and don't want to be part of the study?

- If you agree to take part you can leave the study at any time without giving a reason why. Your data will simply be removed from the study upon your request.

I am happy to answer any questions you may have before you agree to take part.

Danielle McDermott, Chief Researcher.

Appendix II Participant Checklist and Consent Form

Thank you very much for taking part in the study. This point of this form is to make sure that that you understand what is involved, and sign that you consent to take part.

Please circle YES or NO or Not Applicable (NA).

Have you been able to ask questions and talk about the study?	YES/NO
If you have asked questions have you had fair answers?	YES/NO/NA
Do you understand that you are free to end the study at any time?	YES/NO
Do you understand that you don't have to answer a question and don't have to give a reason why?	YES/NO
Do you agree to the results of the research being published? (N.B. You will not be able to be linked to any published information)	YES/NO
Do you understand that the researcher has to tell someone if you share any intention to commit self-harm, harm someone else or pose a threat to security?	YES/NO
Do you understand that taking part will not affect parole, care or life in prison in any way?	YES/NO
Do you agree to the researcher's access to clinical records, sentence information, and disciplinary information?	YES/NO
Do you give your informed consent to take part in the research?	YES/NO

Signed _____

Institute of Psychological Science,
University of Leeds

Questionnaire Pack

In order to keep your answers confidential, rather than use your name, I would like you to create your own personal participant number by completing the following instructions. This will be a code which will be easy to recreate by you and will not change.

For example:

Please enter below your day date of birth (so 14 if born on 14th Feb), followed by the first and third letter of your first name (so, if your name is Tom, it would be TM), followed by your year of birth (so it would be 82 if you were born in 1982)

My Unique participant code is:

___ ___ (Day date of birth)

___ ___ (1st & 3rd letter of first name)

___ ___ (Year you were born)

Thank you for your time

For researcher only:

ACCT (SH) ACCT (Not SH) Control



Section 1 – Personal Details

Please complete the following questions by writing down the answer in the space provided or ticking the box which best describes you. All of your responses are **strictly confidential** and all results will be **completely anonymous**.

1. What date did you complete the questionnaire?

.....

2. Prison Number

.....

3. Are you:

Remand Sentenced

4. Are you:

Convicted Unconvicted

If convicted, what is your index offense? If un-convicted, what is your alleged offence?

.....

5. What is your age as of your last birthday? (Please write in numbers)

.....

6. What is your marital status?

Single Married Civil Partnership
Divorced Separated Widowed

7. What age did you leave school? (Please write in numbers)

.....

8. Prior to custody, were you:

Employed Unemployed Self-Employed
Retired

9. Is this your first time in prison?

Yes No

10. Do you have a history of mental health problems?

Yes (Go to 10a) No (Go to 11)



10a. If you answered yes to question 9, have you ever suffered with any of the following?

Depression	<input type="checkbox"/>	Bi-Polar	<input type="checkbox"/>	Personality Disorder	<input type="checkbox"/>
Schizophrenia	<input type="checkbox"/>	Anxiety	<input type="checkbox"/>	Psychosis	<input type="checkbox"/>

11. Have you ever intentionally harmed yourself?

Yes (Go to 11a) No (Go to 12)

11a. If yes, when did you last harm yourself? (Please give an estimate if unsure)

Today	<input type="checkbox"/>	Under a week ago	<input type="checkbox"/>	Over a week ago	<input type="checkbox"/>
Over a month ago	<input type="checkbox"/>	Over 6 months ago	<input type="checkbox"/>	In the past year	<input type="checkbox"/>
Over a year ago	<input type="checkbox"/>				

12. Have you ever tried to kill yourself?

Yes (Go to 12a) No (Go to 13)

12a. If yes, when did you last attempt to kill yourself? (Please give an estimate if unsure)

Today	<input type="checkbox"/>	Under a week ago	<input type="checkbox"/>	Over a week ago	<input type="checkbox"/>
Over a month ago	<input type="checkbox"/>	Over 6 months ago	<input type="checkbox"/>	In the past year	<input type="checkbox"/>
Over a year ago	<input type="checkbox"/>				

13. What is your ethnicity?

Asian (Indian)	<input type="checkbox"/>	Asian (Pakistani)	<input type="checkbox"/>	Asian (Bangladeshi)	<input type="checkbox"/>
Asian (Other)	<input type="checkbox"/>	Black (Caribbean)	<input type="checkbox"/>	Black (African)	<input type="checkbox"/>
Black (Other)	<input type="checkbox"/>	Mixed (White and Caribbean)	<input type="checkbox"/>	Mixed (White and African)	<input type="checkbox"/>
Mixed (White & Asian)	<input type="checkbox"/>	Mixed (Other)	<input type="checkbox"/>	Not Stated	<input type="checkbox"/>
Chinese	<input type="checkbox"/>	Other	<input type="checkbox"/>	White (British)	<input type="checkbox"/>
White (Irish)	<input type="checkbox"/>	White (Other)	<input type="checkbox"/>	Other (please specify)	

.....



Section 2a: How you act and think

Please rate each of the following items in terms of how characteristic they are of you. Use the following scale for answering the items. Please **circle** your answer.

This sounds very **unlike** me 2 3 4 5 6 This sounds very **like** me 7

	'Very unlike me'						'Very like me'
1. My friends say I am argumentative	1	2	3	4	5	6	7
2. Sometimes I fly off the handle for no good reason	1	2	3	4	5	6	7
3. I tell my friends openly when I disagree with them	1	2	3	4	5	6	7
4. Some of my friends think I'm a hothead	1	2	3	4	5	6	7
5. Once in a while I cannot control the urge to be violent to another person	1	2	3	4	5	6	7
6. Given enough provocation, I may hit another person	1	2	3	4	5	6	7
7. At times I feel I have gotten a raw deal out of life	1	2	3	4	5	6	7
8. I am sometimes eaten up with jealousy	1	2	3	4	5	6	7
9. I sometimes feel like an explosion ready to blow	1	2	3	4	5	6	7
10. Other people always seem to get the breaks	1	2	3	4	5	6	7
11. I wonder why sometimes I feel so bitter about things	1	2	3	4	5	6	7
12. If somebody hits me, I hit back	1	2	3	4	5	6	7
13. I sometimes feel that people are laughing at me behind my back	1	2	3	4	5	6	7
14. When people annoy me I may tell them what I think of them	1	2	3	4	5	6	7
15. When frustrated, I let my irritation show	1	2	3	4	5	6	7



	'Very unlike me'				'Very like me'		
16. If I have to resort to violence to protect my rights, I will	1	2	3	4	5	6	7
17. I am a calm person	1	2	3	4	5	6	7
18. There are people who have pushed me so far, I have been violent	1	2	3	4	5	6	7
19. I flare up quickly, but get over it quickly	1	2	3	4	5	6	7
20. I can't help getting into arguments when people disagree with me	1	2	3	4	5	6	7
21. I am suspicious of overly friendly strangers	1	2	3	4	5	6	7
22. I have trouble controlling my temper	1	2	3	4	5	6	7
23. I can think of no good reason for ever hitting a person	1	2	3	4	5	6	7
24. I have threatened people I know	1	2	3	4	5	6	7
25. I have become so mad that I have broken things	1	2	3	4	5	6	7
26. I often find myself disagreeing with people	1	2	3	4	5	6	7
27. When people are especially nice I wonder what they want	1	2	3	4	5	6	7
28. I get into fights a little more than the average person	1	2	3	4	5	6	7
29. I know that "friends" talk about me behind my back	1	2	3	4	5	6	7



Section 2b: How you act and think

People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and **circle** your answer. Do not spend too much time on any statement. Answer quickly and honestly.

	Rarely/ Never	Occasionally	Often	Almost always/ Always
1. I plan things carefully	1	2	3	4
2. I do things without thinking	1	2	3	4
3. I make-up my mind quickly	1	2	3	4
4. I am happy-go-lucky	1	2	3	4
5. I don't "pay attention"	1	2	3	4
6. I have "racing" thoughts	1	2	3	4
7. I plan trips well ahead of time	1	2	3	4
8. I am self-controlled	1	2	3	4
9. I can concentrate easily	1	2	3	4
10. I save regularly	1	2	3	4
11. I "fidget" or get distracted at films or talks	1	2	3	4
12. I am a careful thinker	1	2	3	4
13. I plan for job security	1	2	3	4
14. I say things without thinking	1	2	3	4
15. I like to think about difficult problems	1	2	3	4
16. I change jobs	1	2	3	4
17. I act "on impulse" or without thinking	1	2	3	4
18. I get easily bored when working on solving thought problems (crosswords etc)	1	2	3	4



	Rarely/ Never	Occasionally	Often	Almost always/ Always
19. I act on the spur of the moment	1	2	3	4
20. I am a steady thinker	1	2	3	4
21. I change where I live a lot	1	2	3	4
22. I buy things on impulse	1	2	3	4
23. I can only think about one thing at a time	1	2	3	4
24. I change hobbies/interests	1	2	3	4
25. I spend or use credit more than I earn	1	2	3	4
26. I often have random or unconnected thoughts in my mind	1	2	3	4
27. I am more interested in the present than the future	1	2	3	4
28. I am restless during films or talks	1	2	3	4
29. I like puzzles	1	2	3	4
30. I think about the future	1	2	3	4