Offenders with Autism Spectrum Disorder: Screening, Characteristics and Staff Awareness

by

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Doctor of Psychology (Forensic)

Deakin University
June 2014
I am the author of the thesis entitled Offenders with Autism Spectrum Disorder: Screening, Characteristics and Staff awareness

Submitted for the degree of Doctor of Psychology (Forensic)

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<th>Full Form</th>
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<tbody>
<tr>
<td>APA</td>
<td>American Psychiatric Association</td>
</tr>
<tr>
<td>ASD</td>
<td>Autism Spectrum Disorder</td>
</tr>
<tr>
<td>ASDASQ</td>
<td>Autism Spectrum Disorder in Adults Screening Questionnaire</td>
</tr>
<tr>
<td>CJS</td>
<td>Criminal Justice System</td>
</tr>
<tr>
<td>DSM</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>DSM-IV-TR</td>
<td>Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text review</td>
</tr>
<tr>
<td>DSM-5</td>
<td>Diagnostic and Statistical Manual of Mental Disorders, fifth edition</td>
</tr>
<tr>
<td>HFA</td>
<td>High-functioning autism</td>
</tr>
<tr>
<td>ICD</td>
<td>International Classification of Disease and Health Related Problems</td>
</tr>
<tr>
<td>ID</td>
<td>Intellectual Disability</td>
</tr>
<tr>
<td>IQ</td>
<td>Intelligence Quotient</td>
</tr>
<tr>
<td>LFA</td>
<td>Low-functioning autism</td>
</tr>
<tr>
<td>PDD</td>
<td>Pervasive Developmental Disorders</td>
</tr>
<tr>
<td>PDD-NOS</td>
<td>Pervasive Developmental Disorders – Not Otherwise Specified</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
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Abstract

The core characteristics of Autism spectrum disorders (ASD), including social naiveté, a lack of empathy, and fixated interests and routines, have been suggested as precipitants to problematic behaviour. Findings regarding the possible link between ASD and offending are inconsistent and limited by methodological challenges. Individuals with ASD face particular difficulties in forensic settings, and cases may go unrecognised due to limited ASD knowledge among criminal justice system (CJS) personnel and the absence of an identification protocol. The aim of this research was to establish CJS personnel knowledge of ASD and to trial an ASD identification protocol in Victorian (Australia) prisons. In study one, clinical \((n=74)\) and assessment \((n=10)\) personnel from Corrections Victoria and a forensic mental health service, completed the Autism Knowledge Questionnaire and Perception of ASD Needs Questionnaire, which were developed and validated in this study. Findings highlighted incomplete ASD knowledge, particularly among Assessment Officers, and agreement from all personnel that individuals with ASD need specific support and recognition in the CJS. In study two, an ASD screening and identification protocol was developed and trialled among Victorian prisoners. Assessment Officers administered the screening tool to 294 prisoners, and it was validated on 85 prisoners during a follow-up clinical interview, involving a checklist of ASD characteristics, the Autism Quotient (Baron-Cohen et al., 2001) and the Empathy Quotient-short (Wakabayashi et al., 2006a). A satisfactory concordance rate was achieved between screening and clinical interview. Nine of the 85 participants displayed characteristics indicative of ASD; social and communication deficits were the most frequent. The limitations and implication of both studies are discussed.
Chapter 1.
Introduction and Overview of Thesis

Autism spectrum disorders (ASD) are lifelong neurodevelopmental conditions marked by impairments in social interaction and communication, together with the presence of a range of restrictive, and often repetitive, behaviours and interests (American Psychiatric Association (APA), 2000). There are wide variations in the level of impairment experienced by individuals with ASD; this is due to the particular manifestations of the characteristics of ASD and the intellectual capacity of the individual. As a result, the clinical presentation and lifelong outcomes differ significantly between affected individuals (Palermo, 2004). Distinctions are commonly recognised through the alternate diagnoses of Autistic Disorder and Asperger Syndrome; however, the non-specific and variable nature of ASD means the disorder is often difficult to diagnose. This is further complicated when the diagnosis is sought in adulthood and/or when mental illness is co-occurring (Ferriter et al., 2001; Kring, Greenberg, & Seltzer, 2008).

Individuals on the autism spectrum present in a myriad of ways across the key domains of impairment. Difficulties with verbal and non-verbal communication are common, and include difficulties in comprehending and using abstract language. Wide variations have been observed in those who have developed speech. Patterns may be pedantic and repetitious and many experience difficulty with the pragmatic or social use of language, and in understanding the subtleties involved in social interactions (i.e., body language, facial expression and tone of voice). As a result, they may have a limited ability to form reciprocal relationships, which stems from difficulty identifying the emotional states of others and responding appropriately.
A preoccupation with a particular interest area can manifest in a number of ways, such as a fascination with dates and times, classifying or memorising facts about a particular subject or the hoarding of particular types of objects. The intensity or focus of an interest area can be considered problematic when it impacts daily social and occupational functioning (APA, 2000; Baron-Cohen, 2008).

Several characteristics of ASD may predispose an individual to offending behaviour. Social naiveté may render them vulnerable to being manipulated by others (Murrie, Warren, Kristiansson, & Dietz, 2002). Bizarre and socially inappropriate behaviours may arise from their obsessions with particular objects or activities (Murrie et al., 2002; Smith & O’Brien, 2004). According to Palermo (2004), their particular obsession with routines may prompt aggressive outbursts when these are disrupted. Furthermore, aggressive or other antisocial behaviours may arise from their lack of insight and empathy for others and the difficulties they have in understanding social cues (Katz & Zemishlany, 2006; Murrie et al., 2002; Stokes, Newton, & Kaur, 2007). Individuals with ASD often have difficulty considering what others are thinking, as a result they may have difficulty understanding the effects of their actions on others; and may not understand the importance of rules, social conventions or morals (Baron-Cohen, 2008; Haskins & Silva, 2006). Frustration may be triggered by a hypersensitivity to the behaviour of others or by misinterpretation of the intent of others.

Nonetheless, as noted in a review by Bjørkly (2009), there is a dearth of systematic research on the frequency and character of offending behaviour in this population. Current research findings are both inconsistent and limited. The available evidence mainly comprises case reports and examinations of narrow populations.
within secure psychiatric settings. Despite these methodological limitations and research findings that individuals with ASD are largely law abiding, the range of potential predisposing factors and the available anecdotal evidence suggests that individuals with ASD may be at a higher risk of involvement with the criminal justice system (CJS) when compared to the general population (Kumagami & Matsuura, 2009; Scragg & Shah, 1994). Conversely, many people have contested this view and have demonstrated rates of offending behaviour among individuals with ASD is consistent with, or lower than, rates of offending behaviour among the general population (Hippler, Viding, Klicpera, & Happê, 2010; Mouridsen, Rich, Isager, & Nedergaard, 2008; Scragg & Shah, 1994). Others have reported that the vast majority of individuals with ASD are meticulous rule followers that adhere to the law, possibly more consistently than typically functioning individuals (Frith, 1991; Hall, Godwin, Wright, & Abramson, 2007; Woodbury-Smith, Clare, Holland, & Kearns, 2006).

Although there is increasing recognition that some people with ASD are at risk of offending and that some of these individuals enter the CJS, relatively little information is known about the character of these individuals and their offending behaviour, specifically in Australia. It is likely that people with ASD may go unrecognised in forensic populations, due to the interference of co-morbid psychiatric conditions or the difficulties inherent in diagnosing adults with ASD (Kring et al., 2008; Tantam, 1991). In addition, recognition may largely depend on the knowledge base of the CJS personnel. Although there is anecdotal evidence that this knowledge is often lacking, and indications that some personnel may confuse the characteristics of mental illness with disability (Modell & Mak, 2008), there is little empirical evidence regarding their specific knowledge of ASD.
The specific aims of this thesis are:

1) To establish the extent of knowledge about ASD among Corrections Victoria Assessment Officers and CJS personnel and to consider the potential impact of their knowledge on the identification of, and service delivery to, individuals with ASD; and

2) To design and trial a protocol for identifying prisoners with characteristics indicative of ASD in the Victorian prison system and to examine the features of ASD which may have influenced the offending behaviour of any identified prisoners.

1.1. Overview of Thesis Chapters

Following the current introductory chapter, the thesis is comprised of a review of the literature (chapters 2-4), two empirical studies (chapters 5 and 6) and an overall conclusion (chapter 7).

Chapter 2

An overview of ASD and its diagnostic criteria are provided in the second Chapter. Consideration is given to conditions comorbid with ASD, including psychiatric disorders and intellectual disability. Australian and international prevalence findings are reviewed and the increase in prevalence rates is examined in the context of an increase in awareness of ASD and the development of screening tools. Assessment and diagnostic approaches for ASD are explored, with an emphasis on the difficulty of diagnosis in adulthood.

Chapter 3

The literature regarding ASD and offending behaviour is examined in this Chapter. The focus is on three main areas: the prevalence of offending behaviour
among people with ASD; theoretical explanations for offending behaviour in ASD; and the characteristics of ASD that could predispose an individual to offending behaviour. Prevalence findings are explored in two ways: rates of offending behaviour among groups of individuals with ASD; and rates of ASD among forensic samples. A number of case studies are utilised to explore offending behaviour among individuals on the autism spectrum.

Chapter 4

The identification of individuals with ASD in the CJS is explored in Chapter 4. In particular, the difficulties faced by these individuals throughout their involvement with the CJS are examined in relation to the characteristics of ASD. Research on the screening and identification of ASD is examined, with a focus on methodology and on the levels of knowledge of CJS personnel.

Chapter 5

The knowledge and understanding of ASD among CJS professionals is explored in the first empirical study of the thesis. Chapter 5 outlines the reasoning and design for the study, and states the specific hypotheses to be investigated. The methodology of the study is described, and the results are presented. The chapter concludes with a discussion of the results in relation to the literature.

Chapter 6

The second study was a pilot of a two-stage screening and interview protocol aimed to identify individuals with characteristics of ASD in the Victorian prison system. Following an outline of the reasoning and design of this study, the specific hypotheses are posed, the methodology is described, and the results are presented. Findings are discussed in relation to the available literature.
Chapter 7

The key findings of the two studies are reviewed in the final chapter. This includes a discussion of the theoretical and clinical implications of the findings. Finally, a number of specific recommendations for future research in these areas are made.
Chapter 2.

Overview of Autism Spectrum Disorders

Autism was first described in 1943 by Leo Kanner after observing a group of extremely talented, yet severely troubled children (Frith, 2008). The behaviours displayed by the children included a preference to be alone, a strong desire for sameness, a fascination and attachment to objects, impairments in communication and islets of ability (Frith, 1991; Wing, 1991). Kanner titled the abnormal features of these eleven children as early infantile autism. Coincidently, at around the same time, Hans Asperger published his account of children who presented with similar characteristics to those described by Kanner. He described deficits in communication, social interaction and idiosyncratic interests. These observations led to the first descriptions of Asperger Syndrome, a condition with similar core deficits to autism; however with marked differences in presentation and level of deficit (Frith, 1991; Wing, 1991). Asperger Syndrome did not receive a great deal of attention until Lorna Wing translated Hans Asperger’s original paper into English in 1981 (Asperger, 1991; Wing, 1981). At this time there was a growing awareness of autism and an increase in the publication of research and case studies (Frith, 1991).

The diagnostic criteria for autism and Asperger Syndrome have changed with successive editions of the American Psychiatric Association’s (APA) Diagnostic and Statistical Manual of Mental Disorders (DSM), and the International Classification of Disease and Health Related Problems (10th Edition; ICD-10); the two major diagnostic systems used internationally (APA, 2000; World Health Organisation (WHO), 2007). The DSM criteria are utilised in this thesis and thus the ICD will not be discussed in detail. Changes to the ASD criteria in the recently published DSM-5 have led to alterations in the conceptualisation of ASD. These changes occurred
during the completion of this thesis, as such, both DSM-IV-TR and DSM-5 criteria will be considered. The conditions commonly co-morbid with ASD, the rates of ASD within Australia and internationally, and the assessment and diagnosis of ASD will also be explored in the chapter.

2.1. Autistic Disorder and Asperger Syndrome (DSM-IV-TR)

Autistic Disorder and Asperger Syndrome are classified under Pervasive Developmental Disorders (PDD) in the DSM-IV-TR. Pervasive Developmental Disorders are characterised by severe and pervasive impairments in the development of language, socialisation and behaviour (APA, 2000). The DSM-IV-TR defines five subtypes of PDD: Autistic Disorder; Rett’s Disorder; Childhood Disintegrative Disorder; Asperger’s Disorder (referred to as Asperger Syndrome throughout this thesis) and PDD - not otherwise specified (PDD-NOS).1

The DSM-IV-TR diagnostic criterion for Autistic Disorder incorporates three domains of impairment: social interaction; impairment in communication; and restricted, repetitive patterns of behaviour and interests. Characteristics from each domain are required for a diagnosis (see Appendix A). Further, a diagnosis requires marked impairment in at least one of the domains prior to age three (APA, 2000; Frith, 2008). The diagnostic criteria for Asperger Syndrome (see Appendix B) incorporate similar core characteristics to Autistic Disorder. Unlike Autistic

1The subtype of PDD-NOS includes atypical presentations where there are severe and pervasive impairments in communication, social interaction or behaviours, but they do not meet the criteria for Autistic Disorder or Asperger Syndrome (APA, 2000). Childhood disintegrative disorder and Rett’s disorder vary from Autistic Disorder and Asperger Syndrome with a fairly distinct set of diagnostic criteria (APA, 2000; Kabot, Masi, & Segal, 2003).
Disorder, Asperger Syndrome requires age-appropriate cognitive development, and intact language and communication abilities (APA, 2000).

Longstanding controversy surrounds the distinction between Autistic Disorder and Asperger Syndrome; with debate centred around if they are synonymous or in fact discrete diagnostic entities. The diagnostic criteria for Autistic Disorder and Asperger Syndrome differ in terms of the frequency and severity of the characteristics, however the core features vary only marginally. Differences between the two diagnoses have been identified across the core areas of impairment, including cognitive profiles (Koyama, Tachimori, Osada, Takeda, & Kurita, 2007) and social abilities (Klin, Pauls, Schultz, & Volkmar, 2005; Saulnier & Klin, 2007). However, there is a large body of evidence that suggests the two diagnostic entities are synonymous (Howlin, 2003; Macintosh & Dissanayake, 2004, 2006; Manjiviona & Prior, 1995; Mayes, Calhoun, & Crites, 2001; Ozonoff, South, & Miller, 2000).

When compared to Autistic Disorder, individuals with Asperger Syndrome have been shown to have greater social interests, a more intact theory of mind, age appropriate language abilities, and are likely to exhibit more pedantic speech. Social abilities are a common factor used to distinguishing the two disorders; individuals with Asperger Syndrome have demonstrated greater social difficulties than those with Autistic Disorder (Klin et al., 2005; Saulnier & Klin, 2007). Differences have also been identified in cognitive profiles, for example, individuals with Asperger Syndrome have been shown to have significantly greater cognitive abilities when compared to individual with Autistic Disorder, specifically in relation to vocabulary and comprehension abilities (Koyama et al., 2007). However, the research highlighting differences between the two disorders often have methodological
limitations, particularly around the classification of ASD (APA, 2000; Bennett et al., 2008; Klin et al., 2005; Saulnier & Klin, 2007).

At the other end of the debate, it is argued that there is no clear evidence to support a distinction between Asperger Syndrome and Autistic Disorder (Howlin, 2003; Macintosh & Dissanayake, 2004, 2006). For example, Howlin (2003) found no significant differences between the cognitive and symptom profiles of 76 adults with either autism \(n=34\) or Asperger Syndrome \(n=42\). There were also no group differences in social abilities, communication skills, or stereotyped patterns of behaviour. Furthermore, in a comparison of the motor abilities of 21 children with a diagnosis of Asperger Syndrome or Autistic Disorder there were no significant differences between groups across the three measured domains of motor functioning (Manjiviona & Prior, 1995). The descriptions of the children’s characteristics were derived from parental report as opposed to clinical observation; this is a key limitation of the findings. In their studies, both Howlin (2003) and Manjiviona and Prior (1995) employed modified versions of the Asperger Syndrome diagnostic criteria whereby a diagnosis of Asperger Syndrome was based on a current presentation without evidence of delays during early childhood.

A number of findings provide support for the empirical position that Asperger Syndrome and Autistic Disorder are best conceptualised as part of the same autism spectrum rather than separate diagnoses (Manjiviona & Prior, 1995). There is a great deal of overlap in the manifestation of core symptoms and very few qualitative distinctions between the diagnoses have been demonstrated (Macintosh & Dissanayake, 2004). Research findings have not demonstrated different courses in development, aetiology or core impairments and at present there is not enough evidence to support the view that Autistic Disorder and Asperger Syndrome are two
distinct developmental disorders (Freeman, Cronin, & Candelam, 2002; Macintosh & Dissanayake, 2004, 2006; Tryon, Mayes, Rhodes, & Waldo, 2006).

2.2. The Autism Spectrum

Autism is no longer considered a narrow diagnostic category. Originally, autism was seen categorically; a person was either affected or they were not (Frith, 2008). The DSM-IV-TR definition utilised a categorical approach to define PDD (APA, 2000). It is now accepted, however, that the core characteristics of ASD manifest differently in each individual, and range from mild to severe levels of impairment (Baron-Cohen, 2008; Gabriels & Hill, 2007). Due to the diversity in clinical presentation, ASD have been more recently described as varying along a spectrum of impairment in communication, social interactions, interests and behaviour (La Malfa, Lassi, Bertelli, Salvini, & Placidi, 2004; Saulnier & Klin, 2007). While many individuals are able to live relatively independent lives, others require life-long support and care.

At the severe and highly debilitating end of the spectrum is the classification of low-functioning autism (LFA). These individuals commonly have limited, or no verbal skills, display substantial stereotypic repetitive behaviours (Brereton, Tonge, & Einfeld, 2006) and are largely classified as intellectually disabled (IQ <70) (Maljaars, Noens, Jansen, Scholte, & van Berckelaer-Onnes, 2011; Mayes et al., 2011). As a result, they have marked learning difficulties demonstrated through an inability to organise and apply information (Boser, Higgins, Fetherston, Preissler, & Gordon, 2002; Saulnier & Volkmar, 2007). Deficits in social impairment are common with a marked lack of interest in interacting with others (Mayes et al., 2011). Communication deficits affect social interaction abilities and low-functioning
individuals have been shown to communicate less frequently and have less motivation to communicate or interact with others than high-functioning individuals. Individuals with LFA have been shown to use communication to regulate the behaviour of others rather than for social interaction (Maljaars et al., 2011). Understanding and regulating emotions is often impaired among these individuals and they may express their distress in an unusual manner. Atypical motor mannerisms are also common; they may be clumsy or engage in rhythmic body movements including rocking or hand flapping (Baron-Cohen, 2008; Frith, 1989).

Asperger Syndrome and high-functioning autism (HFA) sit at the more cognitively able end of the spectrum. These individuals typically have age appropriate cognitive abilities (IQ >70), and experience the core characteristics to a less debilitating extent than lower-functioning individuals (Brereton et al.; Koyama et al., 2007; Matson, Wilkins, & Ancona, 2008; Mayes et al., 2011). Individuals with HFA or Asperger Syndrome are commonly able to live relatively independent lives, maintain employment and interact with others. However, marked impairments in communication, social interaction, and emotional recognition are often present (Frith, 1989; Koyama et al., 2007).

The concept of the autism spectrum is both well recognised and clinically useful. Despite differences in the profiles of individuals who fall at each end of the spectrum, it has not been possible to conclude that Asperger Syndrome, HFA and LFA are distinct disorders. Alternatively, they appear to form part of a spectrum from mild to severe severity of impairment (Boucher, Bigham, Mayes, & Muskett, 2008; Macintosh & Dissanayake, 2004; Maljaars et al., 2011; Mayes et al., 2011; Ozonoff et al., 2000; Tryon et al., 2006). Levels of impairment are not distinguished in the DSM-IV-TR criteria (APA, 2000; Rinehart, Bradshaw, Brereton, & Tonge,
2002); however, literature regarding the conceptualisation of the autism spectrum was recognised in the recently published DSM-5.

2.3. Current Diagnostic Definitions

The recent publication of the fifth edition of the DSM (DSM-5) has led to significant changes to the definition and classification of ASD (refer to Appendix C) (APA, 2013). The PDD subgroups have been replaced with the single domain of ASD; one of five classifications under Neurodevelopmental Disorders (Kurita, 2011). The APA research and expert panel based this revision on evidence of a lack of specificity and sensitivity of the separate diagnoses under PDD in the DSM-IV-TR (APA, 2000; Kapp & Ne’eman, 2012; Woolfenden, Sarkozy, Ridley, & Williams, 2012).

Revisions to the criteria required for an ASD diagnosis have resulted in more comprehensive criteria, which require greater symptomology when compared to the DSM-IV-TR criteria (Gibbs, Aldridge, Chandler, Witzlsperger, & Smith, 2012; Matson, Belva, Horovitz, Kozlowski, & Bamburg, 2012a; Worley & Matson, 2012). The level of impairment is ranked on one of three levels of severity (APA, 2013). Similar to the previous requirement, the DSM-5 criteria requires characteristics of ASD to be present during early development, however it has acknowledged that symptoms may not be apparent due to social learning, or until social demands exceed abilities.

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2 Neurodevelopmental disorders subtypes as listed in the DSM-5: Intellectual Disabilities; Communication Disorders; Autism Spectrum Disorders; Attention-Deficit/Hyperactivity Disorder; Specific Learning Disorder; Motor Disorders; Other Neurodevelopmental Disorders
Concerns regarding the widespread impacts of the DSM-5 criteria for ASD have been raised, specifically in relation to the removal of Asperger Syndrome, the reduction of core areas of impairment and the potential impact on diagnosis and prevalence rates. Some researchers have described the new criteria as vague and general, with suggestions that there is a need for greater clarity and objectivity, with observable points of reference (Wing, Gould, & Gillberg, 2011; Worley & Matson, 2012). These changes have led to significant contention among professionals and researchers in the field (Szatmari, 2011; Wing et al., 2011).

Changes have been made to the specification of the core areas of impairment. Specifically, deficits in communication and social interaction have been combined onto the single domain of social/communication deficits. This includes impairments in an individual’s ability to maintain the verbal and non-verbal forms of conversation (Wing et al., 2011). To improve the sensitivity of the criteria, affected individuals must meet both areas of impairment. These changes were supported by the literature, which has shown that impairments in social interaction relate to an individual’s lack of interest and pleasure in communicating with another (Kuenssberg & McKenzie, 2011; Wing et al., 2011; Worley & Matson, 2012).

A number of potential problems related to the removal of Asperger Syndrome from the DSM have been raised. For example, Wing et al. (2011) maintain their longstanding view that the characteristics of ASD are best defined on a continuum from low levels of impairment to significant deficits in social and occupational functioning. Nonetheless, they raised concern about the consequences of removing Asperger Syndrome on the basis that individuals who were previously diagnosed may no longer qualify for medical and social services. Prior to the release of the DSM-5 criteria, individuals with Asperger Syndrome strongly objected to the
possible loss of their label. There is often preference given to one diagnostic title over another due to possible stigmatism; for example, an individual with Asperger Syndrome may identify with the behavioural conceptualisation of the term, without the suggestion of cognitive deficits that comes with other labels (Gensler, 2012; Wing et al., 2011). As such, there are clinical implications arising from the removal of Asperger Syndrome from the DSM, including anxiety and confusion (Ghaziuddin, 2010; Kaland, 2011). Despite the adjustments required of these individuals, the move to a dimensional conceptualisation of ASD removes the ambiguity around the Asperger Syndrome domain (Gensler, 2012; Szatmari, 2011).

Concerns have been raised regarding the impact of the DSM-5 ASD criteria on diagnostic accuracy and prevalence rates. Recent research findings have found that the DSM-5 criteria are less sensitive than the DSM-IV-TR criteria for Autistic Disorder, that a diagnosis requires greater symptomatology and that there is a reduction in the number of individuals identified by the DSM-5 criteria when compared to the DSM-IV-TR criteria (Matson et al., 2012a; Worley & Matson, 2012). In a sample of 208 children and adolescents, Worley and Matson (2012) found a 32.3% decrease in the prevalence of ASD when employing the DSM-5 criteria as opposed to the DSM-IV-TR criteria. Taheri and Perry (2012) reported 37% of 131 children with a diagnosis of Autistic Disorder or PDD-NOS no longer met the DSM-5 criteria for ASD; this was a statistically significant reduction in prevalence rates across the diagnostic criteria. Furthermore, in an intellectually disabled adult population, Matson et al. (2012a) found a 36.5% decrease in prevalence rates when using the DSM-5 criteria as opposed to the DSM-IV-TR criteria.
Together, these findings suggest that the DSM-5 criteria may fail to capture the higher functioning individuals who remain significantly impaired and may thus affect their access to funded professional and social services. These findings support the increased specificity of the DSM-5 at the expense of decreasing sensitivity (Matson et al., 2012a; Matson, Hattier, & Williams, 2012b; Worley & Matson, 2012). There are, however, a number of limitations to these findings. Data were often recoded from past research against the reworded and re-categorised DSM-5 criteria (Matson et al., 2012a; Matson et al., 2012b). However, two other studies did not find that the DSM-5 criteria led to poor sensitivity (Huerta, Bishop, Duncan, Hus, & Lord, 2012; Mazefsky, McPartland, Gastgeb, & Minshew, 2013). Using the Autism Diagnostic Interview-Revised (ADI-R; Le Couteur, Lord, & Rutter, 2003), and the Autism Diagnostic Observation Schedule (ADOS; Lord et al., 2000) the researchers found high comparability between DSM-IV-TR and DSM-5 diagnoses.

If it is the case that prevalence rates reduce, there are likely to be widespread impacts (Matson et al., 2012a). It is unknown how service providers will determine who is suitable for intervention and their eligibility for funding. Decreased prevalence rates and misdiagnosis will have significant educational, social and economic implications. This leaves questions regarding what will happen to this population as they become adults and no longer qualify for the support services they received as children who were not attaining developmental milestones (Gensler, 2012; Worley & Matson, 2012).

2.4. Prevalence of ASD

In the mid-twentieth century, ASD were thought to be rare. Today they are considered much more prevalent, with estimates of the number of affected
individuals still growing. Findings from epidemiological research into the number of people diagnosed with ASD vary greatly. In a review of 43 epidemiological studies published between 1966 and 2004, Fombonne (2005) reported prevalence estimates ranging from 0.7 to 72.6 individuals in every 10,000.

In Australia, prevalence estimates of ASD range from 9.6 (Williams, MacDermott, Ridley, Glasson, & Wray, 2008b) to 40 (Icasiano, Hewson, Machet, Cooper, & Marshall, 2004; Parner et al., 2011; Williams et al., 2005; Williams et al., 2008b) people per 10,000. The wide range in prevalence is possibly due to methodological and sampling differences. Icasiano et al. (2004) contacted various ASD service providers and diagnoses were confirmed in face-to-face interviews with the researchers. Williams et al. (2008b) requested a report of the numbers of ASD cases from regional service providers, however, only 75% of the service providers contacted provided the data. Furthermore, these methods are dependent on individuals with ASD having contact with service providers. Williams et al. (2005) and Parner et al. (2011) used the Western Australian government registers for ASD cases, although it is believed that the majority of cases are recorded on the register, it does not necessarily account for individuals diagnosed in private practice. Further, studies have various sized target populations, age ranges and gender ratios. Diagnostic standards also differ with some studies employing the ICD-10, and others using various versions of the DSM criteria.

In a 2002 study in the Barwon region of Victoria, Australia, involving paediatricians, special schools and education support services, Icasiano et al. (2004) identified ASD in 177 children aged two to 17 years. This represented a prevalence rate of 39.2 per 10,000 children. Although incidence of Autistic Disorder or Asperger Syndrome were not reported separately, the authors reported that 50.8%
(n=90) of those identified with ASD met the DSM-IV criteria for Autistic Disorder and 26.6% (n=47) met the criteria for Asperger Syndrome. This may be an underrepresentation as 38 children with a previous ASD diagnosis could not be contacted or declined to participate. More recent Australian prevalence rates were derived from a Western Australian sample of 152,060 children aged up to 10 years (Parner et al., 2011). Autistic Disorder was identified in 516 children, which indicated a prevalence rate of 39.3 per 10,000 children. Autism spectrum disorders (including Autistic Disorder, Asperger Syndrome and PDD-NOS) were identified in 678 children (51 per 10,000 children).

Internationally, epidemiological research findings also vary considerably. Prevalence rates per 10,000 people range from 8.6 (Magnusson & Saemundsen, 2001), 22 (Parner et al., 2011; Williams, Thomas, Sidebotham, & Emond, 2008a), 34 (Yeargin-Allsopp et al., 2003), to 94 (Kim et al., 2011). In a 2002 screen of 10,903 individuals from the 1996-1998 birth cohort in England, Chakrabarti and Fombonne (2005) identified 22 children per 10,000 who met the DSM-IV criteria for Autistic Disorder. Asperger Syndrome was identified in 11 per 10,000 children. Lazoff, Zhong, Piperni, and Fombonne (2010) reported consistent prevalence rates among a sample of 23,635 school children aged five to 17 in Montreal, Canada. Of these, 60 had a diagnosis of Autistic Disorders as per the DSM-IV, a prevalence rate of 25.4 per 10,000. A further 23 children met the criteria for Asperger Syndrome (9.7 per 10,000 children). Variations in these prevalence rates are possibly due to similar methodological and sample size difference to those mentioned above. Target population size varied from 10,903 (Chakrabarti & Fombonne, 2005) to 404,816 (Parner et al., 2011); age ranges also varied considerably across the studies.
Rates of ASD have grown considerably over the past two decades (Baron-Cohen, 2008; Fombonne, 2005). There is debate in the literature regarding whether this increase is due to an overall rise in the cases of ASD or whether past research has underestimated prevalence rates (Fombonne, 2001, 2005). Possible explanations for the apparent increase include improved awareness (Fombonne, 2003; Simonoff, 2012); changes in the methodology employed in prevalence research, including sample characteristics, diagnostic methods and terminology (Bartley, 2006; Fombonne, 2001); the nature and extent of support offered to affected individuals and their families throughout their childhood, thus impacting identification and increased access to ASD and disability services (Elsabbagh et al., 2012; Fombonne, 2005; French, Bertoney, Hyde, & Fombonnez, 2012; Simonoff, 2012). It has also been suggested that the prevalence of ASD has in fact increased, although there is currently insufficient empirical evidence to support this claim (French et al., 2012; Nassar et al., 2009; Prior, 2003; Wing & Potter, 2002).

2.5. Conditions Co-morbid with ASD

Concomitant conditions often occur in individuals with ASD. These include, but are not limited to, intellectual disability (ID) and mental illness (Baron-Cohen, 2008; Tsakanikos et al., 2006). It has been suggested that those with an intellectual impairment experience the characteristics of ASD to a greater, more debilitating extent (Brereton et al., 2006). The manifestation of mental illness in individuals on the autism spectrum is complex and due to communication difficulties, individuals with ASD can have difficulty describing their emotional experiences. This can lead to difficulties in the identification and treatment of mental illnesses (Ghaziuddin, Ghaziuddin, & Greden, 2002; Saulnier & Volkmar, 2007). Importantly, the
occurrence of a co-morbid condition in individuals with ASD has been linked with the expression of problematic and antisocial behaviour (Gillberg & Billstedt, 2000; Mazzone, Ruta, & Reale, 2012; Newman & Ghaziuddin, 2008).

### 2.5.1 Intellectual functioning.

Historically, ID was defined as having an IQ of less than 70 as measured by a comprehensive and standardized neuropsychological assessment (APA, 2000). However, the recently published DSM-5 has removed the IQ criteria and now bases the severity of ID on adaptive functioning. An individual’s support requirements are determined in line with functioning needs. Presentations of ID include immature and impulsive behaviour; deficient age-appropriate knowledge; memory and attention difficulties; and poor adaptive functioning (APA, 2000; Cockram & Underwood, 2000). Studies have indicated ASD and ID are highly co-morbid (Fombonne, 2005), however, an accurate and consistent relationship has not been determined and the pathogenesis and aetiology have not been validated. It is therefore important to consider these disorders as distinct diagnoses (La Malfa et al., 2004).

It has been estimated that rates of ID among individuals with ASD varies from 67% (Chakrabarti & Fombonne, 2005), 70% (La Malfa et al., 2004), 81% (Fombonne, Du Mazaubrun, Cans, & Grandjean, 1997), to 84% (Magnusson & Saemundsen, 2001). In an evaluation of 21 epidemiological studies in which intellectual functioning was assessed in addition to ASD, Fombonne (2005) identified that nearly 70% of individuals with ASD had an intellectual impairment. Chakrabarti and Fombonne (2005) conducted a population prevalence study on the rates of ASD in a birth cohort from 1996 to 1998 in England. Within those identified as having Autistic Disorder (n=24) and where intellectual functioning could be
determined \((n=21)\), 67\% were identified as having an ID \((n=14)\). Similarly, in an American study involving the identification of affected children (aged 3 to 10 years) through community organisations, health centres, primary physicians, and diagnostic centres, Yeargin-Allsopp et al. (2003) reported that 68\% \((n=600\) of 880 cases) of children with autism also displayed intellectual impairment \((IQ < 70)\). In a more recent population study in which 444,154 youth were screened during the years 2001 to 2007, 42.6\% \((n=2,172)\) of those identified with ASD \((n=5,100)\) also had an ID (Idring et al., 2012).

Research on prevalence rates of PDD in samples of individuals with an ID vary from 8\% (Stromme & Diseth, 2000) to 39\% (La Malfa et al., 2004). According to De Bildt, Sytema, Kraijer, and Minderaa (2005), 16.7\% of a sample of 825 children with ID aged 4 to 18 years also met the DSM-IV-TR diagnostic criteria for a PDD. In a population prevalence study of ID \((IQ < 70)\) in Iceland, 21\% \((n=25)\) of participants who were identified as having an ID \((n=119)\) also had ASD (Saemundsen et al., 2010). Co-occurring ASD was identified by Bryson, Bradley, Thompson, and Wainwright (2008) in 28.2\% \((n=48)\) of a sample of adolescents (age range 14 to 20) with an ID \((IQ < 75)\). Methodological differences and a number of limitations to these studies can explain the variation in comorbid rates of ASD and ID. For example, changes in the conceptualisation of ASD over time have led to variation in diagnostic definitions of ASD among early research. There is a lack of methodological consistency with variation in standardised screening tools utilised, size of samples and participant recruitment methods. Sample size has been correlated with prevalence findings, with studies with smaller sample sizes indicating higher prevalence (Fombonne, 2005). Due to methods of recruitment, the diagnoses of participants could not always be confirmed (Idring et al., 2012) or were based on
single case reviews (Yeargin-Allsopp et al., 2003). Furthermore, recruitment from community-based support services (Chakrabarti & Fombonne, 2005; Fombonne et al., 1997) and institutionalised populations (La Malfa et al., 2004) are likely to be overrepresented with individuals who have low cognitive functioning (Bryson et al., 2008).

2.5.2 Psychiatric comorbidity.

Psychiatric disorders are believed to be particularly prevalent among individuals with ASD (Bakken et al., 2010; Gillberg & Billstedt, 2000; Tantam, 2000; Tsakanikos, Sturmey, Costello, Holt, & Bouras, 2007). This includes mood disorders where high rates of anxiety, depression and bipolar are reported among individuals with ASD. Behavioural disorders including, attention deficits hyperactivity disorder (ADHD) and conduct disorder have also been identified among individuals with ASD (Mazzone et al., 2012).

2.5.2.1 Anxiety and mood disorders.

Research over the last decade asserts that depression is one of the most frequent mental illnesses presenting in individuals with ASD (Ghaziuddin et al., 2002; Kim, Freeman, Paparella, & Forness, 2012; Meng-Chuan et al., 2011). In addition to the common symptoms of depression individuals with ASD may also experience an increase in social isolation and defiant and aggressive behaviour that maybe due to difficulties understanding and communicating emotions (Ghaziuddin et al., 2002; Newman & Ghaziuddin, 2008). Communication difficulties make the identification and treatment of depressive illnesses difficult. As a result, feelings of depression are often expressed through changes in behaviour (for example, impulsivity), appetite and sleep patterns (Ghaziuddin et al., 2002). Individuals at the
higher-functioning end of the spectrum often have the ability to recognise their social
oddities, awkwardness and differences from their peers. This has been suggested to
be a strong influence on the development of depressive symptoms in these
individuals (Brereton et al., 2006; Sterling, Dawson, Estes, & Greenson, 2008).

Reported rates of depression among individuals with ASD vary from 10.1%
(Leyfer et al., 2006) and 14% (Mattila et al., 2010) to 28.3% in children (Mukaddes,
Hergüner, & Tanidir, 2010); 43% in adults (Sterling et al., 2008) and 37.1% in adults
with both ASD and ID (Bakken et al., 2010). Furthermore, in a clinical sample of
119 children, Kim et al. (2012) found 73.9% of children displayed dysthymia, with
the number growing to 84% and symptoms worsening at a five year follow-up. The
variation in these rates are likely due to more affected individuals being referred to a
clinic service without considering individuals in the community, further the lack of
consistency in assessment instruments employed throughout the research may have
affected outcomes. Although rates of depression appear to be elevated in individuals
with ASD, it is possible that they are under-diagnosed due to communication
impairments, specifically their difficulty understanding and expressing feelings and
emotions (Ghaziuddin et al., 2002).

Along with depression, anxiety disorders commonly present with ASD and
can manifest in a multitude of ways (Bakken et al., 2010; Kim et al., 2012; Meng-
Chuan et al., 2011; Tsakanikos et al., 2007). The core features of ASD may be
exacerbated by feelings of anxiety; for example poor adaptability to change is
frequent among this population and disruptions to daily routines and rituals
commonly result in increased distress or an increase in the frequency and severity of
ritualistic behaviour (Brereton et al., 2006; Frith, 2004; Soderstrom, Rastan, &
Gillberg, 2002). Due to the frequent and often intense nature of ASD characteristics,
anxiety often goes undiagnosed in this population (Frith, 2004; Kuusikko et al., 2008; Tantam, 2000). Anxiety may arise from bullying or victimisation. Victimisation is a common experience for those with ASD (Shtayermman, 2007), and which may impact on understanding and managing emotions, self-esteem and suspiciousness about others. In turn, anxiety and suspiciousness, coupled with poor social adaptability and difficulties communicating, have the potential to result in oversensitivity to external influences, social avoidance, and antisocial or aggressive behaviour (Tantam, 2000).

Rates of anxiety among individuals with ASD vary. In a sample of 50 children with HFA \( (M=12.7 \text{ years}, SD=1.5 \text{ years}) \), Mattila et al. (2010) reported that 58% of the clinical group \( (n=32) \) and 50% of a community group \( (n=18) \) had an anxiety disorder\(^3\). Irrespective of group, specific phobia was the most common anxiety disorder (28% of the total sample). In a clinical sample, Mukaddes et al. (2010) found 78.3% of children \( (N=30; \text{ age 6-15 years}) \) with HFA had an anxiety disorder, with specific phobia also being the most common (53.3% of the sample). In a five and a half year follow-up study of a community-based sample of children with ASD, Kim et al. (2012) found anxiety disorders were present in 56% of the sample. The difference in the prevalence rates of these studies is likely due to the sample characteristics (clinical vs. community samples), all clinical samples reported higher rates of anxiety disorders when compared to community samples. Specific phobias appear to be the most prevalent anxiety disorder.

2.5.2.2 Behavioural disorders.

Impulsivity, hyperactivity and inattention also coexist with ASD (Mazzone et al., 2012; Saulnier & Volkmar, 2007). The rates of comorbid ASD and ADHD are

\(^3\) Eight participants were included in both groups (Mattila et al., 2010)
considerable with estimates ranging from 30% (Leyfer et al., 2006), 44% (Mattila et al., 2010), to 65% (Mukaddes et al., 2010). An inability to maintain attention is not surprising given some of the dominant characteristics of ASD. Social naiveté, lack of insight and self-focused obsessions (Brereton et al., 2006) may impair concentration and often result in hyperactive or hypoactive behaviour (Gillberg & Billstedt, 2000). Brereton et al. (2006) reported disruptive and hyperactive behaviours were significantly more frequent in their sample of 367 young people ($M=7.38$ years; $SD=3.94$) with Autistic Disorder than in a comparison sample of 550 young people with intellectual disabilities ($M=12.14$ years; $SD=4.37$). The Autistic Disorder group also displayed significant deficits in impulse control and their ability to maintain attention. Likewise, Goldstein and Schwebach (2004) had found that inattention and hyperactive behaviours displayed in people with a PDD were clinically associated with the manifestation of ADHD. However, the opposite profile also exists. A subgroup of people with ASD have the ability to attend to a specific topic for extended periods of time (Baron-Cohen, 2008; Tantam, 2000) due to prolonged and intense interests in specific objects or activities (APA, 2000; Klin, Danovitch, Merz, & Volkmar, 2007).

2.6. Gender Differences in ASD

Although findings vary, it is estimated that there is a gender ratio of at least four males to every female diagnosed with ASD (APA, 2000; Kim et al., 2011; Williams et al., 2008b). Some studies however, have reported up to seven (Williams et al., 2008a) and eight (Icasiano et al., 2004) males to every female. It has been reported that females with ASD are more likely to function at the low end of the spectrum and are less cognitively able than their male counterparts (APA, 2000).
Females appear to experience the core autistic characteristics at a more disabling level, particularly social functioning, insight and empathy (Brereton et al., 2006). Gender differences have also been suggested at the high-functioning end of the spectrum, yet may not be as readily detected due to differences in presentation. According to Attwood (2006), females may be more skilled at mimicking behaviour and as such, more likely to be able to copy others and remain undetected. This is consistent with the stereotypes of typical male and female behaviours, females are more able to mimic social behaviour and verbalise their emotions, and less likely to express their frustration via aggressive means. This last point could render males with ASD more likely to come to the attention of professionals (Attwood).

Gender differences are evident in criminal behaviour, with males engaged in significantly more criminal activity than females (Haskins & Silva, 2006). According to current estimates of offending behaviour in six Australian states and territories\(^4\), 77.3% of all offenders were male, while 22.4% were female\(^5\) (Australian Bureau of Statistics, 2013). As a result, males with ASD may be at a higher risk of offending behaviour than females with ASD due to the dominance of both offending behaviour and ASD in males (Haskins & Silva, 2006).

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\(^4\)Includes: Victoria, Queensland, South Australia, Western Australia, Tasmania, Northern Territory and Australian Capital Territory. New South Wales data not included due to different data recording methods in this state.

\(^5\)Remaining 0.3% of unknown gender
Chapter 3.

Forensic Aspects of Autism Spectrum Disorders

A link between ASD and offending behaviour has been suggested since early descriptions of autism and Asperger Syndrome (Asperger, 1991; Wing, 1981). In his original descriptions of Asperger Syndrome in 1981, Hans Asperger posed a possible association between criminal behaviour and what he termed ‘autistic psychopathy’. He presented four cases of children with aggressive tendencies, obsessions with blood, and violent fantasies (Asperger, 1991). In recent decades, the association between ASD and offending behaviour has received increased attention in both autism and criminal justice domains. Importantly, most individuals with ASD are law abiding, meticulous rule followers who rarely, if ever, have contact with the CJS (Frith, 1991; Hall et al., 2007; Woodbury-Smith et al., 2006). Despite the resulting reluctance to link ASD to criminal behaviour (Gomez, 2010; Wing, 1981), research has been undertaken into the prevalence, risk factors and theoretical reasons for offending behaviour among individuals with ASD (Anckarsäter, 2005; Ghaziuddin, Tsai, & Ghaziuddin, 1991; Mouridsen, 2012).

The prevalence rates of offending behaviour among individuals with ASD and the psychological theories that link ASD to problematic and antisocial behaviour are explored in this chapter. In addition, the characteristics of ASD that may increase the risk of offending behaviour are reviewed.

3.1. Prevalence of Offending

A growing number of studies have attempted to determine the rates of offending among individuals with ASD and their involvement with the CJS. Estimates of the rates of offending vary, quite possibly due to methodological
difficulties such as differences in diagnostic criteria and the retrospective nature of a number of studies. As such, there is substantial difficulty in determining the correlation between offending behaviour and ASD (Palermo, 2004). Researchers have used different approaches to examine the possible association between ASD and offending. Rates of offending behaviour have been investigated among samples of individuals diagnosed with ASD, and the rates of ASD have been explored among forensic samples (Ghaziuddin, 2005; Mouridsen et al., 2008). Offending behaviour has been shown to vary across the autism spectrum and comorbid intellectual disability appears to impact negatively on offending behaviour in this population.

3.1.1 Prevalence of offending in ASD.

According to prevalence studies, individuals with ASD are no more likely to engage in offending behaviour than those without ASD. However, the methodology of studies varies, and in particular, control groups are often drawn from different and potentially non-representative subsets of the community.

In a community-based study, Woodbury-Smith et al. (2006) investigated the rate of antisocial behaviour among 25 adults who met the ICD-10 diagnostic criteria for ASD. Illegal behaviour\(^6\) was reported by 48% \((n=12)\) of the ASD group, which was significantly lower than the comparison group of 20 non-ASD volunteer employees of which 80% \((n=16)\) had engaged in illegal behaviour. Formal convictions had been recorded for 2% of the ASD group and no participants in the comparison group. When examining the types of illegal behaviour, individuals in the comparisons group had significantly more drug related offences than the ASD group; and individuals with ASD had significantly more criminal damage offences

\(^6\)Illegal behaviour for which they were not convicted.
(defacing property, graffiti, and vandalism to vehicles) and were more likely to have a history of violence when compared to the comparison group. The authors concluded that the low rates of offending may be due to the law abiding nature of individuals with ASD, however due to the low sample size additional investigation is required.

In a further community-based study Allen et al. (2008) investigated offending behaviour among 126 individuals with Asperger Syndrome who were engaged in a range of community clinical and forensic mental health services. Criminal offences had been committed by 33 (26.2%) of the sample. However, due to a number of limitations in the methodology including extracting the majority of data from files and case notes, a lack of a comparison group, no confirmation of participant diagnoses, and possibly inaccurate rates of offending, the authors could not support the hypothesised relationship between Asperger Syndrome and offending behaviour. As a result of the limitations, the study may have underestimated the relationship between Asperger Syndrome and offending behaviour.

Four studies were identified that recorded ASD and offending data over many years. Firstly, a 25 years (1960-1984) follow-up study explored criminal behaviour among 313 Danish people with ASD, compared to 933 typically developing individuals (Mouridsen et al., 2008). Convictions were recorded for 9% \( (n=29) \) of the ASD group and 18% \( (n=168) \) of the comparison group. This is one of the few studies that employed a matched comparison group, and with findings indicating that offending behaviour is less frequent among individuals with ASD than in typically developing individuals. In a Swedish study, Langstrom, Grann, Ruchkin, Sjostedt, and Fazel (2009) examined the rates of offending among 422 individuals with ASD (317 with autism and 105 with Asperger Syndrome) who had
been hospitalised during 1988-2000. The National Crimes Register indicated 33
(7.8%) participants had past convictions, two (.5%) had been convicted of sex
offences and 31 (7.3%) of violent offences. Offending behaviour was more frequent
in those with Asperger Syndrome (20%) compared to those with autism (3.2%).
Results of this study may not be indicative of all individuals with ASD, and due to
sampling from a hospital, may be overrepresented by individuals with problematic
behaviour.

The rate of CJS involvement was examined among 609 American youth (age
range 12 to 18 years) with ASD between 2000 and 2006 (Cheely et al., 2012). Of the
sample, 32 (5%) had been charged with an offence. Three matched controls were
randomly selected for each participant and comprised youth without ASD who were
engaged with youth justice services. The control group was found to engage in
significantly higher \( p = .02 \) levels of offending behaviour than the ASD group.
However, analysis of the types of offending behaviour indicated that crimes against
the person and school related offences were significantly more prevalent among the
ASD group than the comparison group. It is possible that the control group had
received multiple criminal charges, which is likely to have influenced the differences
in rates of offending between the two groups. Finally, in a follow-up study with 177
of Hans Asperger’s original patients, Hippler et al. (2010) used patient records from
Vienna University Children’s Clinic and the Institute of Medical History archives to
determine rates of offending. Participant age at initial contact ranged from three to
21 years \( M=8.4, SD=2.91 \), criminal record occurred on average 33 years post-
diagnosis (range 23-64 years \( M=42 \) years, \( SD=8.75 \)). A total of 33 convictions were
recorded for eight participants, a conviction rate of 1.3%. The rate of offending
among a matched sample from the general population was 1.25% indicating no increase in conviction rates among individuals with ASD.

3.1.2 Prevalence of ASD in forensic settings.

The prevalence of neuropsychiatric disorders among Swedish youth offenders was examined by Siponmaa, Kristiansson, Jonson, Nyden, and Gillberg (2001). The psychiatric records of 126 offenders aged 15 to 22 years were retrospectively reviewed. Asperger Syndrome was identified in 3% \((n=4)\) of cases, PDD-NOS was found in 12% \((n=15)\) of cases, and no cases of Autistic Disorder were identified. Due to the retrospective nature of the study, diagnosis could not be confirmed in all cases, probable diagnoses were estimated for an additional 5% \((n=6)\) of PDD-NOS cases and 7% \((n=9)\) of Asperger Syndrome cases. The results indicated that youth offenders with ASD were overrepresented, however as only 4% of offenders in Sweden are referred for psychiatric evaluation; this is possibly an underrepresentation of actual ASD rates. The retrospective nature of the study may have also affected the rates of identified ASD. Another Swedish study investigated the rates of ASD among 100 individual’s aged 17-79 years who were under prosecution for severe violent or sexual crimes between 1998 and 2001 (Soderstrom, Nilsson, Sjodin, Carlstedt, & Forsman, 2005). Screening for ASD occurred during a mandated forensic psychiatric assessment for the court. Autistic Disorder was identified in 5% of participants, Asperger Syndrome in 3% and PDD-NOS in 10% of participants (Soderstrom et al., 2005).

In the United Kingdom, Scragg and Shah (1994) examined all 392 patients at Broadmoor maximum security psychiatric hospital for Asperger Syndrome. A three-stage procedure was employed to identify patients; diagnosis was based on screening
patient files, semi-structured interviews with staff and interviews with patients. Six of the 392 patients met the criteria for Asperger Syndrome, a rate of 1.5%. A further three cases displayed clear autistic traits yet a diagnosis could not be confirmed due to limited file information, if these three cases were included in prevalence calculations the rate would increase to 2.3%. The prevalence rate of Asperger Syndrome in the general population at the same time, utilising the same diagnostic criteria, was 0.55% (Ehlers & Gillberg, 1993), nearly four times less than that found at Broadmoor Hospital (Scragg & Shah, 1994). Consistent with these findings, Hare, Gould, Mills, and Wing (1999) screened 1,305 patients at three forensic hospitals in England, reporting that 2.4% \((n=31)\) met the criteria for ASD. An additional 2.4% \((n=31)\) were identified as having a probable diagnosis of ASD. Of the 31 patients with ASD, 66.6% had a diagnosis of Asperger Syndrome and 33.3% had a diagnosis of Autistic Disorder. The authors concluded that individuals with ASD were overrepresented in the three hospitals.

In a study of ASD rates in four juvenile family courts in Japan, Kumagami and Matsuura (2009) found 28 of 428 cases before the courts had a diagnosis of ASD. Asperger Syndrome was identified in 42.8% \((n=12)\) of cases, PDD-NOS in 53.5% \((n=15)\) and Autistic Disorder in 3.5% \((n=1)\) of cases. One of these courts dealt with unique crimes\(^7\) and involved specialist psychiatric services. In this court, 17 of 92 cases had ASD (18.2%); in the other three courts, 11 of 335 cases had ASD (3.2%).

Several issues are inherent in determining the prevalence of criminal behaviour in this population. In particular, the lack of clear and consistent use of terminology, differing diagnostic standards and inconsistent methodology impedes

\(^7\) Unique crimes included arson, sex-related offences and murder
reliable determination (Haskins & Silva, 2006; Scragg & Shah, 1994). Although no strong conclusion regarding prevalence can be drawn from these findings, there is nonetheless an indication that there are many individuals with ASD within the CJS.

### 3.1.3 Rates of offending in comorbid intellectual disability and ASD.

Research has indicated that individuals with an ID are overrepresented in the CJS (Hayes, 1996; Sondenaa, Rasmussen, Palmstierna, & Nottestad, 2008), with rates varying across a number of legal jurisdictions (Hayes, Shackell, Mottram, & Lancaster, 2007; Hayes, 1996; Siponmaa et al., 2001; Sondenaa et al., 2008; Vanny, Levy, Greenberg, & Hayes, 2009; White, Chant, Edwards, Townsend, & Waghorn, 2005). Despite these findings, prevalence research has indicated that individuals with LFA (IQ < 70) are less likely to engage in offending behaviour than those with HFA or Asperger Syndrome (Langstrom et al., 2009; Mouridsen et al., 2008). Hare et al. (1999) and Langstrom et al. (2009) conducted research in two secure psychiatric settings (details reported above) and found individuals with Asperger Syndrome were more likely to engage in criminal behaviour than those with a co-morbid ID.

Anckarsater, Nilsson, Saury, Rastam, and Gillberg (2008) found individuals with ASD in secure forensic setting showed low rates of intellectual impairment, with eight of the 42 participants diagnosed with an ID (IQ < 70). Mouridsen et al. (2008) conducted a follow-up study with 313 individuals with ASD, of which 130 had an ID. At follow-up, 29 had been convicted of a crime (details reported above). The findings indicated that low IQ was not related to risk of criminal behaviour. These findings can be explained by the superior social skills and greater levels of interest in other people evident among the HFA group (Holland, Clare, & Mukhopadhyay, 2002). In addition, higher functioning individuals may be more
capable of engaging in criminal behaviour than those with co-occurring ID (Langstrom et al., 2009).

3.2. Nature of Offending Behaviour

Both population studies and case reports have highlighted offending behaviour among individuals with ASD. However, it remains unknown as to whether this population is over-represented in criminal justice domains. A number of studies have shown higher rates of interpersonal offending among individuals with ASD, when compared to both other offending behaviour and individuals without ASD (Anckarsater et al., 2008; Cheely et al., 2012; Kumagami & Matsuura, 2009) as well as psychiatric comorbidities among offenders with an ASD (Dudeck et al., 2011; Newman & Ghaziuddin, 2008; Ogloff; Warren, Tye, Blaher, & Thomas, 2011). The Australian and New Zealand Standard of Offence Classification categorises offence types across 13 divisions (see Appendix D), six of which relate to offences committed against a person. An interpersonal offence is defined as culpable act that results in harm, or attempted harm, towards a specific person or persons as opposed to an entire community or organisation (Pink, 2011). Interpersonal offending behaviour includes, for example, murder, assault, sexual assault or harassment.

Interpersonal offending behaviour has been reported throughout case descriptions of ASD, including violence, stalking, sexual assault and murder (see, for example, Barry-Walsh & Mullen, 2004; Frith, 1991; Haskins & Silva, 2006; Katz & Zemishlany, 2006; Langstrom et al., 2009; Schwartz-Watts, 2005). In a prevalence study of ASD in the CJS, Cheely et al. (2012) found individuals with ASD were more likely to engage in interpersonal offending than a group of matched controls. Interpersonal offending was significantly more frequent among youth in the ASD
group \((n=40; 38.8\%)\) than the control group \((n=112; 19.8\%)\). The most frequent charge among the control group was against public order \((n=187; 33.0\%)\).

Woodbury-Smith et al. (2006) also found higher rates of interpersonal violent behaviour\(^8\) among 25 community-based individual with HFA \((30\%; n=8)\) when compared to 20 typically developing individuals \((25\%; n=5)\), however the difference between the two groups was not statistically significant. In relation to sexual offending among individuals with ASD, Kumagami and Matsuura (2009) found sexual crime to be more frequent among youth with ASD \((n=5/28; 17.8\%)\) in Japanese juvenile courts when compared to a non-ASD group \((n=16/289; 5.5\%)\). The cases with ASD had marked difficulty in social and interpersonal situations.

Reports of offending behaviour in individuals with ASD that is not against another person are limited and this type of offending appears to be less frequent than interpersonal offending. Siponmaa et al.’s (2001) examination of offending behaviour among youth with ASD indicated that participants with PDD-NOS and Asperger Syndrome committed significantly more arson offences when compared to non-ASD participants. This is consistent with the findings of other studies that investigated criminality among individuals with ASD (Hare et al., 1999; Mouridsen et al., 2008). Property damage offences were reported among 50% of Allen et al.’s (2008) sample of 16 adults with Asperger Syndrome. Likewise, Woodbury-Smith et al. (2006) found adults with ASD were more likely to commit criminal damage offences than a non-ASD comparison group. The case of a man with repeated theft convictions has also been published (Chen et al., 2003).

\(^8\)Behaviour for which they were not convicted.
3.2.1 Psychiatric comorbidity and offending behaviour.

It has been argued that individuals with ASD and a co-occurring mental illness may be at a greater risk of antisocial behaviour and criminal involvement than those without a mental illness (Newman & Ghaziuddin, 2008). High rates of psychiatric disorders have been reported among forensic populations (Dudeck et al., 2011; Fazel & Danesh, 2002; Fazel & Seewald, 2012; Leue, Borchard, & Hoyer, 2004; Ogloff et al., 2011). For example, Siponmaa et al. (2001), established that almost half of the individuals with a PDD in a forensic psychiatric hospital in Sweden had a severe mental illness at the time of committing their offence. Increases in psychiatric symptoms have been shown to trigger criminal and anti-social behaviours in individuals with ASD (Haskins & Silva, 2006; Newman & Ghaziuddin; Palermo, 2004). These symptoms often occur in response to situations that the individual is not able to control, and where there is unpredictability in social situations or changes in routine; for example family relocation and an inability to satisfy preoccupations with objects or activities (Haskins & Silva; Palermo).

Aggression and violence among young people with ASD have also been linked to mood and anxiety disorders (Newman & Ghaziuddin, 2008; Niditch, Varela, Kamps, & Hill, 2012). In their review of 17 publications (37 cases) examining the relationship between Asperger Syndrome and violence, Newman and Ghaziuddin (2008) reported that psychiatric disorders were present at the time of violent offending in 29.7% of cases. A further 54% (n=20) had a ‘probable’ psychiatric disorder at the time of violent offending. Despite concluding that violent offending behaviour in individuals with Asperger Syndrome often coexisted with psychiatric disorders, these authors nonetheless identified six cases (15%) of individuals with Asperger Syndrome who committed violent offences in the absence
of any comorbid mental health conditions. Further, Bleil Walters et al. (2013) examined childhood maltreatment and symptoms of depression among adolescent sexual offenders with ASD. The authors found significantly more symptoms of depression among the group of adolescent sexual offenders with ASD ($n=27$) than the comparison group of non-ASD adolescent sexual offenders ($n=16$). In relation to maltreatment, despite finding no statistically significant differences, a low to moderate history of emotional abuse was found among offenders with ASD ($n=25$), compared to a history of no to minimal emotional abuse among the non-ASD offenders ($n=16$).

Behavioural disorders have also been associated with offending behaviour among individuals with ASD. Symptoms of ADHD are now more commonly observed in adults; they may be impulsive, disorganised and lack concentration (Thomson, 1999). This may result in unstable moods, volatile behaviour, and substance misuse; placing these individuals at a higher risk of criminal involvement (Newman & Ghaziuddin, 2008; Thomson, 1999). In an examination of psychiatric disorders in young offenders, Siponmaa et al. (2001) identified 15% ($n=19$) of the sample had ADHD. There is limited research on co-occurring ASD and ADHD in offending samples. Palermo (2004) described a single case of a man with co-morbid Asperger Syndrome and ADHD who had been involved with the CJS for many years. It was suggested that overactivity, inability to prioritise attention and misinterpretation of social cues contributed to his offending behaviours, which included trespassing and intrusive behaviours. There has been debate as to whether the characteristics of ADHD parallel the characteristics of ASD; for example, poor

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9Two participants who commenced the study were discharged prior to completion of the maltreatment measure.
attention, sleep disturbances, and preoccupations are relevant to both disorders. Consequently, it is often not possible to conclude that two distinct clinical disorders are co-occurring (Barnhill, 2007; Saulnier & Volkmar, 2007). Unlike earlier editions, the DSM-5 allows for a diagnosis of both ASD and ADHD (APA, 2000; 2013).

Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD) are also associated with problematic behaviour, specifically a disregard of authority and violation of the rights of others. Prevalence of comorbid ASD and CD appear to be low and range from 2% (Mattila et al., 2010), 3.3% (Mukaddes et al., 2010), to 14.3% (Kim et al., 2012), and with ODD presenting more frequently than CD in individuals with ASD. Rates of ODD vary due to methodological differences and range from 7% (Leyfer et al., 2006), 16% (Mattila et al., 2010), 27.7% (Kim et al., 2012), to 33.3% (Mukaddes et al., 2010). The characteristics of CD may be an escalation of ASD features, for example low levels of empathy, which may lead to interpersonal conflict (Tantam, 2000). Further, as previously mentioned, experiences of victimisation may lead to hostile behaviour.

Mattila et al. (2010) argued that resolving mental health concerns could reduce problematic and defiant behaviour among individuals with ASD. They found defiant behavioural disorders often occurred in response to feelings of anxiety. This is consistent with the suggestion that assisting individuals with ASD to manage stress and anxiety may reduce the problematic behaviour that could lead to contact with the CJS (Tantam, 2000). The identification and diagnosis of individuals with ASD in the CJS is vital for treatment and rehabilitation of offenders with mental health conditions (Dudeck et al., 2011; Leue et al., 2004; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002).
3.3. Theoretical Explanation for Offending Behaviour in ASD

Two key models are used to frame disability in the literature. The social model and the medical model (Oliver, 2004; Palmer & Harley, 2012). The medical model describes features of the disability as ‘impairments’ or ‘deficits’, and as a problem of the affected individual. Responsibility for the disability thus resides with the individual and alleviation of difficulties and impairments are within the domain of health professionals (Barnes & Mercer, 2005; Mitra, 2006). In contrast, the social model conceptualizes disability as a social construct, that is, the responsibility of the community. The social model emphasises the physical and social barriers in the environment that contribute to the disability. Accordingly, the environment and community must change to enable equality for individuals with a disability (Barnes & Mercer, 2005; Humpage, 2007; Mitra, 2006; Oliver, 2004).

In line with most of the published literature on anti-social and problematic behaviour, ASD and offending, and the rehabilitation focus of the Victorian CJS, this thesis is largely based on a medical model of disability. The rehabilitation of offenders in the Victorian CJS employs a framework based on identifying an individual’s specific risk factors, treatment needs and responsivity issues. These factors then become the target of offense specific interventions by health professionals (Andrews & Bonta, 1994; Polaschek, 2012).

A number of theoretical perspectives have provided explanations for the cognitive and behavioural aspects of ASD that have been associated with offending behaviour. This section evaluates six major theories related to the characteristics observed among individuals with ASD.
3.3.1 Theory of mind.

Theory of mind (or mentalisation) provides explanation for deficits in both social interaction and perspective taking abilities among individuals with ASD. Theory of mind is an innate ability that allows people to automatically infer the beliefs, emotions, desires and intentions of others as well as the self (Baron-Cohen, 2008; Baron-Cohen, Leslie, & Frith, 1985; Wellman, 1993). It relates to an individual’s ability to take on board the perspective of others and read social cues. Those with a deficit in theory of mind are puzzled by people’s behaviour; as a result they may misinterpret the intentions of others and engage in anti-social behaviour (Baron-Cohen, 2009; Baron-Cohen et al., 1985; Hare et al., 1999). The development of theory of mind is purported to be delayed in many individuals with ASD (Baron-Cohen, 2008; Baron-Cohen et al., 1985; Wellman, 1993). Theory of mind has been linked to empathy (Marshall & Marshall, 2011; Proctor & Beail, 2007) and has been suggested to impact offending behaviour among individuals with ASD (Baron-Cohen, 1988; Burdon & Dickens, 2009; Haskins & Silva, 2006). Deficits in theory of mind often result in difficulties in social interaction, forming reciprocal relationships and expressing empathy. In social settings, they may misinterpret social cues or the meaning of others and as a result act inappropriately. Due to deficits in theory of mind, individuals with ASD may be unaware of the impact of their actions and therefore fail to express empathy and remorse (Baron-Cohen et al., 2005a; Barry-Walsh & Mullen, 2004).

Bolton (2006) described an additional theoretical perspective linked to theory of mind and empathy. Bolton theorised that sexual offending in individuals with Asperger Syndrome is based on a lack of emotional regulation, which results in an inability to identify the emotional states of others, and in turn affects social
development. Bolton suggested that this leads to difficulty managing sexual arousal, and when sexual arousal occurs, the lack of understanding in social situations and the misinterpreting of the responses of others can lead to inappropriate sexual encounters. Due to deficits in theory of mind, an individual with ASD who has made a physical sexual advance on another person may interpret the other person’s lack of response as that person’s willingness to engage in the sexual encounter, as opposed to fear or embarrassment. A patient of Bolton’s reported that a woman looking at him indicated her sexual interest. However, research findings on the specific link between offending behaviour and theory of mind in individuals with ASD are limited, and have not necessarily supported the suggested association (Woodbury-Smith et al., 2005a).

3.3.2 Mind-blindness theory.

Baron-Cohen’s (2009) mind-blindness theory is based on deficits in theory of mind among individuals with ASD. The mind-blindness theory states that the development of theory of mind is delayed in individuals with ASD (Baron-Cohen, 2009). They have difficulty considering the perspectives of others, identifying how they may be thinking and feeling, and understanding or rationalising the behaviours of others. This results in a degree of mind-blindness from early infancy until adulthood. Mind-blindness theory explores the social and communication development in individuals with ASD and the delay or lack of development of social skills in this population. This theoretical perspective states that a lack of theory of mind results in children with ASD misreading the behaviour of others and becoming confused and possibly frightened in social situations. It states that social learning is cumulative; however in children with ASD the basic processes are often impaired,
for example failing to look at another person’s face, lack of engagement in pretend play, being unaware that they hurt another person’s feelings and misinterpretation of facial expressions. The mind-blindness theory has a number of limitations, it does not explain the non-social features of ASD, nor does it explain the lack of affective response towards another person.

3.3.3 Empathising-systemising theory.

The empathising-systemising theory is an expansion of the mind-blindness theory, and incorporates the affective and cognitive deficits seen in individuals with ASD (Baron-Cohen, 2009). The empathising-systemising theory explains social and communication deficits, narrow interests and repetitive behaviours among individuals with ASD. Empathy is divided into two components: cognitive (theory of mind) and affective (emotional reaction). To express empathy, an individual must recognise and respond appropriately to another person’s mental state (Baron-Cohen et al., 2005a). Systemising refers to an individual’s desire to engage in or construct a system and identify the rules and limits of a system. A system is defined by a set of criteria or rules that foretell how a system functions. Systems vary widely, examples include: collectable systems (e.g., organising types of items); numerical systems (e.g., a timetable); natural systems (e.g., wind patterns); and social systems (e.g., family structure) (Baron-Cohen, 2009).

The empathising-systemising theory states that low empathy levels and high systemising levels are indicative of ASD. Levels of empathy can be measured using the Empathy Quotient (EQ; Baron-Cohen & Wheelwright, 2004). Systematic thinking and an individual’s interest in following systems can be measured using the Systemising Quotient (Baron-Cohen, Richler, Bisarya, Gurunathan, & Wheelwright,
According to the theory, below average empathy levels can explain difficulties in social interaction and communication (Baron-Cohen, 2009). Empathy is linked to the poor perspective taking abilities and lack of reciprocal social interest seen among individuals with ASD. Systemising abilities in the average and above average range can explain narrow interests, repetitive behaviours, the desire for sameness and poor adaptability. Individuals who have ASD keep their environment constant and maintain predictability by systemising their routines and behaviour. A potential limitation of the empathising-systemising theory is the focus on individuals at the high-functioning end of the spectrum; the majority of research includes participants with Asperger Syndrome and HFA. This is due to difficulties in testing empathy and systemising in lower functioning individuals (Baron-Cohen, 2009; Merritt, 2012).

3.3.3.1 Hyper-systemising theory.

The hyper-systemising theory suggests that systemising among individuals on the autism spectrum is excessive (Baron-Cohen, 2006). According to this theory, individuals with ASD have great difficulty coping with minor variances and will search for meaning and structure. The theory states that individuals with ASD have a strong preference for structured environments and relationships that pose minimal variance. Distress may result when there is maximum variance in the environment or relationships. Baron-Cohen (2006) reviewed the biological literature related to systemising and concluded that males had higher systemising mechanisms than females, and that the systemising mechanisms of individuals with ASD were at the maximum level.
3.3.4 Social learning theory.

Bandura’s social learning theory (Bandura, 1962, 1977, 1978, 2001; Mischel, 2007) has been used to explain the difficulties individuals with ASD face in social and interpersonal interactions. Social learning theory explains the way knowledge is derived from the environment. It states that behaviour is learnt through social interaction and the imitation of other people’s behaviour, this occurs both intentional and unintentionally. Social learning theories are useful in understanding the acquisition and maintenance of behaviours, through observational learning processes, modelling, imitation and the receipt of rewards and punishments (Bandura, 1965, 2001). Social learning processes have been described as a cycle that reinforces itself: learning influences behaviour and in turn, behaviour influences learning. Social learning begins at birth and is a cumulative process. During the second year of life, social learning contributes significantly to cognitive development, the same age where the early signs of autism are displayed in affected children. People, who have not engaged socially as children and learnt the basics of human behaviour, will have vast difficulties, or be unable to learn complex behavioural patterns, including appropriate interpersonal interaction, in adulthood (Bandura, 1965, 1969a, 1969b). As such, individuals with ASD who did not engage with other people as a child may lack interest in interacting with others as an adult. Individuals at the higher end of the spectrum often developed some early social and communication skills; however did not learn the subtle aspects of communication. For example, they may develop language, but they may be unaware of the abstract use of language and have difficulty interpreting body language. This may result in ongoing difficulties in social interaction and relationships (Bandura, 1969a; Frith, 1991; Ormond, Krauss, & Seltzer, 2004).
3.3.5 Weak central coherence theory.

The weak central coherence theory states that individuals with ASD process information by focusing on the small details without considering the global meaning (Frith, 1989). Frith (1989) suggested that individuals with ASD perceive the world as fragmented and have difficulty integrating detailed information to form a coherent, global picture. For example, an individual with ASD can attend to a narrow interest for a long period of time, whereas a typically developing individual would attend to the area briefly then focus on the greater pattern that it fits into (Frith, 1989). When the world is viewed as fragmented and only small sections of someone’s perception are considered, an individual lacks awareness of how their actions interact with the wider environment. High levels of cognitive processing are required to integrate information on a broader level. Weak central coherence has been linked to deficits in theory of mind and is related to systemisation (Baron-Cohen, 2009; Rajendran & Mitchell, 2007).

Weak central coherence theory explains the non-social features of autism, including repetitive behaviour, the preference for sameness and preoccupations (Frith, 1989; Hill & Frith, 2003; Rajendran & Mitchell, 2007). Social factors are also explained by the theory, including a lack of interest in both shared attention and reciprocal interaction (Baron-Cohen, 2008; Hill & Frith, 2003). The ability to focus on the finer details of an object or environment results in strong abilities and comprehensive knowledge in their areas of interest. This often comes at the expense of social and language abilities.

Difficulties focusing on the overall picture of an event or situation can result in difficulties identifying or understanding the consequences of behaviour. Individuals with weak central coherence may be unaware of factors in the
environment that may be impacted by their actions (Gomez, 2010). Haskins and Silva (2006) suggests that weak central coherence among individuals with ASD may be linked to offending behaviour. They reported that criminal behaviour may arise from narrow interests and obsessions while failing to consider the wider consequences of their actions. For example in a case description, Murrie et al. (2002) described a man with Asperger Syndrome who attempted to murder his psychologist to circumvent a potentially unfavourable child custody evaluation. The man was intently focused on gaining custody of his son and failed to consider the consequences of murdering his psychologist (Murrie et al., 2002). Cognitive factors including weak central coherence have been linked to problematic behaviours displayed in ASD (Best, Moffat, Power, Owens, & Johnstone, 2008).

The weak central coherence theory has been criticised for implying that individuals on the autism spectrum cannot consider the wider meaning of an object or their environment. The theory does not specify the point where specific and detailed information is integrated into the wider context (Baron-Cohen, 2008).

3.3.6 Executive dysfunction theory.

Executive function is a collective term for a number of cognitive processes including memory, impulse control, shifting attention and monitoring behaviour (Ozonoff, Pennington, & Rogers, 1991; Stuss & Knight, 2002). Executive functioning assists in the regulation and adaptation of behaviour, and affects the ability to apply cognitive abilities across situations (Martin & McDonald, 2003). Executive functioning occurs in the frontal lobe of the brain and impairments have been shown in individuals with frontal lobe damage and neurodevelopmental disorders (Hill, 2004; Hill & Frith, 2003; Stuss & Knight, 2002).
The theory of executive dysfunction explains a number of behaviours commonly presented among individuals with ASD (Hill, 2004; Rajendran & Mitchell, 2007). Impairments in executive functioning have been related to the rigidity, perseveration and intense focus seen among individuals with ASD, specifically their difficulty switching attention or changing their behaviour when focusing on a special interest area (Baron-Cohen, 2008; Hill, 2004).

Neuropsychological testing of executive functioning has indicated difficulties in abstract and social reasoning and with shifting attention (Anckarsäter, 2005; Lord, Rutter, & Le Couteur, 1994; Rajendran & Mitchell, 2007). The theory states that frustration and irrational responses displayed when an individual’s routines or focus is disrupted are due to dysfunction in the cognitive process of monitoring behaviour (Brower & Price, 2001). Further, executive functioning impairments have been related to difficulties with social interaction and communication.

The relationships between executive functioning and offending among individuals with ASD is unable to be wholly understood due to the limited research specifically focused on executive functioning in this population, and the differences in methodology amongst the research, specifically in measuring executive functioning. Executive functioning has been investigated among offenders and people who have engaged in anti-social or problematic behaviour (Brower & Price, 2001; Dolan & Anderson, 2002; Fullam & Dolan, 2008; Morgan & Lilienfeld, 2000; Woodbury-Smith et al., 2005a). Some studies have found no association between executive functioning and antisocial or offending behaviour. Murphy (2003) found executive functioning was unimpaired in patients with Asperger Syndrome in a high-security forensic psychiatric hospital when compared to patients who did not have Asperger Syndrome. There were a number of methodological limitations including
the measurement of executive functioning and the criteria used to categories the Asperger Syndrome group. Consistently, Woodbury-Smith et al. (2005a) did not find a relationship between offending behaviour and executive functioning among three groups: ASD offenders \((n=21)\), ASD non-offenders \((n=23)\), and a general population comparison group \((n=23)\). The ASD offenders group scored higher on measures of executive functioning and displayed more advanced skills than the ASD non-offenders group. Further, Fullam and Dolan (2008) did not find a significant difference in executive functioning abilities between patients at a secure forensic hospital who had engaged in in-patient violence and those who had not. However, due to there being no control group this study could not determine the extent of the deficits in executive functioning.

Other studies have found an association between executive functioning and offending behaviour (Brower & Price, 2001). Morgan and Lilienfeld (2000) conducted a meta-analysis of 39 published studies to address the methodological inconsistencies and determine the relationship between anti-social behaviour and executive functioning. The analysis revealed that individuals who engaged in anti-social behaviour performed worse on executive functioning tests when compared to control groups. A moderate to large effect size was found. Anckarsäter (2005) found deficits in executive functioning were prevalent among an offender sample, which included those with ASD. Executive dysfunction was significantly associated with anti-social and aggressive behaviour. These findings were consistent with those of Dolan and Anderson (2002) who found executive functioning abilities were significantly lower in violent offenders with personality disorders than a healthy comparison group.
3.4. Characteristics of ASD that may Predispose Affected Individuals to Offending Behaviour

The manifestations of the core characteristics of ASD have been linked to problematic behaviour in some individuals, and may also increase the likelihood of antisocial or illegal behaviour (Gomez, 2010; Murrie et al., 2002). The pursuit of special interests, preoccupations and obsessions with objects, topics, or activities may result in socially inappropriate or illegal behaviour. Difficulties adapting to change, particularly when unexpected, may lead to distress and result in aggressive outbursts. In addition, deficits in communication, difficulties with social interactions and social naiveté can result in inappropriate social advances (Barry-Walsh & Mullen, 2004; Katz & Zemishlany, 2006). Impulsivity, and a poor understanding of morals and socially appropriate behaviour have also been suggested among this population (Newman & Ghaziuddin, 2008). These are linked to low levels of empathy, where individuals with ASD may have difficulty recognising the impact of their actions on others (Haskins & Silva, 2006). Internationally, research has also demonstrated that individuals with a developmental disability or mental illness are at a greater risk of victimisation by others (Mouridsen et al., 2008; Petersilia, 2001). This includes an increased risk of being a recipient of violence or abuse in situations which they find challenging and demanding (Anckarsater et al., 2008; Petersilia, 2001).

3.4.1 Social and interpersonal naiveté.

Individuals with ASD have difficulty understanding the rules that govern social behaviour and display marked difficulties in social interaction (APA, 2013; Wing, 1981). Interest in interacting with other people varies among individuals on
the autism spectrum. Some have very little interest in forming social relationships and prefer to be alone; others have a strong desire for social interaction and relationships, although they may not have the necessary skills in communication and emotional reciprocity to develop successful relationships (Baron-Cohen & Wheelwright, 2003; Frith, 1991). Difficulty with social interaction often occurs in conjunction with an inability to identify the emotional states of others and the misinterpretation of social cues. Individuals with ASD may not respond to, or comfort someone who is upset; alternatively they may latch onto another person and want to spend a lot of time with them regardless of the other person’s reaction (Murphy, 2007; Samson, Huber, & Gross, 2012; Stokes et al., 2007).

When attempting to initiate a romantic relationship, some individuals with ASD behave outside social norms, including inappropriate touching, following a person and making offensive and insensitive comments (Stokes et al., 2007). These individuals may also be unaware of social hierarchies and attempt to engage with health professionals or law enforcement officers on a personal level (Palermo, 2004; Wing, 1997); for example, asking a mental health examiner about their sexual orientation and personal life (Palermo, 2004). Further, many individuals with ASD have difficulty using and interpreting non-verbal forms of communication, for example, their use of facial expressions may be limited (Tantam, 1991; Wing, 1981). Although in many cases, social and interpersonal naïveté is harmless, some misconceptions of social norms can have adverse consequences for individuals with ASD and the community.

The misinterpretation of social rules along with social and interpersonal naïveté has been identified among individuals with ASD who have engaged in offending behaviour, particularly that of an interpersonal nature. In the pursuit of
reciprocal relationships, individuals with ASD may make inappropriate social approaches; for instance, they may intrude on someone’s personal space or touch someone they find attractive (Hall et al., 2007; Ray, Marks, & Bray-Garretson, 2004; Soderstrom et al., 2002). The intent of this behaviour varies. An individual with ASD may unintentionally and unknowingly engage in inappropriate courtship behaviour (e.g., displaying obsessive interest in a person) and in other cases an individual may intentionally threaten a person who does not reciprocate a social advance (Katz & Zemishlany, 2006; Soderstrom et al., 2002; Stokes et al., 2007). Stokes et al. (2007) reported that individuals with ASD were more likely to pursue and monitor someone they were interested in than they were to initiate conversation. They may become obsessive, misinterpret social rules and behave intrusively. Katz and Zemishlany (2006) provided a good illustration of this tendency when describing a man who became fixated on a women who he had only met once. He regularly attended her workplace, where he would quietly stand and stare at her. Eventually, after several anger outbursts, he told her colleague that he was going to kill her because she had not reciprocated interest. These behaviours constituted stalking, which is thought to be common among individuals with ASD (Stokes & Newton, 2004; Stokes et al., 2007).

Estimates of the rates of social impairment among individuals with ASD within the forensic system are limited. Allen et al. (2008) used the Gillberg and Gillberg (1989) criteria for Asperger Syndrome10, as measured by the Asperger Syndrome Diagnostic Interview (ASDI; Gillberg, Gillberg, Rastam, & Wentz, 2001), to identify ASD characteristics among 16 individuals with Asperger Syndrome who

10The Gillberg and Gillberg (1989) criteria includes six domains related to Asperger Syndrome characteristics: Social, Interests, Routines, Speech and Language, Nonverbal Communication and Motor
had engaged in offending behaviour. Deficits in reciprocal social interaction were identified in 100% of the sample. In a second study, Anckarsater et al. (2008) measured the deficits in social interaction among 42 individuals with ASD using two methods. When using the DSM-5, 98% of the sample displayed impairment in social interaction, whereas 100% of the sample displayed social difficulties when employing the Gillberg and Gillberg criteria.

Aggression and Violence.

Social and interpersonal difficulties, coupled with challenges in communication, have been associated with aggressive and violent behaviour among individuals with ASD (Frith, 1991). This includes difficulties managing feelings of anger in social situations and when having to compromise in relationships (Siponmaa et al., 2001). Individuals at the low-functioning end of the spectrum may act in aggressive or violent ways due difficulty communicating and socialising (Brosnan & Healy, 2011). However, the forensic literature focuses on individuals at the high-functioning end of the spectrum. A review of 11 empirical studies on Asperger syndrome and violence identified two key factors that precipitated violent behaviour among participants. Firstly, the desire for friendships coupled with difficulties in social interactions, particularly when the victim did not respond as desired. Secondly, risk of violent behaviour was increased by participant’s reactions to the appearance and behaviour of others (Bjørkly, 2009).

A number of published case studies have linked interpersonal difficulties to violent behaviour. Mawson, Grounds, and Tantam (1985) described a 44-year old male with Asperger Syndrome who had a history of inappropriate social behaviour and violent offending. He was reactive to the appearance of other people; specifically he liked to touch other people’s hair on a first encounter. On one
occasion, when he considered that a girl wearing shorts was indecently dressed, he attempted to stab her and cut her clothing with a hacksaw blade. Baron-Cohen (1988) described a 21-year old man with Asperger Syndrome who had longstanding difficulties assimilating into social groups and forming age appropriate peer relationships. The man had engaged in violent behaviour (hitting, slapping and attacking) towards non-threatening family members and his 71-year old housemate who he describes as his girlfriend. His violent behaviour was reported to be an attempt to rectify relationship troubles.

Similarly, Katz and Zemishlany (2006) described a 22-year old male with a diagnosis of Asperger Syndrome who lacked understanding of socially appropriate behaviour. He was convicted of multiple physical and verbally aggressive attacks on family members, which he was unable to explain. Katz and Zemishlany (2006) reported two further cases where the individuals had significant difficulty interacting in social situations and managing relationships, which was associated with violent interpersonal offending (Katz & Zemishlany, 2006). Finally, Paterson (2008) described a prisoner with Asperger Syndrome who had limited social skills, his misunderstandings of other prisoners often resulted in physical and verbal conflicts.

**Sexual offending**

Problematic sexual behaviours, in particular, have been associated with social and interpersonal naïveté (Stokes & Kaur, 2005; Sutton et al., 2013). The development of sexual desires does not differentiate between individual with an ASD and those without (Stokes & Kaur, 2005; Van Bourgondien, Reichle, & Palmer, 1997). However, due to deficits in social interaction, and often inadequate support systems, it is likely that they lack appropriate sexual knowledge (Stokes & Kaur, 2005). Common themes among reports of sexual offending in individuals with
ASD include a strong desire for intimate relationships, problematic attempts at forming relationships (Bolton, 2006; Milton, Duggan, Latham, Egan, & Tantam, 2002; Ray et al., 2004), and misinterpretation of the responses of others (Haskins & Silva, 2006; Murrie et al., 2002; Woodbury-Smith et al., 2005a). For example, Barry-Walsh and Mullen (2004) described a man with Asperger Syndrome who had a history of sexually deviant behaviour. This man had difficulties with social interaction and often misinterpreted the responses of others. He was charged with assaulting a young girl after she rejected his blunt sexual advances, and he lacked awareness of the impact of his actions on the victim and of the potential legal ramifications. Griffin-Shelley (2010) published the case of a 14-year old male with Asperger Syndrome who had been convicted of sexual offences against younger known male victims, including his younger siblings. Griffin-Shelly determined the predisposing factors to his sexual deviance were his diagnosis of Asperger Syndrome and difficulties in interpersonal relationships. The adolescent described a number of precipitating factors, including a strong desire for interpersonal relationships, an inability to consider another person’s experience (e.g., not understanding why people reacted to him in the way they did), and feeling resentful and hostile towards people who are enjoying a relationship. Rather than being driven by anti-social tendencies, it was the author’s conclusion that the sexual behaviours were an emotional coping strategy that gave the teenager an artificial sense of connection with others. The need for additional supports to enable individuals with ASD to develop healthy sexual behaviours has been emphasised throughout the literature (Bleil Walters et al., 2013; Griffin-Shelley, 2010; Stokes & Kaur, 2005; Sutton et al., 2013).
3.4.1.1 Victimisation.

Individuals with ASD are at a risk of victimisation due to social naiveté, personality characteristics, and a lack of understanding among the general population (Chen & Schwartz, 2012; Johnson & Sigler; Modell & Mak, 2008). The misinterpretation of social conventions coupled with the desire to develop relationships, has been shown to place those with ASD at risk of being exploited by others (Hall et al., 2007; Hare et al., 1999; Stokes et al., 2007). They may experience rejection, bullying, manipulation, and the desire for revenge due to social difficulties and interpersonal conflict in this population (Shtayermman, 2007; Wing, 1997).

High levels of peer victimisation were found among young adults ($M=19.7$ years; $SD=3$) with Asperger Syndrome (Shtayermman, 2007). This occurred in a social context and resulted in ongoing social difficulties for the victim.

Individuals with ASD are often trusting of unfamiliar people (Dewey, 1991). They may fail to recognise the motivations of others, and under their direction, commit or assist in law-breaking activities (Barnhill, 2007; Hare et al., 1999). For example, Murrie et al. (2002) described a man with ASD who had marked social and communication impairments, he had intense preoccupations with women and the opportunity for sexual relationships. This preoccupation rendered him more susceptible to being manipulated by others, for example, he was persuaded to take women shopping for lingerie and performing unusual sexual acts for a group, believing these would lead to a sexual relationship. He also made himself legally vulnerable by allowing women to use his telephone to organise illegal drug deals; again, he incorrectly believed this would lead to sexual contact. Not once did he discuss his intentions or desires with the women (Murrie et al., 2002). Victimisation may result in feelings of stress, frustration and anger (Murrie et al., 2002; Tantam,
2000). Individuals with ASD often ruminate about these stressful experiences, leading to low self-confidence and an elevated level of suspicion towards the perpetrator.

It has been suggested that victimisation in combination with deficits in theory of mind and social naivété, may result in individuals with ASD feeling justified to engage in criminal behaviour (Barry-Walsh & Mullen, 2004; Woodbury-Smith et al., 2006). They may feel their behaviour was an appropriate response to the way they had been treated, thus they do not expect legal action to be taken and often have great difficulty understanding charges laid against them (Barry-Walsh & Mullen, 2004). They may justify criminal behaviour through revenge (Hare et al., 1999). Woodbury-Smith et al. (2006) provided a number of good illustration of this; one report detailed a man who vandalised his work place after he had been made redundant. Another vandalised the seats on his bus with a knife, as he believed his bus driver deliberately failed to stop for him the previous day. In a final compelling case, Murrie et al. (2002) described a 31-year old man who set fire to 11 homes that resembled the homes of people who had bullied him at school.

3.4.2 Special interests and routine behaviour.

Restrictive, repetitive and stereotyped patterns of behaviours and interests are a key characteristic of ASD, and include preoccupations and fascinations with specific items, objects, activities or routines (APA, 2000; Leekam, Prior, & Uljarevic, 2011). Individuals with ASD commonly focus intensely on one or more areas of particular interest (Volkmar & Lord, 2007), or concentrate for extensive periods on organising their environment (Hall et al., 2007). Engaging with a special interest area or routine often reduces stress and anxiety among this population.
However depending on their content, intensity, and rigidity, these preoccupations often significantly impair daily functioning (Russell, Mataix-Cols, Anson, & Murphy, 2005). They can be a barrier to social engagement and to adapting to an environment. The next two sections of this chapter focus on special interests and repetitive behaviours, as they have been associated with problematic and antisocial behaviours in individuals with ASD (Chen et al., 2003; Woodbury-Smith et al., 2010).

### 3.4.2.1 Special interests.

Throughout the literature, the terminology used to discuss special interests varies. The common alternatives include obsessions (Hall et al., 2007; Russell et al., 2005) and circumscribed interests (Klin et al., 2007; Woodbury-Smith et al., 2010). The term special interests has also been used in the majority of publications (Hare et al., 1999; Katz & Zemishlany, 2006; Tantam, 1991; Winter-Messiers, 2007; Winter-Messiers et al., 2007) and has therefore been adopted in this thesis. The range and content of interests varies widely between individuals on the autism spectrum. Common interests include transportation (Winter-Messiers, 2007), time keeping devices (Klin et al., 2007), flames and fire (Barry-Walsh & Mullen, 2004; Palermo, 2004). Others have specific or more unusual special interest areas, for example, particular radio stations (Barry-Walsh & Mullen, 2004), dead end streets (Klin et al., 2007) or flushing toilets (Hare et al., 1999). Complex special interests include memorising facts, for example, heights of buildings, carrot varieties and the player numbers of past sportsmen (Tantam, 1991). These intense interests often result in the individual having expert knowledge in the area (Winter-Messiers, 2007). Many individuals reported a reluctance to discuss their interest areas with others, due to
fear of social rejection and a perception of other people’s poor understanding of their speciality area (Winter-Messiers, 2007).

Despite some reports of a reduction in stress as a result of engaging in special interests (Winter-Messiers, 2007), others have noted that enduring obsessions are intrusive, cause a high degree of distress and consume significant amounts of time (Russell et al., 2005). Klin et al. (2007) found special interests interfered with the learning and social interactions of adolescents with ASD between 25% and 75% of the time ($N=96; M=14.3$ years; $SD=5.9$). Difficulties in relationships and social interactions may be due to difficulty focusing on or discussing things other than the interest area (Klin et al., 2007; South, Ozonoff, & McMahon, 2005). Parents of children with ASD often deemed their child’s special interests to be socially unacceptable (Winter-Messiers, 2007) and interfered in social settings (Klin et al., 2007). Argumentative behaviour often resulted when parents confronted their child about the time spent absorbed in their special interest activity (Winter-Messiers, 2007).

The potential relationship between special interests and offending behaviour is not well understood. It is suggested that offending and antisocial behaviour can be triggered by pursuit of a special interest, or as a result of the nature of the special interest (Dein & Woodbury-Smith, 2010; Hare et al., 1999; Langstrom et al., 2009; Wing, 1997; Woodbury-Smith et al., 2010). In some reports, the relationship is clear, with offending behaviour often directly related to areas of special interest (Wing, 1997). In other cases, however, the relationship is not as clear. For example, Woodbury-Smith et al. (2010) found no direct link between the content of the special interest and the offending behaviour of 71% ($n=15$) of their sample ($N=21$) of
offenders with HFA or Asperger Syndrome. Yet in other cases there was a clear link, for example, in two cases an interest in fire was associated with arson offences.

Research on the rates of special interests among forensic ASD samples is limited and varies from 62% (Anckarsater et al., 2008) to 71% (Hare et al., 1999) and to 88% (Allen et al., 2008). Variation in these estimates is due to differing sample characteristics and methods used to determine special interests. In an investigation of the special interests of patients in a forensic psychiatric hospital in England, Hare et al. (1999) found significantly more individuals with ASD (71%) had special interests than those without ASD (2.6%). Of those with ASD, 25% reported intense preoccupations with weapons and violence including Nazism. Consistently, in Woodbury-Smith et al. (2010) sample, special interests of a violent nature were significantly more frequent among offenders with ASD when compared with non-offenders with ASD.

The possible link between special interests and offending behaviour has primarily been explored in published case reports. Key themes include theft, fire setting and special interests of a sexual nature. For example, the pursuit of special interests has been associated with theft, and offending behaviour itself has also been identified as a special interest or compulsive behaviour (Chen et al., 2003). Chen et al. (2003) described a 21-year old male with Asperger Syndrome who developed an obsession with stealing. He reported that he enjoyed stealing and acted under obsessive impulses. In addition, the man displayed aggressive behaviour when his stealing behaviour was disrupted and when stealing or collecting was prohibited.

A preoccupation with fire, specifically, flames and starting fires has led individuals with ASD to commit offences of arson (Tantam, 1991). Mouridsen et al. (2008) found arson was significantly more likely to be committed by an individual
with a PDD than a group of matched controls. Three of the five ASD cases published by Barry-Walsh and Mullen (2004) involved arson and an obsession with fire. The first reported case was a man who had a special interest with flames that developed from watching a heater pilot light flicker as a child. He was charged with setting fire to a hedge and reported lighting the fire to watch the flames flicker. Another case involved a 24-year old man who had a special interest with lighting fires. He spontaneously lit a fire in the backyard of his family home. In response to being confronted by his father, he became confused and aggressive because he believed he was entitled to light the fire, as a result, he assaulted his father. The third arson case was that of a 24-year old man who set fire to a radio station because their transmission frequency was interfering with the radio station to which he was strongly fixated. Prior to this, he had written a number of letters asking them to stop interfering with his listening times.

In a number of case reports, sexual preoccupations among individuals with ASD have been linked to sexual offending. Preoccupations include sexual relationships, sexual fantasies, genitals and pornography (Milton et al., 2002; Murrie et al., 2002). It has been suggested that these interests are related to a strong desire for intimacy (Haskins & Silva, 2006; Katz & Zemishlany, 2006; Murrie et al., 2002). Five of the six Asperger Syndrome cases presented by Murrie et al. (2002) had an element of sexual preoccupation, four of these cases resulted in serious harm to others. The most compelling was a 33-year old father who had a special interest in paper dolls, he hoarded thousands and he used them to play sexual games, often incorporating photos of himself. He reported an interest in filming and photographing children and admitted to sexually fantasising about them. He was prosecuted for videotaping and showing pornographic films to his daughter and her
peers. When confronted, he immediately confessed and displayed no remorse or insight into the possible affects this had on the children (Murrie et al., 2002).

### 3.4.2.2 Ritualistic and repetitive behaviours.

The desire for routine and sameness is a common element of ASD (Allen et al., 2008; APA, 2000). Individuals with ASD often behave in a ritualistic manner, carrying out the same routines each day or for each activity (Hall et al., 2007). They may have rigid daily routines related to food preparation and personal care. Ordering their environment is also common, items may be arranged in particular patterns or categories, including size, colour and function (Hall et al., 2007; Klin et al., 2007; Tantam, 1991). Engaging in routines and organising items brings order into what individuals with ASD may perceive as an otherwise chaotic environment. The rigid nature and dependence on a routine or ritual can have a profound effect on the lives of people with ASD and may lead to anxiety and frustration when change occurs (Soderstrom et al., 2002; South et al., 2005). An association has been suggested between repetitive and routine behaviour among individuals with ASD and problematic or antisocial behaviour. For example, arranging items in a shop can be problematic if the shop owner interprets the behaviour as vandalism and involves the police (Hall et al., 2007). Distressed and aggressive behaviour may result if routines are not completed or if an individual is disrupted during a routine (Hall et al., 2007; Rapin, 1997). Matson and Rivet (2008) found repetitive behaviours were associated with aggressive and destructive behaviour in adults with HFA. Many families and carers have been the victims of this aggressive behaviour (Smith & O’Brien, 2004).

Information on the frequency of restricted repetitive behaviours among forensic ASD samples is limited, with available published research based on small samples. Rates vary from 13% (Hare et al., 1999), to 56% (Allen et al., 2008), to
60% (Anckarsater et al., 2008) of individuals with ASD in secure psychiatric and community-based settings. Case reports have dominated the literature with reports of restricted, repetitive routines among many forensic ASD case studies (Barry-Walsh & Mullen, 2004; Haskins & Silva, 2006). The link to offending was often indirect with routine behaviour and a desire for sameness related to an increase in emotional distress and poor coping responses. For example, Katz and Zemishlany (2006) described a 22-year old man with Asperger Syndrome who had committed violent offences, he was highly preoccupied with routines, procedures and ceremonies, and he was rigid and inflexible in both behaviour and his thought patterns. Due to his concrete thought processes, he was unwilling and unable to consider the impact of his violent behaviour on his victims. Similarly, Baron-Cohen (1988) reported violent behaviour in a 21-year old man with Asperger Syndrome who was inflexible, preferred sameness and displayed a number of repetitive behaviours. The young man had difficulty adapting to change and became violent when in unpredictable environments.

### 3.4.3 Insight and empathy.

Empathy involves the ability to recognise and understand the perspective of others. It is considered an essential part of normal social functioning that allows us to interact effectively in the social world (Baron-Cohen & Wheelwright, 2004; Blackburn, 1993). According to Jolliffe and Farrington (2007) empathy is a protective factor that inhibits involvement in certain offences, while deficits in considering the mental states of other people have been implicated as a possible cause of offending behaviour (Jolliffe & Farrington, 2004; Jolliffe & Farrington, 2007; Tantam, 1991; Wing, 1981), and aggression (Burke, 2001; Geer, Estupinan, &
Manguno-Mire, 2000). Lower levels of empathy among individuals with ASD have been linked to frustration, interpersonal and other offending behaviour in ASD samples (Tantam, 1991; Wing, 1981). Low levels of empathy associated with anti-social behaviour have been shown to look behaviourally similar to low empathy associated with ASD, which can lead to difficulties identifying these individuals (Sutton et al., 2013).

Empathy has been defined as encompassing cognitive and affective components: perception and discrimination (the ability to use relevant information to recognise, identify and label emotions); perspective and role-taking (the ability to assume and experience another’s viewpoint); and emotional responsiveness (the ability to share another’s feelings) (Feshbach & Feshbach, 1982; Marshall, Hudson, Jones, & Fernandez, 1995). The ability of an individual to empathise with others is likely to be affected by a poor ability to identify emotions (see, for example, Marshall et al., 1995). This highlights the link between empathy and the characteristics of ASD (Baron-Cohen & Wheelwright, 2004).

Individuals with ASD often have difficulty understanding, or fail to consider the effects of their actions on others (Baron-Cohen, 2009; Baron-Cohen et al., 1985). It has been proposed that this may be due to deficits in theory of mind. Individuals with ASD have been shown to place their personal desires over that of their victims and the wider impacts on the community (Hare et al., 1999). For example, Stokes et al. (2007) found that a lack of insight and empathy among individuals with ASD increases the likelihood of engagement in stalking behaviour where a relationship may be pursued in an inappropriate and aggressive fashion. In these cases, the distress experienced by the person of interest is often unnoticed by the offender.
Research on the rates of empathy deficits among forensic ASD samples is limited. Scragg and Shah (1994) screened the files of 392 patients at a secure psychiatric hospital in the United Kingdom and completed follow-up semi-structured interviews with those identified from the file screen. All individuals identified as having ASD ($n=6$) lacked insight into the consequences of their actions and failed to display empathy. In a further United Kingdom study examining the association between empathy, offending and ASD, Woodbury-Smith et al. (2005a) found that offenders with ASD were significantly impaired in recognising fear from facial expressions when compared to a non-offending general population sample. Interestingly, no significant difference was found between the ASD offenders and ASD non-offender groups. More recently, Allen et al. (2008) investigated the offending behaviour of 16 community-based adults with Asperger Syndrome who had engaged in offending behaviour whose details were provided by a known informant. Six of these participants agreed to be interviewed. Insight and empathy were key contributory factors to offending behaviour, with a lack of concern about the consequences of their actions indicated in 94% ($n=15$) of participants, and a lack of awareness of the consequences of their actions indicated in 82% ($n=13$) (Allen et al., 2008).

A number of case reports have also highlighted a relationship between a lack of empathy and offending behaviour, particularly violent offending (Barry-Walsh & Mullen, 2004; Haskins & Silva, 2006). For example, Murrie et al. (2002) published a series of four case studies of individuals with Asperger Syndrome who had committed serious sexual crimes, arson or attempted murder. In all cases, the perpetrators showed no remorse or understanding of the impact of their actions on others. One case, described a 22-year old man confessed to the attempted murder of
his psychologist, he reported believing that the death of the psychologist would result in better outcomes in his child custody case. The young man had limited perspective-taking abilities and did not demonstrate remorse or guilt. Another case described a 31-year old man, who openly shared intimate information during a forensic assessment, including his aggressive sexual fantasies with strangers. He was described as displaying no emotions and appeared to be unaware of the impacts of his explicit disclosure on the two examiners (Murrie et al., 2002).

Schwartz-Watts (2005) published reports of three males with Asperger Syndrome who had committed murder. In all three cases, the perpetrators were unable to acknowledge that they had acted excessively. In the most compelling case, the defendant was confronted by his neighbour over a small amount of money. Following a brief physical altercation, the defendant shot his neighbour several times; he then retrieved a second gun and shot the victim again in the head. When questioned, the defendant stated he had seen people come back to life in movies and wanted to protect himself. He was unable to appreciate the severity of the incident and the excessive measures he had taken (Schwartz-Watts, 2005).

Katz and Zemishlany (2006) described a 22-year old who repeatedly acted in aggressive and violent ways towards his family. The man did not attempt to explain his behaviour and was unable to comprehend the physical or emotional effect of his actions on his family. He reported that he would not have assaulted people if the judge had told him the behaviour was not permitted. Similarly, Haskins and Silva (2006) described the case of a man diagnosed with PDD-NOS and Major Depression who had been charged with murder. The man was accused of starting a fire in his home to claim insurance money; the fire claimed the life of his young daughter and seriously harmed his wife. The man was described as cold and callous; he seldom
displayed emotions, used minimal body language and did not express feelings of shame or regret. He confessed to lighting the fire and openly discussed his plans for spending the insurance money from his daughter’s death.

These case descriptions highlight how a lack of insight and low levels of empathy can contribute to offending, particularly of an interpersonal nature, among these individuals with ASD; with evidence of an alarming detachment from the effects of their behaviour (Wing, 1997). In contrast, others have contended, that offending behaviour by individuals with ASD may not arise from antisocial attitudes, malicious motives, or an intent to hurting others, since this would require an understanding of another person’s experience and feelings, that is, intact theory of mind abilities (Frith, 1991; Wahlund & Kristiansson, 2006).

3.5. Chapter Summary

Individuals with ASD are a heterogeneous population with varied communication, social and behavioural capacities. Although the literature provides inconsistent conclusions regarding a specific link between ASD and offending behaviour, anecdotal findings and theoretical perspectives suggest the characteristics of ASD may place this population at a greater risk of offending behaviour, particularly interpersonal offending. Deficits in social functioning and communication are frequent factors in the offending behaviour seen among this population, in particular, where an individual lacks empathy or is unable to interpret and appropriately respond to social signals. Impairment in controlling inhibitions related to routines and special interests has also been linked to anti-social and aggressive behaviour among individuals with ASD and it is apparent that a coexisting mental illness may increase the likelihood of offending. Furthermore, the
characteristics of these disorders may also render them vulnerable to becoming victims of crime (Murrie et al., 2002; Wing, 1997).

Determining the rate of offending behaviour in individuals with ASD has clear challenges and current findings are both inconsistent and limited. The available evidence mainly comprises small sample sizes, case reports and examinations of narrow populations within secure psychiatric settings. As a result, strong conclusions cannot be drawn from the findings. Despite these methodological limitations, and the current lack of clarity regarding the link between ASD and criminality, it is clear that many individuals with ASD are within the CJS internationally (Kumagami & Matsuura, 2009; Scragg & Shah, 1994; Soderstrom et al., 2005; Sutton et al., 2013).
Chapter 4.

Reasons for Identification of Autism Spectrum Disorders in Criminal Justice System

Individuals with ASD may face particular difficulties at all stages throughout the legal process and whilst incarcerated. As outlined in previous chapters, particular characteristics of ASD may predispose affected individuals to offending behaviour. These characteristics also have the potential to make them vulnerable throughout the CJS (Cashin & Newman, 2009). They may lack awareness of the unwritten rules of prison and be at risk of manipulation and victimisation from other prisoners (Mbuba, 2012). Further, their unique needs often mean they will not be suitable for mainstream offending behaviour treatment programmes run in the prisons system and require specialised services to meet their specific responsivity needs (Andrews & Bonta, 1994; Browning & Caulfield, 2011). These factors highlight the importance of identifying individuals with ASD who encounter the CJS. However, due to the subtle characteristics of ASD, affected individuals may not be immediately obvious to CJS personnel, particularly when personnel lack knowledge of the disorder (North, Russell, & Gudjonsson, 2008; Stoesz, Montgomery, Smart, & Hellsten, 2011). A small number of studies have trialled screening procedures in forensic settings with various outcomes. These studies have highlighted that individuals with ASD are within the CJS and that they required specialised support. Further, they have indicated that personnel are ill-equipped for supporting individuals with ASD (Hall et al., 2007; Haskins & Silva, 2006; Myers, 2004).

Knowledge of ASD among personnel at all stages of the CJS is vital for the accurate identification of individuals with ASD, and in turn, may allow for suitable treatment and management options to be developed for this population (Allen et al.,
2008; Browning & Caulfield, 2011; Haskins & Silva, 2006). Research into levels of knowledge of ASD amongst CJS personnel is limited; as such, knowledge among broader health and correctional samples are in need of exploration. The knowledge of ASD among health care professionals regarding the impacts and outcomes of ASD in those affected is particularly limited, highlighting the need for an increase in awareness and understanding of ASD among CJS personnel (Allen et al., 2008; Heidgerken, Geffken, Modi, & Frakey, 2005; McAdam, 2012). This chapter will examine the difficulties faced by individuals with ASD throughout the CJS, particularly in the prison environment. The knowledge of ASD among forensic personnel and forensic identification procedures will also be explored.

4.1. Difficulties Faced by Offenders with ASD in the Criminal Justice System

The characteristics of ASD, predominately deficits in communication and social functioning, can lead to significant difficulties for individuals with ASD across all levels of CJS involvement (Hall et al., 2007). Social and communication deficits render them vulnerable to being misinterpreted by CJS personnel, including during a police interview (North et al., 2008) and throughout a criminal trial (Freckelton, 2011). As a result they will likely have difficulty negotiating the CJS (Allen et al., 2008). If apprehended by police, vital decisions need to be made which significantly impact legal outcomes. If required to stand trial, their fitness to plead would need to be considered. Further, if an individual with ASD is convicted and sentenced to prison, a wide range of difficulties may be faced in the custodial environment (Paterson, 2008).

Fundamental decisions are made during an individual’s first contact with the CJS. When initially questioned by the police, they must decide what information to
disclose, if they require legal representation, and how they will plead. Individuals with ASD are unlikely to have the capacity to effectively communicate or understand the complexities of the CJS. As a result those with ASD may be particularly vulnerable during a police interview (Freckelton & List, 2009; North et al., 2008). Those at the high-functioning end of the spectrum may not be initially identified as having ASD; communication abilities may be sufficient and they may openly discuss the matter (North et al., 2008). However, levels of distress may be exacerbated if police demands are high and they may be unable to make independent decisions (Freckelton & List, 2009). According to North et al. (2008), individuals with HFA were overly compliant with police interviews; suggesting that these individuals aim to please the interviewer and avoid confrontation. This can be a significant disadvantage to a suspect as they may incriminate themselves (North et al., 2008).

Individuals with ASD face many challenges during the court process, including issues of criminal responsibility, mental capacity and fitness to stand trial (Freckelton & List, 2009; Katz & Zemishlany, 2006; Mayes, 2003). Criminal responsibility and criminal culpability among offenders with ASD began to receive attention in Australia following the finding that Martin Bryant, who in 1996 murdered 37 people at Port Arthur in Tasmania, had a diagnosis of Asperger Syndrome (Freckelton, 2011; Mullen, 1996). Since that time, forensic experts have increasingly argued that defendants with ASD are less criminally responsible or culpable than those without ASD. Judicial officers have also sought the views of forensic experts to informally assist them in understanding and considering the factors of ASD that may influence criminal responsibility (Freckelton, 2011).
Fitness to stand trial is similarly defined across Australian legal jurisdictions. In Victoria, Australia it is defined by section 6 of the *Crimes (Mental Impairment and Unfitness to be Tried) Act 1997* (Vic):

1) A person is unfit to stand trial for an offence if, because the person's mental processes are disordered or impaired, the person is or, at some time during the trial, will be-
   a) unable to understand the nature of the charge; or
   b) unable to enter a plea to the charge and to exercise the right to challenge jurors or the jury; or
   c) unable to understand the nature of the trial (namely that it is an inquiry as to whether the person committed the offence); or
   d) unable to follow the course of the trial; or
   e) unable to understand the substantial effect of any evidence that may be given in support of the prosecution; or
   f) unable to give instructions to his or her legal practitioner.

2) A person is not unfit to stand trial only because he or she is suffering from memory loss.

Questions have been raised regarding the fitness to plead of a person with ASD. Even when cognitive abilities are intact, individuals with ASD may nonetheless lack awareness and understanding of the judicial process and the charges against them (Hall et al., 2007; Mayes, 2003). A number of case studies have demonstrated that individuals with ASD lack awareness of the impact of their actions on others, which in turn inhibits their ability to understand the illegal nature of their actions. Consequently, they may not understand why charges were laid (Katz &
Interpersonal and communication difficulties may impact on their ability to understand the course of the trial, connect how evidence may impact on their likelihood of conviction and direct and understand their legal representation (Freckelton & List, 2009; Hall et al., 2007). They may fail to recognise or may misinterpret information that is inferred or implied by a legal representative or the judge (Hall et al., 2007). The lack of empathy may be interpreted by the decision maker(s) as cold and remorseless and may negatively impact on the perception of future risk and the overall outcomes of the case (Murrie et al., 2002). Capacity to have committed the crime must also be determined (Barry-Walsh & Mullen, 2004; Haskins & Silva, 2006). This is a common defence used in this population due to the difficulty of determining intent (Freckelton & List, 2009) and is an essential component in proving criminal responsibility (Katz & Zemishlany, 2006).

4.1.1 The experiences of individuals with ASD in custody.

Prison environments are shaped by a volatile culture of violence, mistrust and vulnerability (Mbuba, 2012; Schneider et al., 2011). Prisoners have described an anti-social culture, power hierarchies, substance misuse, loss of autonomy, limited privacy, a lack of stimulation (boredom) and disrupted routines (Ashkar & Kenny, 2008; Mbuba, 2012; Williams et al., 2013). A prisoner code or set of social rules, dictates how the prison functions and what behaviour is acceptable. Violence is used as conflict resolution, retribution and to gain power (Mbuba, 2012). In an Australian study, Schneider et al. (2011) found that threats of physical or sexual assault resulted in extreme levels of psychological distress among prisoners.
Individuals with ASD may face particular difficulties in a prison environment. Difficulties in communication and social functioning may render them vulnerable to manipulation, bullying and intimidation from others (Dein & Woodbury-Smith, 2010). The unwritten and paradoxical nature of the prisoner code may be misinterpreted, disregarded or unnoticed by individuals with ASD. This may result in exploitation and retribution (Cashin & Newman, 2009; Mbuba, 2012). The social dynamics of prison and difficulties relating to others may result in social isolations or anxiety. Prisoners with ASD may experience heightened levels of distress and anxiety due to difficulties in adapting their personal routines or special interest areas in the prison environment (Freckelton & List, 2009; Rapin, 1997). Strict adherence to prison routines has been shown to provide stability and comfort to individuals with ASD; however, they can also be a source of anxiety when changed or when a prisoner is relocated (Freckelton & List, 2009).

There is limited published research exploring the experience of individuals with ASD in prison. In one of the few studies, Paterson (2008) explored the experience of two adults with Asperger Syndrome who were incarcerated in the United Kingdom. The researcher interviewed and observed the interactions of participants; and consulted with multidisciplinary prison staff. The findings highlighted the difficulties they encountered and three main themes related to their behaviour in prison: adherence to prison regimes; relationships; and empathy. The first participant had initial difficulty adapting to prison life and was involved in multiple violations of prison rules at the beginning of his sentence. His self-report was inconsistent with the observations of the researchers and staff reports. The participant claimed that he had adapted to prison life; however, observations and reports indicated he had difficulty adjusting to the prison routine. He lacked
awareness of the intention of others and believed he had formed friendships; however, the researcher’s observations indicated that his perceived friendships were superficial and that he lacked awareness of body language and the subtleties in communication. He was often victimised and teased by other prisoners and despite them rolling their eyes at him, the participant believed they were being genuinely friendly. The participant had difficulty interacting with others, would often become agitated during social interactions and responded with aggression. He was permitted to remain in his cell during the time he would normally spend with other prisoners to manage his aggressive outbursts. Although this was successful in reducing aggressive outbursts, it did not deal with the underlying issues, which are thus likely to persist. His social naivety was linked to a lack of empathy regarding his aggressive and violent behaviour both in prison and in relation to his index offence. When describing his offence he lacked emotional expression and did not appear to understand the seriousness of his offence. He was described as rigorous, rigid and obsessive in his adherence to prison routines and he would become aggressive if another prisoner did not adhere to prison rules. On one occasion, he started a fight with a prisoner who collected an additional food item at mealtime. He also developed his own routine where he would clean and organise items in his cell daily, and he had aggressive outbursts when this routine was impacted.

Paterson’s (2008) second participant was described as having severe impairments in social functioning and communication. Non-compliance with prison rules and routines resulted from his preference for being alone, poor social skills, lack of understanding of social situations and a co-existing mood disorder. Due to his misinterpretation of social situations, he had poor relationships with other prisoners. His interactions with others were often marked by frustration and
aggressive outbursts. For example, an incident was described where the participant thought another prisoner was pushing in front of him in the meals line. This was not the case and instead of resolving the issue by communicating verbally, he blocked the other prisoner and a fight started. The characteristics of ASD likely increased his risk of problematic behaviour and he was subsequently separated from the main prison population and housed in a small mental health unit. His discussion of his index offence indicated that he lacked empathy and insight into the reasons why the offence occurred. These characteristics are likely to influence his risk of reoffending.

In another United Kingdom study, Allen et al. (2008) explored offending behaviour in 16 individuals with Asperger Syndrome. Five of the participants had received prison sentences and four of these consented to participate in a semi-structured interview regarding their experience in the CJS. All four participants described challenges of prison life including missing family, the unpredictable nature of the environment, difficulty following the prison routine, difficulty developing friendships, and being transferred once they had settled into a prison (change of routine). Positive aspects of prison included peer (other prisoners) and professional support, and a strict routine. Despite these positive aspects, the participants’ experiences in prison were largely negative.

Custodial services may have difficulty placing and managing individuals with ASD due to their vulnerability and problematic behaviour (Murphy, 2010). The development of specialised ASD units within prisons has been suggested as a means to reduce these difficulties and improve treatment and rehabilitation options for incarcerated individuals with ASD (Burdon & Dickens, 2009; Hare et al., 1999). It has been suggested that a structured, organised and predictable environment is likely to reduce problematic behaviour among individuals with ASD (Hare et al., 1999;
Thomson, 1999), and may reduce the potential difficulties faced in prison. The cognitive and behavioural aspects of ASD, particularly the misinterpretation of social cues and poor social skills, increases their vulnerability and affects their ability to cope in prison. However, due to the limited amount of research in this area and small sample sizes, the experience of prison for individuals with ASD, remains largely unknown.

4.2. Assessment and Diagnosis of ASD in Forensic Settings

The Victorian, Australia correctional system employs the Risk-Need-Responsivity (RNR) framework of offender rehabilitation. This is a validated guide for the assessment and treatment of offenders (Andrews & Bonta, 1994; Polaschek, 2012). The risk principal states that the level of service, or intervention, should be matched to an individual risk of reoffending. Risk is determined by identifying factors associated with reoffending, for example, age, criminal history, anti-social peers and substance abuse (Andrews, Bonta, & Wormith, 2006). The need principal states that the dynamic, or changeable, criminogenic needs of offenders that are linked to risk of reoffending should be the targets of treatment intervention (Day & Howells, 2002; Polaschek, 2012). Finally, the responsivity principal states that to maximise treatment effectiveness intervention should be targeted to an individual’s learning ability, style and needs, as well as to their level of motivation (Andrews et al., 2006; Day & Howells, 2002). This principal is pertinent to offenders with ASD since their learning style may not be supported by the current programs offered in the Victorian prison system. As such, the identification and appropriate assessment of individuals with a suspected ASD who become involved in the CJS has important
implications for addressing their treatment needs, as well as ensuring effective management within the CJS.

Accurate assessment and identification of individuals with a disability, including ASD, within the Victorian prison system is emphasised in the Corrections Victoria Disability Frameworks (Department of Justice-Corrections Victoria, 2009, 2013). This framework aims to address gaps in the services to individuals with a disability by providing adapted offending behaviour and behavioural management interventions. According to Murrie et al. (2002) “failure to correctly identify such persons, or overlooking the features specifically related to their diagnosis, may lead to inappropriate forensic assessment, legal decisions, or clinical interventions” (p. 69). Identification provides an opportunity for court personnel to understand the specific needs and characteristics of the individual. For example, the court can be informed of how a lack of eye contact, perseveration with a particular answer or not responding directly to a question, does not imply guilt. Early identification could also enable appropriate pre-sentence reports and the preparation of individuals with ASD for attendance in court (Freckelton & List, 2009; Paterson, 2008).

The difficulties faced by individuals with ASD in the CJS, particularly whilst incarcerated, and their specific needs suggests specialised treatment services and transition programmes are required (Mayes, 2003). Failure to identify and support these individuals may lead to difficulties re-adjusting to the community upon release and could in turn affect recidivism rates (Browning & Caulfield, 2011; Mayes, 2003). For example, strict adherence to routines whilst in custody may have provided structure and predictability to daily activities. When released, this routine will change and may affect an individual’s ability to manage their behaviour. The identification of individuals with ASD often does not occur until issues arise in the
prison environment (Mayes, 2003). The importance of implementing procedures to enable the early identification of individuals with ASD within forensic settings is underscored.

The assessment and diagnosis of ASD is complex, particularly in forensic settings. Although most diagnoses of ASD now occur in childhood, in some cases an ASD is not identified until later in life when the individual encounters a health professional. There are a number of possible explanations for diagnosis of ASD not occurring until adulthood. Firstly, high-functioning individuals may present with subtle and stable characteristics and may have learnt to compensate for any limitations (Ritvo, Ritvo, Guthrie, & Ritvo, 2008; Wing & Potter, 2002). Characteristics are often less dominant when in a supportive and well-structured environment (Bastiaansen et al., 2011), and may not become problematic until the transition into adulthood where social and educational demands exceed capabilities (Ozonoff, Garcia, Clark, & Lainhart, 2005). Secondly, the characteristic of ASD may be disguised by, or mistaken for, another mental illness (Bastiaansen et al., 2011; Ozonoff et al., 2005). For example, the negative symptoms in schizophrenia (flattened affect and poverty of speech) (Haskins & Silva, 2006; Tantam, 2000), restlessness or irritability in anxiety disorders (APA, 2000) and repetitive behaviours in OCD (Russell et al., 2005) may be confused with the characteristics of ASD. Finally, the diagnosis of ASD in adulthood is difficult, particularly when there is a lack of developmental information (Ferriter et al., 2001).

The difficulty of diagnosing ASD in adulthood is longstanding (Stoesz et al., 2011; Tantam, 1991). The DSM-5 requires sufficient historical information to demonstrate developmental impairment during childhood for a diagnosis to occur (APA, 2013; Tantam, 1991). It is not always possible, however, to obtain
comprehensive developmental histories due to aged or deceased parents, difficulty and unreliability of recalling distant life events and the often chaotic lives of individuals involved in the legal system (Spencer et al., 2011; Stoesz et al., 2011; Tantam, 1991). Obtaining developmental histories can aid assessment and the development of interventions and a working relationship with the individual and their family (Plotts & Webber, 2002).

The assessment and diagnosis of ASD are ideally completed by a multidisciplinary clinical team, against the DSM-5 or ICD-10 diagnostic criteria. Initial assessment often involves the use of screening and/or diagnostic instruments (Eaves, Wingert, & Ho, 2006; Howlin, 2000). However, determining a formal diagnosis is largely based on clinical judgment (Lord et al., 1994; Woodbury-Smith & Volkmar, 2009), and often requires many sessions of interviewing and testing. Screening instruments are employed to identify individuals who require follow-up clinical assessments, whilst saving time and avoiding subjecting a low risk individual to a lengthy assessment. They are brief, easy to administer and score, and are generally designed to be over-inclusive in order to capture all cases (Eaves et al., 2006). Diagnostic instruments are more comprehensive than screening tools and generally focus on specific disorders. They are used as an adjunct to clinical measures of characteristics and behaviours (Stoesz et al., 2011) and may serve as a secondary screen, prior to a formal diagnostic clinical assessment. Both screening tools and diagnostic instruments are relatively brief, formal evaluations, designed to identify individuals who deviate from the general population. They do not enable a diagnosis per se, but rather highlight the need for further, more advanced assessment (Johnson & Myers, 2007). There are numerous ASD instruments for the identification of ASD in children (Matson & Boisjoli, 2008). Although a number of
tools are now available for use in adult populations, several of these have only been validated into early adulthood.

Screening tools that have been utilised in adult samples include the Krug Asperger Syndrome Index (Krug & Arick, 2003), the Autism Screening Questionnaire (Berument, Rutter, Lord, Pickles, & Bailey, 1999), the ASDI (Gillberg et al., 2001) and the Autism Quotient (AQ; Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001). Diagnostic instruments that have been utilised in adults include the Adult Asperger Assessment (Baron-Cohen, Wheelwright, Robinson, & Woodbury-Smith, 2005b), ADOS – Generic (Lord et al., 2000), the Asperger Syndrome (and HFA) Diagnostic Interview (Gillberg et al., 2001), Ritvo Autism and Asperger Diagnostic Scale – Revised (Ritvo et al., 2011) and the Gilliam Asperger Syndrome Scale (Gilliam, 2001).

Several studies have implemented and evaluated screening protocols in prisons populations to identify intellectual disability (Hayes, 2002; Søndenaa, Palmstierna, & Cabral Iversen, 2010) and acquired brain injury (Jackson, Hardy, Persson, & Holland, 2011). Despite some screening tools being employed in forensic research to identify ASD, few studies have examined the reliability and validity of screening protocols for ASD in custodial environments. Three known studies have implement ASD screening protocols into prison populations. Scragg and Shah (1994) employed a three-stage ASD identification process in a maximum-security United Kingdom hospital. At stage one, patient files were screened for seven ASD characteristics, those identified with three or more characteristics went onto stage two of the study. Stage two gathered additional clinical information from each participant’s key nurse. Stage three involved a clinical interview with consenting patients. The information gathered in stages two and three was sufficient to diagnose
Asperger Syndrome. The sensitivity and specificity of the screening protocol was not investigated.

Hare et al. (1999) employed a two-stage questionnaire methodology to identify individuals with ASD in three forensic hospitals in the United Kingdom. The first stage consisted of the ASD in Adults Screening Questionnaire (ASDASQ) which was developed by Nylander and Gillberg (2001) for use in psychiatric populations. The nine-item screening questionnaire was completed by hospital ward staff for each prisoner, a score of five or higher (out of a possible nine) led to inclusion in stage two of the study. Those with a previous ASD diagnosis were automatically included. Stage two utilised the Handicaps, Behaviours and Skills structured interview schedule (Wing & Gould, 1978) to identify the specific characteristics of ASD among participants and to confirm the accuracy of the screening tool. Evaluation of the screening tool indicated high sensitivity and low specificity when using a cut-off of five (Ferriter et al., 2001). This resulted in a number of false positives results, however insured that individuals with ASD were not overlooked. The screening tool showed good inter-rater reliability (Ferriter et al., 2001; Hare et al., 1999). Further evaluation of the screening tool was conducted through comparing the individuals identified in this study to those identified by Scragg and Shah (1994). Identification of individuals with ASD was consistent across both studies (Hare et al., 1999). Nylander and Gillberg’s (2001) evaluation of the screening tool in a psychiatric population indicated 89% of cases were correctly identified as having ASD. The researcher concluded the screening tool had moderate-good reliability.

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11One hospital was the focus of Scragg and Shah (1994) study discussed previously.
In a more recent study, Robinson et al. (2012) evaluated a screening instrument and clinical interview protocol used to identify ASD among prisoners from 12 prisons in Scotland. The 20-item screening instrument was developed by the researchers and completed by prison officers who had known the prisoners for a minimum of one week. The items were based on observable behaviours and no training was required to complete the instrument. A total of 2,458 prisoners were screened using the instrument, when compared to the findings from the 126 clinical interviews, the screening instrument had both poor sensitivity and inter-rater reliability. Overall, the screening instrument accurately identified ASD cases 59.6% of the time; only just better than chance.

The AQ was employed in the clinical interview of the Robinson et al. (2012) study. The AQ is a well-established measure of five areas of impairment seen among individuals with autism (Baron-Cohen et al., 2001). Baron-Cohen and colleague’s (2001) evaluated the AQ and established a cut-off of 32 was optimal for identifying individuals with a likely ASD. This cut-off identified 80% of adults with ASD and 2% of adults who did not have ASD. Other evaluations have reported alternative cut-off scores (Auyeung, Baron-Cohen, Wheelwright, & Allison, 2008; Wakabayashi, Baron-Cohen, Wheelwright, & Tojo, 2006b; Woodbury-Smith, Robinson, Wheelwright, & Baron-Cohen, 2005b). For example, Woodbury-Smith et al. (2005b) found a cut-off of 26 correctly classified 83% adults with ASD. In a recently published study that validated the AQ in an Australian sample, Broadbent, Galic, and Stokes (2013) reported strong psychometric properties and identified a cut-off of 29 resulted in both high sensitivity (85.6) and specificity (99.2). This cut-off resulted in a false positive rate of 1%. They found the AQ was a reliable measure of ASD characteristics in both Australian general population and ASD samples. The AQ has
been validated cross-culturally in several United Kingdom samples (Baron-Cohen et al., 2001; Stewart & Austin, 2009; Wheelwright et al., 2006), Japanese samples (Kurita, Koyama, & Osada, 2005; Wakabayashi et al., 2006b), a Dutch sample (Hoekstra, Bartels, Cath, & Boomsma, 2008), and an American sample (Hurst, Mitchell, Kimbrel, Kwapił, & Nelson-Gray, 2007). The AQ has also been associated with scientific and cognitive abilities (Baron-Cohen et al., 2001).

Despite the reported strong utility of the AQ in clinical samples, there is limited research regarding its reliability and validity in forensic samples. The study by Robinson et al. (2012) is the only known study that has used the AQ to identify prisoners with ASD. The authors reported good specificity, yet poor sensitivity of the AQ (Robinson et al., 2012). Further research is therefore needed to determine the utility of the AQ and other screening methods with forensic populations. The use of a relatively cost effective and reliable screening tool with individuals in the CJS may enable identified individuals to achieve better outcomes in rehabilitation and may reduce recidivism. This suggestion is further canvassed in the subsequent chapters. The next chapter focuses on forensic aspects of ASD, in particular, the prevalence of offending among individuals with ASD and the characteristics that may predispose these individuals to offend.

Establishing the extent and characteristics of ASD among prison populations might be a forerunner to the provision of more effective services and intervention strategies designed specifically to meet their learning needs and reduce recidivism (Paterson, 2008). Employing targeted social skills training using social stories or other autism specific techniques is necessary for promoting positive social interactions. Social skills training programmes have the potential to increase an individual’s awareness of appropriate social conventions and may in turn reduce
problematic interpersonal behaviour, for example, stalking (Dein & Woodbury-Smith, 2010; Stokes et al., 2007). Furthermore, high-functioning individuals on the autism spectrum may not have access to ASD specific support programmes to address problematic and offending behaviour, consequently risk of future offending behaviour may not be reduced and this may in turn affect their chances of progressing through prison security levels\(^{12}\) and their parole eligibility\(^{13}\) (Milton et al., 2002).

### 4.3. Personnel Awareness of ASD.

A lack of understanding of ASD by CJS personnel can affect the identification, treatment and management of this population (Browning & Caulfield, 2011). An understanding of ASD is paramount at all stages of involvement with the CJS. Research on personnel knowledge is limited in the forensic domain. Poor or incomplete knowledge of ASD has been demonstrated among other professions, including: paediatric and psychiatric nurses working with children (Igwe, Ahanotu, Bakare, Achor, & Igwe, 2011); psychologists and paediatricians (Stone, 1987); speech–language pathologists (Cascella & Colella, 2004; Stone, 1987); and psychology (Igwe, Bakare, Agomoh, Onyeama, & Okonkwo, 2010) and medical students (Shah, 2001). Deficits in knowledge relate to diagnoses, comorbidity and age of onset (Igwe et al., 2011; Imran et al., 2011); social interaction and relationships difficulties (Heidgerken et al., 2005; Imran et al., 2011; Stone, 1987).

\(^{12}\)For example, from a highly restrictive maximum security prison, to a less restrictive minimum security prison that often focus on rehabilitation, to the least restrictive minimum security prison that focus on reintegration.

\(^{13}\)In Victoria, Australia, the Adult Parole Board typically requires prisoners to address their offending behaviour prior to being eligible for parole. This includes treatment related to risk of reoffending, victim empathy and merits of a law-abiding future (Callinan, 2013).
and emotional regulation (Imran et al., 2011). In contrast, health professions appeared to have a greater level of understanding about communication deficits (Cascella & Colella, 2004; Igwe et al., 2011), which may be more obvious due to the need to communicate with health professionals.

In the forensic domain, the response of the CJS to individuals with ASD is suggested to be inadequate (Katz & Zemishlany, 2006; Mayes, 2003; Woodbury-Smith et al., 2006). A number of studies have highlighted the lack of ASD specific training completed by CJS personnel, which in turn affects their ability to adequately respond to those with ASD who come into contact with the CJS (Allen et al., 2008; Hall et al., 2007; Haskins & Silva, 2006; Mayes, 2003; McAdam, 2012; Sutton et al., 2013; Talbot & Riley, 2007; Teagardin, Dixon, Smith, & Granpeesheh, 2012). Poor ASD knowledge has been demonstrated among police officers in the United Kingdom and USA (Chown, 2010; Modell & Mak, 2008; Teagardin et al., 2012). Police officer’s knowledge of ASD improved significantly following an ASD training programme, although they continued to demonstrate low levels of overall ASD knowledge (Teagardin et al., 2012). Research has suggested that individuals with ASD may be more vulnerable than typically developing individuals during an interrogative interview (North et al., 2008). Insufficient knowledge impacts on the identification and ability to engage effectively with individuals with ASD who come into contact with police (Chown, 2010; Teagardin et al., 2012).

The potential lack of ASD knowledge among CJS personnel may negatively affect individuals with ASD throughout the court process. Court personnel who have an inadequate understanding of ASD may fail to consider the aspects of ASD that impact a defendant during the judicial process (Barry-Walsh & Mullen, 2004; Browning & Caulfield, 2011; Katz & Zemishlany, 2006). This has led to researchers
questioning the ethical and equitable aspects of individuals with ASD before the courts (Barry-Walsh & Mullen, 2004; Freckelton & List, 2009). Allen et al. (2008) reported that individuals with ASD found the court process more manageable when their barrister or an appropriate adult understood their needs and adequately explained the judicial process.

It is likely that ASD may go unrecognised in custodial populations. This is due to the limited knowledge of prison personnel (Allen et al., 2008; Browning & Caulfield, 2011; McAdam, 2012), the interference of co-morbid psychiatric conditions (Kring et al., 2008) and the subtle, often unobservable, characteristics evident in individuals at the high-functioning end of the spectrum (Frith, 1989; Stoesz et al., 2011). Identification is dependent on the knowledge base of prison personnel. Research specifically focusing on the knowledge of ASD among custodial staff is limited. The accounts of participants with ASD in Allen et al.’s (2008) study indicated a lack of understanding of ASD among prison personnel. As noted by one such participant, the lack of understanding of ASD by prison personnel meant that he did not receive the help and support he required.

There is a lack of research on CJS personnel’s knowledge of ASD; therefore, understanding of this area is limited. In one of the only specific ASD knowledge studies conducted in a prison, McAdam (2012) explored the awareness and understanding of ASD among 53 prison personnel. Personnel included general and mental health nurses, psychologists, general and psychiatric doctors, teachers and prison officers. The majority of participants (66%) reported that they were familiar with autism and 49% reported they were familiar with Asperger Syndrome. Of the participants, 83% agreed that ASD vary between affected individuals and 80% reported a belief that individuals with ASD would find prison environments more
stressful than those without ASD. Although this study did not explore specific areas of ASD knowledge, it highlights that personnel do not have sound ASD knowledge. This is consistent with Myers (2004) who found that forensic personnel had inadequate expertise to meet the needs of these individuals. Both McAdam and Myers’ studies emphasised the need for staff training on ASD, as well as the benefits of specific ASD support and treatment options for individuals in custody.

The knowledge, understanding and beliefs about individuals with ASD among CJS personnel can have a widespread impact on the outcomes for offenders with ASD. In recent times, the knowledge and awareness of psychiatric illness has increased among CJS personnel (Hayes, 2007). Given the difficulties’ faced by individuals with ASD in the CJS, it is important that knowledge and awareness of ASD also increases in the criminal justice domain.

4.4. Chapter Summary

Within custodial environments, individuals with ASD are likely to face many interpersonal and behavioural difficulties that arise from their condition. The identification of these individuals within the CJS is vital to enable the provision of appropriate support, treatment and management in line with a rights based approach (see Charter of Human Rights and Responsibilities Act 2006 (Vic)) and their individual responsivity needs (Andrews & Bonta, 1994). Although it is preferable that individuals are identified at the outset of involvement with the CJS, at the very least, screening and diagnosis should occur upon entry into the prison system. However, it is acknowledged that identification difficulties in adulthood may arise, in particular from an absence of a developmental history, and due to the existence of co-morbid psychopathology or intellectual disability (Murrie et al., 2002;
Woodbury-Smith et al., 2005b). A lack of knowledge about the characteristics of ASD among CJS personnel is likely to further impede identification in the forensic context and affect the rehabilitation potential for incarcerated individuals with ASD.

The literature reviewed highlights the importance of establishing strategies to identify individuals with ASD in the CJS, and establishing a strong knowledge base around the characteristics and complex needs of these offenders. These factors in turn, will contribute to informing management strategies, personnel training and interventions tailored to meet the complex rehabilitation and human rights needs of individuals with ASD in prison. The following chapters of this thesis describe two studies designed to address the identified gaps in knowledge and practice.
Chapter 5.

Study 1: Knowledge of Autism Spectrum Disorders in Criminal Justice System

Assessment Officers and Clinical Personnel

5.1. Rationale

Recent research has indicated that certain characteristics of ASD may predispose individuals to offending behaviour; with some studies showing that individuals with ASD are over-represented within the CJS (Allen et al., 2008; Hare et al., 1999; Scragg & Shah, 1994; Siponmaa et al., 2001). This vulnerability has been attributed to deficits in social interaction, language and communication; and an intense interest in items, objects or routines. These characteristics impact on interactions with others and have been linked to increased risk of offending behaviour in individuals with ASD (Anckarsater et al., 2008; Hare et al., 1999).

Furthermore, these characteristics can result in individuals with ASD experiencing difficulties at all stages of the CJS (Allen et al., 2008), including contact with the police (North et al., 2008; Teagardin et al., 2012), throughout the court process (Freckelton & List, 2009), and whilst incarcerated (Allen et al., 2008; McAdam, 2012). It has been suggested that the characteristics of ASD, specifically social naïveté and deficits in communication, may render these individuals vulnerable to manipulation from other prisoners due to a lack of awareness of the unwritten prison code (Cashin & Newman, 2009; Dein & Woodbury-Smith, 2010). Whilst in custody, individuals with ASD may require additional support and monitoring, and in some cases specialised accommodation (Paterson, 2008).

Despite a vast increase in the knowledge and awareness of ASD in recent decades, misunderstanding about ASD characteristics remains. Recent research has
demonstrated a lack of knowledge pertaining to the characteristics of ASD among professionals in many fields, including the CJS (Heidgerken et al., 2005; Imran et al., 2011; McAdam, 2012; Teagardin et al., 2012). This has negative implications for the identification and subsequent treatment of these individuals. There is limited research specifically examining knowledge of ASD among CJS personnel. The available research and reviews have highlighted deficits in knowledge of ASD among prison personnel (Allen et al., 2008; Browning & Caulfield, 2011; McAdam, 2012), yet this is required for personnel to respond effectively to these individuals who present with unique needs (McAdam, 2012; Scragg & Shah, 1994; Siponmaa et al., 2001).

Given the apparent dearth of knowledge of ASD characteristics among professionals, including those within the CJS, it is likely that such individuals may go unrecognised in forensic populations. The specific needs of this population render it important that CJS personnel understand the disorder (Allen et al., 2008; Browning & Caulfield, 2011). Specifically, clinicians working within the CJS, including personnel completing reception screening, need to be competent in identifying individuals with ASD and referring them for clinical assessment. Further, clinicians should be competent in determining appropriate clinical interventions for those with ASD (Siponmaa et al., 2001). Developing knowledge and increasing ASD training contributes to the early identification of individuals who may be on the autism spectrum. In turn, this allows their criminogenic and support needs to be identified and potentially met.
5.1.1 Design.

This study reports the findings from administration of the Autism Knowledge Questionnaire (AKQ) and the Perception of Autism Spectrum Disorders Needs Questionnaire-Forensic (PANQ-F; see Appendix E) to a sample of Victorian CJS personnel: specifically, front-end prison Assessment Officers and clinicians. In brief, the Victorian CJS includes legal and victim assistance, the police, courts, prisons, parole and community corrections. Contact with individuals with ASD in the CJS was determined along with any training in ASD that they had received. Both measures were developed specifically for this study, with a focus on the knowledge of ASD characteristics and the perception of the forensic needs of this population.

5.1.2 Aims and hypotheses.

5.1.2.1 Development of measures.

Prior to the development of the AKQ for the current study there were no known psychometrically sound measures of knowledge of ASD as it presents in adulthood. In line with the pilot study described in Appendix F, the aim of this study was to determine if the AKQ is a valid and reliable measure of ASD knowledge among CJS personnel. It was hypothesised that:

Hypothesis 1A: The AKQ is a valid and reliable measure of ASD knowledge among CJS personnel.

Consistent with the lack of available knowledge measures, there were no known measures to determine recognition among CJS personnel of the specific identification and support needs of individuals with ASD in the CJS. Accordingly, a
second aim of this study was to establish if the PANQ-F is a psychometrically sound measure of participant’s perceptions of the needs of offenders with ASD. It was hypothesised that:

*Hypothesis 1B:* The PANQ-F is a psychometrically sound measure of CJS personnel perceptions of the needs of offenders with ASD.

### 5.1.2.2 ASD in the criminal justice system

Determining the knowledge of ASD among CJS Assessment Officers and clinical personnel is a forerunner in the identification and provision of services for individuals with ASD. Research findings indicate a lack of both understanding of ASD and awareness of the needs of these individual when in the CJS within forensic and health professionals. The third aim of this study was to determine if CJS personnel have comprehensive knowledge of ASD characteristics as measured by the AKQ, and if ASD knowledge differs across professions. Further, the extent to which CJS personnel recognised the specific identification and support needs of individuals with ASD within the CJS was explored. Based on research showing that health and forensic personnel lack knowledge of ASD, it was further hypothesised that:

*Hypothesis 1C:* Criminal Justice System personnel will have incomplete knowledge of the characteristics of ASD as measured by the AKQ.

*Hypothesis 1C-1:* Assessment Officers will achieve a lower score on the AKQ when compared to clinicians.
Hypothesis 1C-2: Scores on the AKQ will differ among clinicians where psychologists will obtain higher scores on the AKQ than allied health and nursing professionals.

Hypothesis 1D: Criminal Justice System personnel’s responses to the PANQ-F will indicate a lack of awareness of the identification and support needs of individuals with ASD who are within the CJS.
5.2. Method

5.2.1 Participants.

Participants were recruited from two forensic services within Victoria, Australia: Corrections Victoria and the Victorian Institute of Forensic Mental Health (Forensicare). These two services were engaged, as they are key in the provision of assessment and intervention to offenders in the Victorian CJS. Other areas of the Victorian CJS were invited to participate in the early development stages of the study, however declined.

An a-priori power analysis using the statistical program G*Power was conducted to determine the sample size required to find a true effect (Faul, Erdfelder, Lang, & Buchner, 2007). The analysis was based on a moderate effect size of $f=0.48$, with a significance criterion of $0.05$. Pearson’s bivariate correlations between the four groups ranged from 0.49 to 0.69, therefore the larger correlation statistic of 0.69 was utilised in the power analysis. The analysis revealed a sample size of 44 was required to achieve adequate statistical power of 0.80 (Cohen, 1988, 1992). The final sample of 84 participants was deemed more than adequate to detect an accurate effect.

The majority of participants were recruited from Forensicare and included psychologists, psychiatrists, registered nurses (including psychiatric nurses), and allied health professionals (occupational therapists and social workers). Registered nurses made up 53.9% of the Forensicare sample. These participants worked with patients with problematic behaviour and/or mental illness who were either in the community (voluntary or mandated) or legally detained in a secure psychiatric hospital due to their offending behaviour or being deemed unsafe to be in the community. Participants were group by profession as displayed in Table 1; the clinician group included all personnel who work in a clinical capacity with
offenders. The psychology-trained group consisted of registered psychologists, psychiatrists and clinicians with psychology related training. Demographic descriptions of the participants are detailed in Table 1.

Table 1

*Demographic Details of Participants by Mental Health Service and Position*

<table>
<thead>
<tr>
<th></th>
<th>Assessment Officers</th>
<th>Clinicians</th>
<th></th>
<th></th>
<th>Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Psychology-trained</td>
<td>Allied Health</td>
<td>Nursing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>10</td>
<td>39</td>
<td>7</td>
<td>28</td>
<td>74</td>
<td>84</td>
</tr>
<tr>
<td>Percentage of sample</td>
<td>12%</td>
<td>46%</td>
<td>8%</td>
<td>33%</td>
<td>88%</td>
<td>100%</td>
</tr>
<tr>
<td>Age (mean in yrs)</td>
<td>38.20</td>
<td>34.42</td>
<td>32.71</td>
<td>41.31</td>
<td>36.77</td>
<td>36.95</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>20.0%</td>
<td>35.9%</td>
<td>28.6%</td>
<td>32.1%</td>
<td>33.8%</td>
<td>32.1%</td>
</tr>
<tr>
<td>Female</td>
<td>80.0%</td>
<td>64.1%</td>
<td>71.4%</td>
<td>67.9%</td>
<td>66.2%</td>
<td>67.9%</td>
</tr>
<tr>
<td>Length of employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (in months)</td>
<td>29.00</td>
<td>43.44</td>
<td>41.86</td>
<td>119.00</td>
<td>71.88</td>
<td>66.77</td>
</tr>
<tr>
<td>1 year or less</td>
<td>10.0%</td>
<td>23.1%</td>
<td>42.9%</td>
<td>7.1%</td>
<td>18.9%</td>
<td>17.9%</td>
</tr>
<tr>
<td>2 to 5 years</td>
<td>80.0%</td>
<td>56.4%</td>
<td>42.9%</td>
<td>42.9%</td>
<td>50.0%</td>
<td>53.6%</td>
</tr>
<tr>
<td>6 to 10 years</td>
<td>10.0%</td>
<td>15.4%</td>
<td>0.0%</td>
<td>25.0%</td>
<td>17.6%</td>
<td>16.7%</td>
</tr>
<tr>
<td>10 or more years</td>
<td>0.0%</td>
<td>5.1%</td>
<td>14.3%</td>
<td>25.0%</td>
<td>13.5%</td>
<td>11.9%</td>
</tr>
<tr>
<td>Relevant qualifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>60.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Diploma/Certificate</td>
<td>10.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>17.9%</td>
<td>6.8%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>20.0%</td>
<td>33.3%</td>
<td>85.7%</td>
<td>39.3%</td>
<td>40.5%</td>
<td>38.1%</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>10.0%</td>
<td>66.7%</td>
<td>14.3%</td>
<td>42.9%</td>
<td>52.7%</td>
<td>47.6%</td>
</tr>
</tbody>
</table>

Participants from Corrections Victoria included registered psychologists and clinicians who had background training in psychology. These personnel worked with individuals who were serving a custodial sentence or a community-based order, including parole. Corrections Victoria Assessment Officers were also included.
Assessment Officers screen all sentenced prisoners for mental illness, social needs and risk of reoffending. They were invited to participate in order to determine their knowledge of ASD, and to use this to inform development of the ASD training programme delivered to Assessment Officers in Study 2 of this thesis. Ten Assessment Officers completed the questionnaire.

5.2.2 Materials.

The battery of questionnaires contained three sections to assess demographics, ASD knowledge and perceptions of ASD needs (refer to Appendix E). Both electronic and paper versions were available.

Section A: Demographic information. A series of demographic questions were used to determine participant age, gender, qualifications and the length of employment in their current or a similar position. Items also related to personal and professional experience with people with ASD and any ASD specific training they had completed.

Section B: The AKQ. The AKQ is a 32 item self-report questionnaire that comprehensively examines the characteristics of ASD, diagnostic criteria, comorbidity, prognosis and research findings. Items assess knowledge across four domains: Social interaction and relationships (eight items); language, communication (six items); behaviour, interests, routines and sensitivities (six items); and other characteristics (diagnosis, research findings, and outcomes) (12 items). Refer to Appendix G for domain details. Response options included yes, no or unsure. Correct responses scored one; incorrect or unsure responses scored zero. Scores ranged from zero to 32. For each domain, scores ranged from zero to the maximum number of items in the domain.
The AKQ was developed specifically for this study (see Appendix F); pilot analysis indicated the AKQ is a valid and reliable measure of ASD knowledge. The questionnaire had excellent internal consistency, with a Cronbach’s alpha coefficient of .93. This was consistent with the current study, which had a Cronbach’s alpha coefficient of .91.

Section C: The Perception of ASD Needs Questionnaire-Forensic. The PANQ-F is a ten-item measure used to determine participants’ perceptions of the needs of individuals with ASD in the CJS. The items related to ASD in terms of vulnerability to offending, additional support needs through the court process and when incarcerated, identification within forensic settings; and the competency of CJS personnel in identifying and supporting people with ASD. All items were scored on a five point Likert scale (‘strongly disagree’ to ‘strongly agree’). Upon completion of the questionnaire, participants were given the opportunity to comment on their awareness of the presence of offenders with ASD in the forensic environment and to provide de-identified information on any relevant cases. The PANQ-F was developed specifically for this study. The PANQ-F was found to be a reliable measure with strong internal consistency. A Cronbach’s alpha of .82 was achieved in the current study.

5.2.3 Procedure.

During the development of this study, the author consulted with the Corrections Victoria regarding the need for this research, specific areas that required addressing, and the utility of the study in relation to the current service provisions. Ethics approval was received from the Victorian Department of Justice Human Research Ethics Committee. Likewise, support for the study was received from the
Forensicare Research Committee. The Deakin University Human Research Ethics Committee approved the conduct of the study within both organisations (see Appendix H).

Participants were recruited through email. They were directed to the web-based questionnaire via a link; participants were also able to request a hard copy of the questionnaire. Two reminder emails were sent at two and five weeks after the initial contact email. Additional recruitment of Corrections Victoria personnel took place at three training days.

Irrespective of recruitment method, all potential participants were initially provided with some basic information about the study and a copy of the plain language statement (see Appendix I). Participants were informed that the study was anonymous and voluntary, and that there would be no repercussions from either participation or from declining to participate. Those who completed the online version of the questionnaire indicated their informed consent by selecting a button labelled *I Wish to Participate in This Study* located at the bottom of the plain language statement. Those opting to complete a hard copy version indicated their informed consent by returning the completed questionnaire to the researcher.

All participants completed the online version of the questionnaire, with the exception of one who requested and completed a hard copy version. The questionnaire took approximately 30 minutes to complete. If participants wished to discuss cases of ASD in the forensic setting in more detail, they were encouraged to contact the researcher. Data collection commenced in August 2010 and was completed in June 2011.
5.3. Results

The data were analysed using SPSS (Version 20), and utilised the collated raw scores of the 86 participants. Three sets of analyses were conducted to address the hypotheses. Firstly, the psychometric properties of the AKQ and the PANQ-F were examined. This was followed by an examination of participant knowledge of ASD according to the AKQ. In the final section, participants’ perceptions of the needs of individuals with ASD according to the PANQ-F were analysed.

5.3.1 Data Screening.

Screening of data from the AKQ and the PANQ-F was conducted to assess the accuracy of data entry, identify any missing data or outliers; and to confirm the assumptions of sample size, normality, singularity and linearity.

5.3.1.1 Missing data.

A total of eight missing values on AKQ items were identified. There were no variables with more than 5% missing values and the data appeared to be missing at random. Missing data were subsequently coded as unsure responses. Two cases of missing data were found on the variable indicating type of profession, due to the nature of the data it was not possible to code missing values and the cases were excluded from all analyses relating to type of profession. No missing data were identified on the PANQ-F.

5.3.1.2 Outlying data.

The data were screened for univariate outliers using SPSS descriptive statistics to calculate standardised Z scores. A univariate outlier was identified on each of the following variables: number of diagnosed ASD cases and number of suspected ASD cases. These variables were categorised to accurately capture the
data and remove the effects of outliers. Further, the mean differences if the outliers were removed indicated they had little impact on the mean. The outliers were not rescaled or removed and were considered representative (Tabachnick & Fidell, 2007). Seven outlying data points were identified on the PANQ-F, and were due to the responses of two participants. These cases were subsequently removed from further analyses.

5.3.1.3 Normality.

Variable distribution checks could only be conducted on continuous variables. Visual inspection of the histograms of the demographic variables, the four AKQ dependent variables and the ten items of the PANQ-F suggested the data violated the assumption of normality; this was supported by significant Shapiro-Wilk statistics on all variables. Despite this, skewness and kurtosis statistics did not fall outside of the acceptable ranges of ±2 and ±7 respectively (Curran, West, & Finch, 1996; Tabachnick & Fidell, 2007), with the exception of two demographic variables: number of ASD cases seen in current or similar position; and interest in receiving ASD specific training. Due to the variability in the data, transformations were not attempted and both parametric and non-parametric analyses were conducted. In the case of no difference between the findings on both methods of analyses, parametric analyses were utilised to facilitate interpretability.

5.3.2 Psychometric properties of the autism knowledge questionnaire.

5.3.2.1 Item groupings.

Whilst Confirmatory Factor Analysis was attempted, it was not possible to determine the underlying factor structure of the AKQ due to the low sample size.
Subsequently, items of the AKQ were categorised into four domains based on the DSM-IV-TR criteria and the current literature (see Appendix G for domain details).

5.3.2.2 Reliability.

The homogeneity of the items in the overall questionnaire, and the four domains of the AKQ were examined to ensure the items were measuring the same underlying construct. Analysis of the 86 responses to the 32 items of the AKQ displayed excellent internal consistency with a Cronbach’s alpha of .91, indicating the items were strongly correlated. To further assess the reliability of the questionnaire the item-total correlations were reviewed to identify items that were not contributing to the questionnaire (see Table 2). No items were identified as redundant. The internal consistency of the four domains of the AKQ was examined to ensure all items were adequately contributing to the measured construct. Further, the item-total correlation statistics were reviewed for each domain (see Table 2).

Domain 1 (social interaction and relationships) consisted of eight items and had a strong Cronbach’s alpha. Review of the item-total correlations indicated that item 15 (Most people with ASD enjoy social chit-chat) had a low, yet acceptable, correlation with the total score. All other items strongly correlated with the total score. Analysis of the six items in domain 2 (language, communication, and cognitive) initially displayed poor internal consistency with a Cronbach’s alpha of .58. Examination of the item-total correlations indicated two items correlated poorly with the total score: item 2: Impairment in using nonverbal expressions is a key characteristic of ASD, and item 31: Most people with ASD have intact speech. Due to the nature of item 2, and its reference to a fundamental characteristic of ASD, it was retained in the questionnaire. However, item 31 was removed from all further
analyses due to the low correlation with the total score and its effect on Cronbach’s alpha. Subsequently, Cronbach’s alpha increased into the acceptable range.

Domain 3 (behaviour, interests, routines and sensitivities) contained seven items, Cronbach’s alpha indicated that the items adequately related to each other. Item 28 (*People with ASD readily adjust to change in their routine*) had a low, yet acceptable correlation with the total score, indicating that participant responses on the item varied. This may have been due to the reverse wording of the item. Due to the nature of item 28, and its reference to a fundamental characteristic of ASD, it was retained in the questionnaire and in all further analyses. Analysis of the responses to the 12 items in domain 4 (Other characteristics: diagnosis, research findings, outcomes) indicated excellent internal consistency, with all items strongly correlating with the total score.

The internal consistency of the overall AKQ was re-evaluated following the removal of item 31. Cronbach’s alpha remained in the excellent range at .91 and all 31 items correlated with the total score.

5.3.2.3 Validity.

The validly of the AKQ was assessed in detail during the pilot study (detailed in Appendix F). Therefore, this study will not revisit face and content validity. Construct validity will be briefly discussed and the AKQ will be further validated when examining the overall results of the questionnaire in subsequent sections.

Gender differences should not be present in responses to the AKQ. Differences in the knowledge scores of males and females would indicate poor construct validity. An independent sample t-test indicated no significant difference between the knowledge of males and females on the AKQ, \( t(82) = 8.19, p = .415 \). This indicated that AKQ knowledge scores do not differ across gender.
Table 2

*Item-total Correlations and Cronbach’s Alpha if the Item is deleted for each Domains and the Overall Autism Knowledge Questionnaire*

<table>
<thead>
<tr>
<th>Domain level</th>
<th>Overall questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item-Total Correlation</td>
<td>Cronbach’s α if Item Deleted</td>
</tr>
</tbody>
</table>

**Domain 1: Social interaction and relationships**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>Most people with ASD enjoy social chit-chat&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.26</td>
<td>0.71</td>
<td>0.34</td>
</tr>
<tr>
<td>16.</td>
<td>The needs of others are seldom considered by people with ASD</td>
<td>0.42</td>
<td>0.68</td>
<td>0.48</td>
</tr>
<tr>
<td>24.</td>
<td>People with ASD are usually aware of what others are thinking or feeling&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.45</td>
<td>0.67</td>
<td>0.52</td>
</tr>
<tr>
<td>25.</td>
<td>People with ASD usually lack discretion</td>
<td>0.40</td>
<td>0.68</td>
<td>0.44</td>
</tr>
<tr>
<td>26.</td>
<td>Typically, people with ASD are drawn more strongly to people than to things&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.53</td>
<td>0.66</td>
<td>0.59</td>
</tr>
<tr>
<td>29.</td>
<td>People with ASD can form strong attachment to their family members and caregivers</td>
<td>0.38</td>
<td>0.69</td>
<td>0.47</td>
</tr>
<tr>
<td>30.</td>
<td>People with ASD often appear aloof and distant</td>
<td>0.44</td>
<td>0.68</td>
<td>0.48</td>
</tr>
<tr>
<td>32.</td>
<td>People with ASD have no interest in forming relationships with others&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.41</td>
<td>0.68</td>
<td>0.52</td>
</tr>
</tbody>
</table>

*Internal Reliability, Cronbach’s α = .71*

**Domain 2: Language, communication, and cognitive**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Impairment in using nonverbal expressions is a key characteristic of ASD</td>
<td>0.23</td>
<td>0.57</td>
<td>0.32</td>
</tr>
<tr>
<td>6.</td>
<td>Abruptness is a common feature in people with ASD</td>
<td>0.49</td>
<td>0.47</td>
<td>0.54</td>
</tr>
<tr>
<td>9.</td>
<td>People with ASD often have difficulty understanding the point of a joke</td>
<td>0.43</td>
<td>0.49</td>
<td>0.40</td>
</tr>
<tr>
<td>18.</td>
<td>People with ASD have trouble understanding facial expressions and gestures</td>
<td>0.34</td>
<td>0.53</td>
<td>0.44</td>
</tr>
<tr>
<td>21.</td>
<td>Most people with ASD take things very literally</td>
<td>0.39</td>
<td>0.52</td>
<td>0.52</td>
</tr>
<tr>
<td>31.</td>
<td>Most people with ASD have intact speech&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>0.23</td>
<td>0.64</td>
<td>-</td>
</tr>
</tbody>
</table>

*Internal Reliability, Cronbach’s α = .71*
### Domain 3: Behaviour, interests, routines and sensitivities

5. Individuals with ASD commonly engage in repetitive movements | .38 | .60 | .47 | .90
13. Many people with ASD have trouble tolerating loud noises | .43 | .58 | .44 | .90
14. Many people with ASD are very sensitive to touch | .49 | .56 | .59 | .90
22. Obsessional interests are common in people with ASD | .47 | .59 | .51 | .90
27. People with ASD have difficulty switching back to a task following an interruption | .35 | .62 | .48 | .90
28. People with ASD readily adjust to change in their routine\(^a\) | .22 | .65 | .31 | .90

Internal Reliability, Cronbach’s \(a = .71\)

### Domain 4: Other characteristics (diagnosis, research findings, outcomes).

1. The number of diagnosed cases of ASD has increased over the past 10 years | .41 | .80 | .47 | .90
3. ASD can be diagnosed by a medical test\(^a\) | .47 | .79 | .54 | .90
4. People with ASD vary in intelligence from intellectually disabled through to above average intelligence | .35 | .80 | .28 | .90
7. People with ASD commonly experience hallucinations\(^a\) | .50 | .79 | .48 | .90
8. ASD occur in roughly equal numbers of males and females\(^a\) | .58 | .78 | .58 | .90
10. Research has demonstrated that heredity and genes play a role in ASD | .55 | .78 | .54 | .90
11. ASD affects people of all races and ethnicities at about the same rate | .39 | .80 | .40 | .90
12. Typically, ASD can be outgrown\(^a\) | .44 | .79 | .47 | .90
17. Children with an ASD usually grow up to be schizophrenic adults\(^a\) | .44 | .79 | .41 | .90
19. In adulthood, people with an ASD no longer benefit from specific autism interventions\(^a\) | .59 | .78 | .53 | .90
20. It is difficult to determine if an adult has an ASD | .45 | .80 | .50 | .90
23. If someone has a diagnosis of ASD, they would not have any other mental health diagnoses\(^a\) | .47 | .79 | .54 | .90

Internal Reliability, Cronbach’s \(a = .71\)

\(^a\)Item was reverse coded prior to analysis. \(^b\)Item was removed
5.3.3 Psychometric properties of the PANQ-F.

5.3.3.1 Reliability.

Analysis of participants’ responses to the ten PANQ-F items indicated strong internal consistency with a Cronbach’s alpha of .82. Review of the item-total statistics (see Table 3) identified two items that fell below .3, indicating that these items were answered inconsistently (Tabachnick & Fidell, 2007): Item 1 (People with ASD have characteristics that make them particularly vulnerable to offending behaviour) and item 10 (The needs of offenders with ASD would be better met outside the prison system). The importance of these items to the overall aims of the study was paramount, and therefore these items were retained in the questionnaire to ensure accurate representations of participants’ beliefs.

Table 3

Means, Standard Deviations and Item-total Correlations of each PANQ-F items

<table>
<thead>
<tr>
<th>Items</th>
<th>M</th>
<th>SD</th>
<th>Item-Total Correlation</th>
<th>Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Characteristics vulnerable to offending</td>
<td>3.44</td>
<td>.86</td>
<td>.20</td>
<td>.84</td>
</tr>
<tr>
<td>2. Support through legal process</td>
<td>4.42</td>
<td>.52</td>
<td>.58</td>
<td>.80</td>
</tr>
<tr>
<td>3. Specialised prison services</td>
<td>4.24</td>
<td>.68</td>
<td>.53</td>
<td>.80</td>
</tr>
<tr>
<td>4. Advantage of entry screening(^a)</td>
<td>4.22</td>
<td>.86</td>
<td>.34</td>
<td>.82</td>
</tr>
<tr>
<td>5. Staff require training to support ASD</td>
<td>4.36</td>
<td>.75</td>
<td>.68</td>
<td>.78</td>
</tr>
<tr>
<td>6. Staff unclear on distinction from mental illness</td>
<td>4.09</td>
<td>.90</td>
<td>.64</td>
<td>.79</td>
</tr>
<tr>
<td>7. Likely unrecognised in forensic system</td>
<td>3.94</td>
<td>.89</td>
<td>.53</td>
<td>.80</td>
</tr>
<tr>
<td>8. Needs require recognition</td>
<td>4.20</td>
<td>.79</td>
<td>.78</td>
<td>.77</td>
</tr>
<tr>
<td>9. Staff training in identification</td>
<td>4.40</td>
<td>.71</td>
<td>.68</td>
<td>.79</td>
</tr>
<tr>
<td>10. Needs better met outside prison system</td>
<td>3.43</td>
<td>.88</td>
<td>.25</td>
<td>.83</td>
</tr>
<tr>
<td>Total</td>
<td>40.74</td>
<td>4.88</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Refer to Appendix E for detailed item descriptions. \(^a\)Item was reverse coded prior to analysis
5.3.4 Personnel knowledge of ASD.

A series of analyses were conducted to investigate knowledge on the four AKQ domains and ASD knowledge across the types of professions. Analyses were also conducted to investigate participant responses to the PANQ-F, to examine the cases of ASD observed by participants and any training they had completed.

5.3.4.1 Knowledge of ASD among criminal justice system personnel.

The total sample responded correctly to 68.2% of the AKQ items. A repeated measures ANOVA examined the differences between participant mean knowledge scores on the four AKQ domains. Mauchly’s test indicated that the assumption of homogeneity of sphericity had been violated, $W = .56, \chi^2(5) = 47.77, p < .001$, suggesting that the observed matrix does not have approximately equal variances and covariances. Therefore, the degrees of freedom were adjusted using Greenhouse-Geisser estimate of sphericity correction ($\varepsilon = .70$) as recommended by Tabachnick and Fidell (2007) and Field (2009).

The repeated measures ANOVA revealed significant differences between the mean knowledge scores on the four domains, $F(1.38, 9.76) = 25.83, p < .001, \eta^2 = .58$. Post-hoc comparisons with Bonferonni corrections highlighted significant differences between five of the six domain comparisons as displayed in Table 4. No significant difference was evident between domains two and three; however, there was a trend towards significance.

The knowledge of participants was strongest on items that related to language, communication, and cognitive deficits (domain 2), with 77% of items answered correctly. Participants were less knowledgeable on items relating to diagnosis, research findings and the outcomes of ASD (domain 4). These items were correctly endorsed by participants 61.7% of the time (Table 5).
Table 4

*Post-hoc Comparisons of Differences between the Four Domains of the AKQ*

<table>
<thead>
<tr>
<th>Domain Comparisons</th>
<th>Mean Differences</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain 1</td>
<td>Domain 2</td>
<td>1.77*</td>
</tr>
<tr>
<td>Domain 3</td>
<td>Domain 4</td>
<td>1.33*</td>
</tr>
<tr>
<td>Domain 4</td>
<td>Domain 1</td>
<td>1.79*</td>
</tr>
<tr>
<td>Domain 2</td>
<td>Domain 3</td>
<td>0.44</td>
</tr>
<tr>
<td>Domain 4</td>
<td></td>
<td>3.56*</td>
</tr>
<tr>
<td>Domain 3</td>
<td>Domain 4</td>
<td>3.12*</td>
</tr>
</tbody>
</table>

*The mean difference is significant at \( p < .05 \).*

5.3.4.2 Knowledge differences across professions.

Levels of ASD knowledge were examined according to profession. This included comparisons of the knowledge of Assessment Officers with clinicians, followed by comparisons of knowledge between the three groups of clinicians (psychology-trained, allied health and registered nurses).

5.3.4.2.1 Knowledge differences between Assessment Officers and clinicians.

Univariate homogeneity of variance was confirmed for the dependent variable using Levene’s Test of Equality of Error Variance (\( p > .05 \)). An independent samples t-test revealed the mean knowledge scores of the Assessment Officers and clinicians differed significantly, \( t(82) = 2.66, p = .009, \eta^2 = .03 \). Clinicians correctly endorsed 70.4% of the AKQ items and had higher knowledge scores than the Assessment Officers who correctly endorsed 52.3% of items. The total sample responded correctly to 68.2% of the items. The means and standard deviations of are presented in Table 5.
Table 5

Percentages, Mean scores and Standard Deviations of Correct Responses to the AKQ Domains by Profession and Total Sample

<table>
<thead>
<tr>
<th></th>
<th>Domain 1 &lt;br&gt;Social &lt;br&gt;8 items</th>
<th>Domain 2 &lt;br&gt;Language &lt;br&gt;5 items</th>
<th>Domain 3 &lt;br&gt;Behaviour &lt;br&gt;6 items</th>
<th>Domain 4 &lt;br&gt;Other &lt;br&gt;12 items</th>
<th>Total AKQ &lt;br&gt;31 items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%  M (SD)</td>
<td>%  M (SD)</td>
<td>%  M (SD)</td>
<td>%  M (SD)</td>
<td>%  M (SD)</td>
</tr>
<tr>
<td>Assessment Officers</td>
<td>57.5 4.60 (2.17)</td>
<td>60.0 3.00 (1.63)</td>
<td>56.7 3.40 (1.78)</td>
<td>43.3 5.20 (2.53)</td>
<td>52.3 16.20 (6.80)</td>
</tr>
<tr>
<td>(n=10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology-trained</td>
<td>78.3 6.26 (1.70)</td>
<td>86.2 4.31 (1.15)</td>
<td>74.3 4.46 (1.41)</td>
<td>71.2 8.54 (2.28)</td>
<td>76.6 23.74 (5.09)</td>
</tr>
<tr>
<td>(n=39)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allied Health</td>
<td>71.4 5.71 (1.60)</td>
<td>65.8 3.29 (1.98)</td>
<td>76.2 4.57 (1.13)</td>
<td>67.8 8.14 (2.91)</td>
<td>70.0 21.71 (6.42)</td>
</tr>
<tr>
<td>(n=7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td>63.4 5.07 (1.92)</td>
<td>72.8 3.64 (1.45)</td>
<td>67.3 4.04 (1.58)</td>
<td>53.6 6.43 (2.99)</td>
<td>61.9 19.18 (6.78)</td>
</tr>
<tr>
<td>(n=28)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>72.0 5.76 (1.91)</td>
<td>79.2 3.96 (1.39)</td>
<td>73.5 4.41 (1.46)</td>
<td>64.2 7.70 (2.78)</td>
<td>70.4 21.82 (6.21)</td>
</tr>
<tr>
<td>(n=74)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Sample</td>
<td>70.3 5.62 (1.91)</td>
<td>77.0 3.85 (1.44)</td>
<td>71.5 4.29 (1.53)</td>
<td>61.7 7.40 (2.86)</td>
<td>68.2 21.15 (6.50)</td>
</tr>
<tr>
<td>(N=84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Other = diagnosis, research findings outcomes; % = % of correct responses to each domain and the overall questionnaire

*aThe mean differences is significant, p < .05. bThe mean differences is significant, p < .05.
Analysis of the four AKQ domains across professions indicted the Assessment Officers performed below the total sample mean and clinicians scored above the total sample mean on all four AKQ domains. Consistent across both groups, the greatest level of knowledge was on domain 2: Language, communication, and cognitive. Assessment Officers correctly responded to 60% of the items and clinicians to 79.2% of items. The area of least knowledge for both groups was on domain 4: Other characteristics (diagnosis, research findings, outcomes). Assessment Officers responded correctly to 43.3% of the items and clinicians correctly endorsed 64.2% of the items.

5.3.4.2.2 Knowledge difference between the groups of clinicians.

A one-way ANOVA examined whether knowledge varied among the clinicians (psychology-trained, allied health and registered nurses). Homogeneity of variance was confirmed for the dependent variable using Levene’s Test of Equality of Error Variance ($p > .05$). Significant differences were found between the groups, $F(2, 71) = 4.881, p = .010, \eta^2 = .12$. Tukey Post Hoc comparisons revealed a significant difference in the knowledge scores of the psychology and the nursing professionals. Significant differences were not found between the allied health professionals and either nursing or psychology-trained professionals. The means and standard deviations are presented in Table 5.

On a domain level within the groups of clinicians, the psychology group demonstrated higher knowledge levels than allied health and nursing professionals on the domains 1, 2, and 4. On domain 3 (behaviour) allied health professionals displayed higher knowledge levels than the psychology group, albeit by 1.9%. The domain of most knowledge for both the psychology and nursing professionals was domain 2 (language). The highest level of knowledge for the allied health group was
on domain 3 (behaviour). The means and standard deviations for each domain by profession are presented in Table 5.

5.3.5 Perception of ASD needs among CJS personnel.

Responses of to the PANQ-F were grouped in order to streamline analyses. Responses of ‘strongly agree’ and ‘agree’ were combined into the group titled ‘agree’, ‘strongly disagree’ and ‘disagree’ responses were combined into the ‘disagree’ group. Responses of neutral remained unchanged. Figure 1 displays the percentage of ‘agree’, ‘neutral’ and ‘disagree’ responses for the ten items comprising the PANQ-F. Overall, the large majority of participants endorsed items indicating that individuals with ASD require greater support and specialised services. Specifically, greater than 90% of participants agreed that people with ASD require support throughout the legal process (item 2) and that staff need specialised training to identify (item 9) and support people with ASD (item 5). Further, over 80% of respondents agreed that the needs of people with ASD require greater recognition in the CJS (item 8), that there are advantages to screening on entry into the prison system (item 4), and that there is a need for specialised prison services for prisoners with ASD (item 3).
Figure 1. Participants’ level of agreement with the ten items of the Perception of Autism Spectrum Disorders (ASD) Needs Questionnaire (PANQ-F). Refer to Appendix E for full wording of the items. *Item reverse coded prior to analysis.
Less consensuses was obtained on item 7: *Individuals with ASD are likely to go unrecognised in the forensic system.* Although most respondents were of the view that people with ASD were likely to remain unrecognised within the forensic system, approximately 25% scored either neutral or disagreed indicating a belief that this population is well identified in forensic systems. Items 1 and 10 show the most variability in participant responses. Neutral responses were the most common (48%) to item 10: *The needs of offenders with ASD would be better met outside the prison system,* with approximately 42% indicating agreement and 10% indicating disagreement. Approximately 45% of respondents indicated either a neutral response or disagreement to the idea that individuals with ASD might be especially vulnerable to display offending behaviour (item 1). Nonetheless, 55% of participants agreed that individuals with ASD have characteristics that may increase their risk of offending.

**5.3.6 Cases of ASD.**

Of the total sample, 66.7% (*n*=56) reported contact with either diagnosed or suspected cases of ASD in their current or a similar position within the correctional system. Of these participants, 76.8% reported contact with one or more diagnosed cases of ASD and 85.7% reported suspecting ASD in one or more cases in their current or similar clinical position (see Table 6).

Across professionals, 68.9% (*n*=51) of the clinicians reported contact with ASD cases during their current or similar position. It is noteworthy that 50% (*n*=5) of the Assessment Officers indicated contact with individuals with a diagnosed ASD during their current or previous comparable position.
Table 6

Number of Participants who reported Diagnosed and Suspected cases of ASD in Current or Similar Positions

<table>
<thead>
<tr>
<th>Number of cases</th>
<th>Diagnosed cases of ASD</th>
<th></th>
<th>Suspected cases of ASD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>$%$</td>
<td>$n$</td>
<td>$%$</td>
</tr>
<tr>
<td>0</td>
<td>13</td>
<td>23.2</td>
<td>8</td>
<td>14.3</td>
</tr>
<tr>
<td>1 - 4</td>
<td>30</td>
<td>53.6</td>
<td>29</td>
<td>51.8</td>
</tr>
<tr>
<td>5 - 9</td>
<td>7</td>
<td>12.5</td>
<td>8</td>
<td>14.3</td>
</tr>
<tr>
<td>$\geq$10</td>
<td>6</td>
<td>10.7</td>
<td>11</td>
<td>19.6</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100</td>
<td>56</td>
<td>100</td>
</tr>
</tbody>
</table>

5.3.7 ASD training.

Specific ASD training was seldom reported among CJS personnel. Tertiary level training was reported by 25% of participants; 46.4% of participants indicated that they had never received training on ASD. Of particular note, nine of the ten Assessment Officers indicated that they had never received any training in ASD. An interest in receiving ASD specific training in the forensic context was expressed by 85.7% of participants.

5.3.8 Summary of results.

Evaluation of the AKQ and the PANQ-F indicated they are reliable measures when administered to CJS personnel. Analyses of the AKQ revealed four valid domains of impairment: Social interaction and relationships; language, communication and cognition; Behaviour, interests, routines and sensitivities; and other characteristics (diagnosis, research findings, and outcomes). Gaps in the
knowledge of ASD across these domains were evident among the sample. Comparisons of knowledge across professions indicated clinicians had greater knowledge than Assessment Officers, with psychology-trained participants having the greatest overall knowledge of ASD as measured by the AKQ. Responses to the PANQ-F indicated strong agreement that individuals with ASD require additional specialised support throughout the CJS; and that personnel require ASD specific training. This was consistent with the findings that personnel have received limited training in ASD and with their expressed interest in completing ASD specific training. The majority of participants reported having contact with individuals in the Victoria forensic system that were either diagnosed with, or suspected of having ASD. This highlights the need for personnel to have adequate knowledge of ASD.
5.4. Discussion

The current study had two central aims. First, to determine whether the AKQ and PANQ-F are psychometrically sound measures to establish the knowledge and perceptions of ASD among CJS personnel. Second, to establish the knowledge of ASD among CJS personnel and to determine their perceptions of the needs of individuals with ASD within the CJS.

Knowledge of ASD among CJS personnel is required to accurately identify, support and provide treatment to individuals with ASD within correctional settings. Previous research has investigated ASD knowledge among health professionals; however, there is limited published research on the knowledge of ASD, specifically among CJS personnel. Available knowledge measures are largely based on the presentation of autism in children and the effect of ASD on child development (e.g., Bakare, Ebigbo, Agomoh, & Menkiti, 2008; Cascella & Colella, 2004; Schwartz & Drager, 2008; Stone, 1987). The available empirical research (McAdam, 2012; Myers, 2004) and case descriptions (Allen et al., 2008; Paterson, 2008) have indicated that CJS personnel have difficulty identifying individuals with ASD and are unaware of their needs when incarcerated. Despite this, it appears that the current study is the first to examine knowledge of ASD characteristics as they present in adulthood and the specific forensic needs of this population in Victoria, Australia.

This chapter explores the findings of this study in relation to its hypotheses and previous research, including the knowledge of ASD characteristics among CJS personnel and their perceptions of the needs of individuals with ASD within the CJS. This chapter also addresses the contact of CJS personnel with ASD in the CJS and any ASD-specific training they have received. Finally, this chapter explores the
implications and limitations of the current study, and makes recommendations for future research.

5.4.1 The effectiveness of the AKQ and PANQ-F.

The AKQ measures an individual’s knowledge of ASD. It appears to be a psychometrically sound measure, and displayed good validity and reliability when administered to a sample of CJS personnel. Preliminary reliability testing identified one item that did not make a meaningful contribution to the questionnaire. Subsequently, item 31 (Most people with ASD have intact speech) was removed from the questionnaire. The item may have correlated poorly with the overall questionnaire due to the diverse presentations of ASD. Research has suggested that individuals with ASD who are within the CJS are more likely to be at the higher functioning end of the spectrum (Holland et al., 2002). These individuals may have intact speech, yet have difficulties with social communication and the expression of language (Koyama et al., 2007; Macintosh & Dissanayake, 2004). Further, the reverse wording of the item may have meant the direction of the response options was unclear. Deletion of the item did not affect the internal consistency of the amended AKQ, which remained in the excellent range.

One item in each of domain 1, domain 2 and domain 3 had a low correlation with the total score. A review of these items revealed that they were clearly worded and elicited important information related to knowledge of the key ASD characteristics. Further, the effect of these items on the overall internal consistency of the questionnaire was negligible. On this basis, they were retained in the AKQ. All items of domain 4 adequately contributed to the questionnaire. The strong internal consistency of the overall questionnaire and each domain indicates that the
AKQ accurately measures knowledge of ASD among CJS personnel. The evaluation of the AKQ supported hypothesis 1A: that the AKQ is a valid and reliable measure of ASD knowledge among CJS personnel.

The PANQ-F measures CJS personnel’s perception of the needs of individuals who have ASD and are involved with the CJS. Due to varied participant responses, two items did not make strong statistical contributions to the overall questionnaire: item 1 (*People with ASD have characteristics that make them particularly vulnerable to offending behaviour*) and item 10 (*The needs of offenders with ASD would be better met outside the prison system*). It is possible that the variation in responses related to diverse beliefs and the controversy surrounding these topics. These items gathered important information and were therefore, retained in the questionnaire. The evaluation of the PANQ-F psychometric properties supported hypothesis 1B.

### 5.4.2 Knowledge of ASD among criminal justice system personnel.

This section explores ASD knowledge in the overall sample and the differences in knowledge between CJS professions. The AKQ measured knowledge in relation to the characteristics of ASD and factors related to diagnosis and prognosis. It was hypothesised that CJS personnel would have incomplete knowledge of the characteristics of ASD (hypothesis 1C). This hypothesis was supported, as only 68.2% of the AKQ items were correctly endorsed by CJS personnel, indicating incomplete knowledge of ASD. These findings are consistent with previous findings that CJS personnel have limited knowledge of ASD, specifically in relation to its identification (McAdam, 2012; Myers, 2004).
The results are also consistent with deficits in the knowledge and understanding of the specific characteristics of ASD identified among professions from other fields, including medical students (Shah, 2001); psychologists and paediatricians (Stone, 1987); and speech–language pathologists (Cascella & Colella, 2004; Stone, 1987). Gaps in knowledge of ASD mean that personnel may overlook diagnostic indicators and individuals on the spectrum may not receive the support and treatment required.

In the current study, language and communication abilities were the most understood ASD characteristics among CJS clinical and assessment personnel. Nonetheless, deficits in this area were still evident: 23.8% of items were incorrectly endorsed or rated as unknown. This is consistent with previous research using a similar domain structure. Igwe et al. (2011) found communication deficits constituted the area in which the second greatest level of understanding existed, knowledge in this area was only slightly lower than the area of greatest knowledge. Further, Cascella and Colella (2004) found speech–language pathologists perceived themselves to have adequate knowledge of communication deficits associated with ASD. It is possible that communication difficulties are easier to identify among adults with ASD when compared to other key characteristics; for example, to identify inflexible routines, direct observation may be required. Throughout the CJS, individuals are required to communicate basic information about themselves and their circumstances. Upon entry to any correctional centre, nursing personnel interview prisoners. Prisoners may also come into contact with allied health and psychology-trained professionals during their incarceration for clinical treatment of mental health and/or to address offending behaviour (Hayes, 2007; Myers, 2004). There may therefore be more opportunity for CJS personnel to identify language and
communication deficits than there is to observe social interactions or routine behavior.

Criminal justice system personnel correctly identified 71.3% of the items related to patterns of behaviour and interests. Although there is a knowledge gap in this domain, the current study demonstrated a greater level of understanding in this area than previous studies of ASD knowledge among health professionals from the community sector (Igwe et al., 2011; Shah, 2001). Adherence to routines and a preference of sameness is common in individuals with ASD (South et al., 2005). Higher levels of knowledge in this area among CJS personnel may be due to the structured and routine nature of the prison environment. Key daily activities have enforced times, including prisoner counts, meals, and lock-up at the end of the day. When there are changes to this routine such as changes to the time of lock-up, individuals with ASD may exhibit signs of anxiety or frustration (Soderstrom et al., 2002; South et al., 2005). Observation of an individual’s behaviour may lead to better recognition of routine patterns of behaviour. CJS personnel who are in close proximity to prisoners may have a greater opportunity to observe and document any incidents related to poor adaptability and therefore, may have greater knowledge in this area.

In relation to social interaction and relationships, a number of studies have reported a misunderstanding among health professionals of the social and interpersonal difficulties faced by individuals with ASD (Heidgerken et al., 2005; Imran et al., 2011; Stone, 1987). These findings are consistent with those of the current study, which found deficits in the knowledge of social interaction and relationships characteristics of ASD among CJS professionals. Previous research has indicated that individuals at the higher functioning end of the spectrum are more
likely to become involved with the CJS than individuals at the lower functioning end of the spectrum (Holland et al., 2002). Those who are higher functioning may have a level of social functioning that appears intact during interactions with CJS personnel (Langstrom et al., 2009). Further, the interactions between offenders and CJS personnel are of a professional nature and as a result, CJS personnel may not observe deficits in social interactions such as emotional reciprocation. Difficulties in social interactions may be more dominant and problematic when communicating with fellow prisoners, and poor understanding of social norms within this environment may make individuals with ASD vulnerable to manipulation and intimidation (Paterson, 2008). For example, in a series of case studies published by Paterson (2008), social and interpersonal deficits were observed among incarcerated adults with Asperger syndrome when they were interacting with other prisoners, as opposed to when interacting with prison personnel.

The final domain that related to diagnosis, research findings and outcomes for individuals with ASD was the area of least knowledge among CJS personnel. This is consistent with findings that ASD diagnoses, comorbidity and age of onset were the areas of least knowledge among a group of nursing professionals (Igwe et al., 2011). Knowledge deficits in this area are not surprising given many of the participants in the current study would not be involved in diagnosis and would not access psychological literature on developments in this area. Clearly, a lack of knowledge about diagnostic indicators would directly affect ASD recognition rates.

5.4.2.1 Assessment officers.

As predicted, Assessment Officers had a lower level of ASD knowledge than did the clinicians; this supports hypothesis 1C-1. Assessment Officers correctly responded to 52.3% of the AKQ items, indicating they were performing only slightly
better than chance, whereas clinicians correctly responded to 70.3% of the AKQ items. Assessment Officers demonstrated a greater level of understanding of language and communication items compared to other ASD characteristics, but lacked specific knowledge related to diagnosis, research findings and outcomes for individuals with ASD. Although this is understandable due to their non-clinical role, the deficits in knowledge among Assessment Officers is concerning given their role is to screen all prisoners with a minimum sentence of six months upon entering the Victorian prison system. Prisoners are screened using the VISAT. Although administration of this tool does not explicitly require clinical knowledge, such knowledge would be of great advantage and enable individuals with characteristics of specific disorders to be identified at the initial stage of their custodial sentence. The lack of ASD knowledge among Assessment Officers means that individuals with ASD might be likely to remain unidentified during the initial stages of their custody sentence, unless they self-report a diagnosis. This has the potential to affect negatively the disposition, treatment and management of these individuals within the custodial setting.

5.4.2.2 Clinicians.

The clinicians correctly responded to an average of 70% of the AKQ items. As clinicians comprised the majority of respondents, their knowledge across the domains was more consistent with the overall sample than that of the Assessment Officers. Similar to Assessment Officers, the clinicians indicated greater knowledge in language and communication abilities than other characteristics.

5.4.2.2.1 Knowledge difference among the groups of clinicians.

The clinician group was comprised of three types of professionals: psychology-trained professionals, allied health professionals, and registered nurses.
Psychology-trained professionals had significantly greater knowledge of ASD compared with nurses, despite the nurses in this study having more years of experience than the other clinicians had. This was consistent with hypothesis 1C-2. However, as there was no significant difference in the knowledge of ASD between the psychology-trained professionals and allied health professionals, hypothesis 1C-2 was only partially supported. This can be explained by the manner in which psychology-trained professionals, allied health professionals and nursing professionals work within the CJS. For example, psychology-trained and allied health professionals work in a clinical treatment capacity and are therefore more likely to have knowledge of the DSM-IV-TR diagnostic criteria than are nursing professionals. Clinical treatment interventions include regular, ongoing contact, which could last for months or years. Treatment is often in a group format, which allows staff the opportunity to observe difficulties among client interactions. Conversely, nurses work under a medical model of treatment, including periodic acute assessment and treatment on an individual basis.

The knowledge differences across professions are consistent with the findings of Imran et al. (2011) that non-medical professionals (psychologists and speech pathologists) were better skilled in identifying the necessary characteristics to diagnose ASD compared to nursing professionals. However, the results of the current study are inconsistent with those of Igwe et al. (2010), who found that psychology students had poorer knowledge of ASD compared with medical and nursing students. The differences between the groups is a limitation of Igwe and colleague’s findings: the psychology students had no clinical exposure to people with ASD, whereas the other two groups had completed clinical placements in settings in which they may have had contact with ASD.
5.4.3 Perception of ASD needs.

Despite gaps in the knowledge of ASD characteristics, the majority of CJS personnel agreed that these individuals required additional recognition and support within the CJS. The majority of CJS personnel also acknowledged that they would benefit from improved knowledge of ASD. Hypothesis 1D: that CJS personnel’s responses to the PANQ-F would indicate a lack of awareness of the identification and support needs of individuals with ASD who are within the CJS, was thus, not supported. This is an interesting finding, and suggests that the degree of knowledge in CJS personnel may have informed their belief that individuals with ASD require recognition and support. Recently, CJS personnel have become increasingly aware of the difficulties faced by individuals with mental illnesses and ID, which are both prevalent in the CJS (Hayes, 2007; Myers, 2004). It is possible that knowledge acquired by CJS personnel relating to the special needs of individual with a mental illnesses or ID may have translated to knowledge about people with ASD. An alternative explanation is that the focus and wording of the items on the PANQ-F may have suggested that individuals with ASD have greater needs than people who do not have ASD.

A number of interesting findings related to ASD and offending arose from responses to the PANQ-F. Two topics elicited diverse views. First, 55% of the CJS personnel believed that individuals with ASD have characteristics that make them particularly vulnerable to offending behaviour. This finding is consistent with the lack of consensus in the literature in which a number of studies draw connections between the characteristics of ASD and offending behaviour (Allen et al., 2008; Hare et al., 1999; Scragg & Shah, 1994; Siponmaa et al., 2001), while others have been unable to confirm this relationship (Ghaziuddin et al., 1991; Mouridsen et al., 2008;
Woodbury-Smith et al., 2006). However, the findings of the current study are inconsistent with those of McAdam (2012), who found that only 6% of a sample of prison personnel believed that there was an increase in the likelihood of offending in this population, although 38% were undecided. The gaps in ASD knowledge in the current study suggest that CJS personnel are ill equipped to determine whether this population is at greater risk of offending; hence, 28% of participants remained undecided on this topic.

The second finding of interest relates to the issue of whether the needs of offenders with ASD would be better met outside the prison system. CJS personnel were largely neutral in their opinions (48%). The lack of clarity of opinion on this issue is not surprising given that a prison sentence results from choices and actions that lead the courts to believe an individual to be unsafe for the community at that time. However, incarceration is not always appropriate for an offender with special needs, as it is not always possible to meet their specific treatment needs (Myers, 2004). Forty-two per cent of participants indicated the needs of offenders with ASD would be better met outside of the CJS, while only 10% indicated that a custodial environment is appropriate. These findings are largely consistent with previous research. Myers (2004) found that CJS personnel believed that prison was not an appropriate environment for people with learning disabilities or ASD. Specifically, participants reported that prisons were not adequately resourced and that personnel did not have the expertise to meet the needs to this population. However, Myers (2004) reported that the prison environment has the potential to provide a structured environment and support to individuals with ASD or learning disabilities that they otherwise may not receive. This may explain the high number (48%) of unsure responses in the current study.
Overall, CJS personnel were aware that individuals with ASD require additional support throughout the CJS. There was awareness among participants that CJS personnel had deficits in ASD knowledge and the manner in which the lack of knowledge affects the identification and support of these individuals. Further, participants endorsed the need for ASD-specific training for CJS personnel.

5.4.4 Contact with individuals with ASD.

A considerable number of personnel reported coming into contact during their CJS employment with individuals diagnosed with ASD, and individuals with suspected ASD. In relation to diagnosed cases of ASD, 66.7% of participants indicated having contact with an individual diagnosed with ASD. Although the period in which these cases were observed cannot be determined, it is likely that at least some of these cases remain in the CJS. This is consistent with international research in which cases of ASD have been identified in the CJS (Allen et al., 2008; Langstrom et al., 2009; Myers, 2004; Scragg & Shah, 1994; Siponmaa et al., 2001).

Assessment Officers reported a lower rate of observed cases of ASD than did clinicians. As described above, Assessment Officers complete the VISAT with prisoners entering the Victorian prison system who have been sentenced to serve longer than six months in prison. Therefore, it is expected that Assessment Officers will have contact with more prisoners, and thus, there is greater potential for them to encounter individuals with ASD than for clinicians, who have less exposure to prisoners across the system. Despite Assessment Officers having contact with more prisoners, it is likely that the low observation rate of ASD cases by Assessment Officers is due to their low levels of ASD knowledge. Clinicians generally have contact with fewer prisoners, yet when they do have contact, this is on an in-depth
level and often for longer periods than Assessment Officers, therefore clinicians may have greater opportunity to notice the subtle characteristics of ASD over time. Further, clinicians have access to client treatment files, which may contain information about previous diagnosis or mental illness features. Overall, based on the incomplete ASD knowledge found among CJS personnel in this study, it is possible that cases of ASD have gone unrecognised, and that CJS personnel have unknowingly encountered individuals with ASD. This is consistent with Myers (2004), who found prison personnel were aware of the likelihood that there were individuals with ASD within the prison system whose condition remained unidentified. These findings may have serious implications for the identification and support of such individuals within the CJS.

5.4.5 Implications of the current Study.

The deficits in knowledge of ASD indicate a strong need for CJS personnel training. The results of this study indicate that many personnel within the CJS are markedly underprepared for the challenges inherent in the identification and support of adults with ASD within the CJS. As a result, these individuals may go unrecognised and are therefore, less likely to have their offending behaviour appropriately addressed.

The majority of CJS personnel had not received any ASD-specific training. Only one-quarter of the sample reported ASD training as a part of their tertiary degree. This is consistent with past research that found that ASD training was limited among personnel working with individuals with ASD (Cascella & Colella, 2004; Hayes, 2007; Myers, 2004). A training programme aimed at the identification and treatment needs of individuals with ASD throughout the CJS is required to
ensure accurate screening and detection. An example of a brief training programme is provided in Study 2 of this thesis (see Appendix J). The National Autistic Society in the United Kingdom has also developed an information booklet titled *Autism: A guide for criminal justice professionals* (The National Autistic Society, 2011). Due to the specialised skills that may be required when working with individuals with ASD, it is often a prerequisite that clinicians who are working with individuals with ASD have specialised training in the diagnosis, treatment and management of the disorder (Schwartz & Drager, 2008).

### 5.4.6 Limitations and recommendations for future research.

Several limitations exist with the design of the current study and must be considered when interpreting and generalising the results. The principal limitation was the sample size. Although several efforts were made to increase the sample size by presentations at personnel training days and email reminders to potential participants, the resulting number of participants was too low to complete a confirmatory factor analysis. To investigate the structure of the AKQ, an exploratory factor analysis with a larger sample size is necessary and recommended. Further, the PANQ-F was not validated prior to the current study, as a result requires ongoing development to ensure it is a psychometrically sound measure. Overall, the AKQ was found to be a valid and reliable measure of ASD knowledge. Therefore it is recommended that the measure be used among personnel to developed and target training for CJS personnel. Further, with additional research, the AKQ may be used to determine the knowledge of ASD among other professions.

The inclusion of ASD experts as a comparison group would allow for greater examination of knowledge levels. Comparison groups have been included in some
past studies and provide benefit in determining gaps in specific areas (e.g., Heidgerken et al., 2005; Stone, 1987). Further, the CJS sample could be increased to incorporate personnel from other fields within the CJS, including custodial and community corrections officers. This would provide a breath of understanding of the knowledge of personnel who work throughout the CJS and may assist in enhancing the generalisability of the study. Further, determining the knowledge of correctional officers would be beneficial to determine service need, as this group has the greatest opportunity for observation and incident recording of offenders throughout the CJS. Ultimately, increasing the knowledge of personnel via specialised training programmes, both in workplaces and university training programmes will ensure the accurate placement, treatment and management of this population.

5.5. Chapter Summary

The current study provided an important overview of CJS personnel’s knowledge of ASD and their perception of the needs of individuals with ASD when in the CJS. The AKQ and PANQ-F appeared to be psychometrically sound measures. Results suggest that personnel in the CJS have gaps in their understanding of the characteristics of ASD, and in particular, a limited knowledge of the social, language, behaviour, and prognosis aspects of the disorders. This in turn, may indicate limited awareness of the difficulties faced by these individuals when involved with the CJS. To meet the needs of individuals with ASD, there is a need for accurate and effective identification of ASD in the CJS, increased training for personnel across the system and the provision of specialised programmes and support options for individuals with ASD. Without such treatment interventions, individuals with ASD are likely to miss the opportunity to understand the
consequences of their behaviour and to develop strategies to reduce their risk of reoffending (Myers, 2004). If such individuals are not identified, and do not have the opportunity to address their offending behaviour, the consequences may be widespread and have detrimental effects on the individual, their family and the wider community (Hare et al., 1999; Hayes, 2007; Myers, 2004).
Chapter 6.

Study 2: Screening for Autism Spectrum Disorders in the Victorian Prison System

6.1. Rationale

A review of the literature has highlighted the potential vulnerability of individuals with ASD to engage in offending behaviour and demonstrated the difficulties individuals with ASD may face within the correctional system given the lack of appropriate services (Allen et al., 2008; Siponmaa et al., 2001; Woodbury-Smith et al., 2006). There are several characteristics of ASD that may predispose an individual to offending behaviour. Bizarre, socially inappropriate and illegal behaviour may arise from their obsessions with particular objects, activities or routines (Chen et al., 2003; Woodbury-Smith et al., 2010). For example, an individual with ASD may break the law in pursuit of a special interest or obsession or may react aggressively to avoid, or remove themselves from, distressing sensory stimuli. A lack of insight, empathy and deficits in theory of mind may result in antisocial behaviour and difficulties understanding social cues, morals, or the importance of rules (Barry-Walsh & Mullen, 2004; Burke, 2001). Social deficits among this population have been demonstrated as a factor in stalking and sexual and violent offending behaviour (Barry-Walsh & Mullen, 2004; Mawson et al., 1985; Paterson, 2008; Stokes et al., 2007). When pursuing social relationships, individuals with ASD may make inappropriate advances, fail to recognise another person’s disinterest or become angry if their sexual approaches are not reciprocated. Further, feelings of frustration and anger outbursts may be triggered by a hypersensitivity to
the behaviour of others or by misinterpretation of the intent of others (Hall et al., 2007; Soderstrom et al., 2002).

Individuals with ASD face many difficulties in custodial environments and it is vital that they are identified at the earliest possible time. Deficits in communication and social interaction can render such individuals vulnerable to being manipulated, bullied and rejected by others (Shtayermman, 2007; Wing, 1997). This is of particular concern in a prison environment where intimidating and threatening behaviour is commonplace (Mbuba, 2012). Further, difficulties in adjusting to changes in routine and dealing with social dynamics may result in increased distress and anxiety among this population (Cashin & Newman, 2009; Dein & Woodbury-Smith, 2010). However, due to the limited knowledge of ASD among forensic personnel (Chown, 2010; Teagardin et al., 2012) and the subtle characteristics of ASD, it is likely that these individuals may go unrecognised in forensic populations. This has the potential to affect the safety, management and rehabilitation of individuals with ASD within the CJS.

Despite increasing recognition of the relevance of ASD to offending behaviour, recent reviews have highlighted the lack of systematic research on the specific characteristics of individuals with ASD within the CJS (Allen et al., 2008; Bjørkly, 2009; Newman & Ghaziuddin, 2008). The findings of the available research are both limited and inconsistent, being principally comprised of retrospective case reports and examinations of narrow populations within secure psychiatric settings. There is also a lack of research specifically from Australia. Despite the limitations of the current literature, it has highlighted the possible relationship between the characteristics of ASD and offending behaviour (e.g., Sutton et al., 2013; Woodbury-Smith et al., 2010). The existing literature has made recommendations regarding the
need for additional research into the characteristics and needs of individuals with ASD within the CJS (Bleil Walters et al., 2013; Cheely et al., 2012; Dein & Woodbury-Smith, 2010; Woodbury-Smith et al., 2006).

Currently, within the Victorian justice system, there is no systematic screening process to identify prisoners with ASD. The identification of individuals with suspected ASD who become involved in the CJS has important implications for disposition, management and rehabilitation.

6.1.1 Design of the current study.

This pilot study is the first known attempt to collect data of this nature in Victoria, Australia. The researcher faced significant challenges during the development and implementation of this research project that limit the breadth of the study. These included limited recognition that ASD was present in individuals in the CJS system, constraints inherent in the custodial environment and ethical considerations.

The study is comprised of two stages. Stage 1 involved the implementation of a brief ASD Screening Tool during the intake assessment of male prisoners entering the Victorian prison system. The ASD Screening Tool was developed specifically for the study and focused on the key characteristics of ASD that could potentially be observed or determined during a brief assessment session.

Stage 2 was the completion of a clinical interview. To determine the validity and reliability of the ASD Screening Tool, a number of participants were included in Stage 2 of the study regardless of the outcomes in Stage 1. The clinical interview consisted of two previously validated measures and open-ended clinical questions related to the key characteristics of ASD and offending behaviour. The clinical
interview sought to determine those individuals deemed appropriate for a full ASD assessment. Due to ethical constraints imposed within the present study, however, these individuals could not be referred for a comprehensive assessment. Reference to the ‘recommended referral’ group in the current study relates to individuals who have characteristics indicative of ASD and who require further clinical assessment to determine a diagnosis. In addition, an important component of an ASD screening and assessment is gaining collateral and historical information. Due to the preliminary nature of this study, such information was unable to be obtained.

Further, the study commenced with referent to the DSM-IV-TR diagnostic criteria for the characteristics of ASD. However, changes in diagnostic criteria occurred during the completion of this thesis, as such, the results refer to both the DSM-IV-TR criteria for Asperger syndrome and the DSM-5 criteria for ASD.

6.1.2 Aims and hypotheses.

The aims of this study were to explore the development and use of a screening and interview protocol to identify individuals in the Victorian prison system who may have ASD; to examine the characteristics of ASD among these individuals; and to use the findings to inform policy, programme and service responses that are appropriate for this population.

6.1.2.1 Utility of the ASD screening tool to identify prisoners with characteristics indicative of ASD.

A growing body of literature has highlighted the potential over-representation of individuals with ASD in the CJS. Despite the availability of a number of ASD screening scales, to the knowledge of the researcher, there are no concise screening instruments that have been implemented in the context of a prison reception
interview or with a generic offender population. In particular, there have been no evaluations of an ASD screening and identification process implemented in an Australian correctional facility. Accordingly, this study will develop and evaluate the utility of a screening tool for identifying prisoners with possible characteristics of ASD (Stage 1). The findings from Stage 1 will be compared with those achieved from a second stage, which includes a clinical interview and two assessment tools commonly used by mental health professionals to identify ASD traits – the AQ (Baron-Cohen et al., 2001) and the EQ-short form (Wakabayashi et al., 2006a). This study seeks to answer the following research questions: Can an ASD screening tool be administered at reception to the CJS by Assessment Officers in conjunction with the Victorian Intervention Screening and Assessment Tool (VISAT) to enable the identification of prisoners who have characteristics indicative of ASD? Is there concordance between those prisoners identified through the ASD Screening Tool and those identified with ASD characteristics through the clinical interview?

Specifically, it was hypothesised that:

Hypothesis 2A: The Stage 1 ASD Screening Tool, when administered by Assessment Officers in conjunction with the VISAT, will enable the identification of prisoners in the Victoria prison system who have characteristics indicative of ASD.

Hypothesis 2B: There will be a high concordance rate between prisoners identified with characteristics indicative of ASD through the Stage 1 ASD Screening Tool and those subsequently identified with characteristics indicative of ASD through the Stage 2 clinical interview.
6.1.2.2 Characteristics of ASD among prisoners identified through the screening and interview protocol.

As reviewed, research findings have highlighted three possible aetiological factors associated with offending behaviour among individuals with ASD: social and interpersonal naiveté (Frith, 1991; Stokes et al., 2007), special interests and routine behaviour (Anckarsater et al., 2008; Haskins & Silva, 2006), and low levels of empathy (Murrie et al., 2002; Wing, 1981). Research has predominantly focused on case analyses, examinations of forensic psychiatric populations, or targeted offender groups. Characteristics of ASD in a generic adult offender population do not appear to have been systematically examined.

The findings of this study will enable a description of the specific ASD characteristics of prisoners who are identified through the ASD Screening Tool and clinical interview. This is important for informing understanding of the risk factors for offending behaviour among individuals with ASD and subsequently the possible development of intervention and preventative strategies. This study aims to answer and explore the following research question: What are the ASD characteristics present among prisoners in the Victorian CJS identified by the ASD screening and interview protocol? Based on findings from previous research and theories posed to explain offending behaviour among individuals with ASD it was hypothesised that:

Hypothesis 2C: Prisoners who display characteristics indicative of ASD will have greater deficits in social and interpersonal abilities (as indicated by the social skills and communication subscales of the AQ and the DSM criteria) than other prisoners.
**Hypothesis 2D:** Prisoners who display characteristics indicative of ASD will have a greater level of special interests and routine behaviours (as indicated the attention to detail and attention switching subscales of the AQ and the DSM criteria) than other prisoners.

**Hypothesis 2E:** Prisoners who display characteristics indicative of ASD will have lower levels of empathy (as indicated by scores on the EQ) than other prisoners.

### 6.1.2.3 Offending behaviour.

Although most individuals with ASD are law abiding, research investigating the association between ASD and offending behaviour has indicated that individuals with ASD who do offend are more likely to engage in offending behaviour of an interpersonal nature (Cheely et al., 2012; Kumagami & Matsuura, 2009; Woodbury-Smith et al., 2006). Interpersonal offending is associated with deficits in social interaction and communication, as well as impairments in insight and empathy (Allen et al., 2008; Hall & Bernal, 1995; Stokes et al., 2007). An understanding of the nature of offending behaviour of prisoners who present with ASD is important to informing interventions for addressing problematic behaviour and reducing recidivism. This study seeks to determine if the offence patterns of prisoners with characteristics of ASD differ from those of prisoners who do not display ASD characteristics. Specifically, are the offences committed by prisoners with characteristics indicative of ASD more likely to be of an interpersonal nature than the offences committed by prisoners who do not display characteristics indicative of ASD? On the basis of previous research and theoretical perspectives regarding offending behaviour among individuals with ASD, it was hypothesised that:
*Hypothesis 2F:* Prisoners with characteristics indicative of ASD will have a higher frequency of interpersonal offences when compared to prisoners who do not display characteristics indicative of ASD.
6.2. Method

During the development of this study, the author consulted with Corrections Victoria management regarding the need for this research and the potential importance of outcomes in relation to current service provisions.

6.2.1 Participants.

Assessment Officers invited prisoners to participate in the study. Assessment Officers are trained professionals with various backgrounds including social work, custodial operations and community corrections. They administer the VISAT to eligible prisoners entering the Victorian prison system. Ten Assessment Officers completed the screening process in the current study.

A total of 408 male prisoners were invited by Assessment Officers to participate in the study during the administration of the VISAT. Of these individuals, 294 (72.1%) consented to participate in Stage 1 of the study. All recruited prisoners were aged over 18 years (age not available for total group) and had recently entered the prison system with a minimum sentence of six months. Participants were excluded if they presented as culturally and linguistically diverse that would necessitate the use of an interpreter.

At Stage 2 of the study, 87 of the 294 participants recruited in Stage 1 were invited to participate in a clinical interview. A number of participants were released from prison prior to the completion of the clinical interview and two participants withdrew their consent to participate. A total of 85 male prisoners aged 19 to 78 ($M = 35.58$ years; $SD = 12.01$ years) therefore participated in the clinical interview comprising Stage 2.
6.2.2 Materials.

6.2.2.1 Training Programme for Assessment Officers.

Corrections Victoria Assessment Offices complete an ASD training programme (see Appendix J). The training included an overview of ASD, the key ASD characteristics and signs of possible ASD among offenders. The Stage one ASD Screening Tool was explained and a number of case studies were presented to increase understanding.

6.2.2.2 Stage 1 – ASD Screening Tool.

The ASD Screening Tool (see Appendix K) is a 10-item questionnaire that screens for characteristics of ASD among prisoners. The screening tool is an adaptation of Nylander and Gillberg (2001) ASD in Adults Screening Questionnaire (ASDASQ); a measure developed to identify possible ASD among psychiatric outpatients. Seven ASDASQ items were adapted to apply to a forensic population, three additional items were derived from research on the development and validation of ASD screening tools (Baron-Cohen et al., 2005b; Ehlers, Gillberg, & Wing, 1999; Gillberg et al., 2001; Le Couteur et al., 2003; Lord et al., 1994) and the DSM-IV-TR (APA, 2000). Each item is related to a core characteristic or behaviour that can be assessed during a short interview (e.g., “Is this individual rigid and inflexible with procedures?” and “Does the individual use unusual nonverbal communication?”). To further validate the questions, two expert ASD diagnosticians reviewed the Screening Tool. Both endorsed the content of the tool as a screen for ASD.

The ASD Screening Tool requires assessors to indicate the presence of each of the ten characteristics by utilising one of three response options: Yes, No, or No Opportunity to Assess. On four of the items, a prompt question is provided to elicit information from the individual being assessed to assist in determining if the
characteristic was present (e.g., “Do you have difficulties in starting or maintaining conversation with others?”). In addition to the ASD Screening Tool, assessors have the opportunity to specify if the prisoners file indicated a previous ASD diagnosis. Participants receive a score based on the number of characteristics identified (range = zero to 10).

6.2.2.3 Stage 2 – clinical interview.

The clinical interview contained three sections (refer to Appendix L for the proforma): Questions relating to the key characteristics of ASD; the Autism Quotient; and the Empathy Quotient – Short Form. Items also related to index offence and prior convictions.

6.2.2.3.1 Key characteristics of ASD items.

A total of 19 open ended questions were included in this section, all questions were based on the DSM-IV-TR diagnostic criteria for Autistic Disorder and Asperger Syndrome as this was current at the commencement of this study. The criteria fell under six broad categories: Developmental history (five items; e.g., “Tell me about your experiences making friends or playing with other children when you were young?”); Psychosocial functioning in adulthood (four items; e.g., “Before entering prison did you have close friends?”); Sensory (two items; e.g., “How do you tolerate noises - change in noise, or loud noises?”); Routine/rituals (one item: “What sort of routines/rituals do you have?”); Adjustment to change (one item: “What happens if routine, rituals or other things are changed/prevented?”); and Special interests (six items; e.g., “In your childhood, did you know more about a topic than others, and did you enjoy telling people about this?”). When a current special interest was identified, participants were asked to rate how frequently they focus on the special interest on a 6 point scale from ‘Hardly ever’ to ‘Always’.
Participants were also asked if the interest had an impact on their day-to-day living (yes or no).

6.2.2.3.2 Autism quotient.

In the current study, the Autism Quotient (AQ; Baron-Cohen et al., 2001) was titled the Personality Characteristics Questionnaire to reduce potential distress to participants. The AQ contained 50 items across five theoretical derived subscales: social skills (e.g., “I find it hard to make new friends”); attention switching (e.g., “New situations make me anxious”); attention to detail (e.g., “I often notice small sounds when others do not”); communication (e.g., “I enjoy social chitchat”); and imagination (e.g., “I find making up stories easy”). Psychometric evaluation of the five-factor structure has produced varying results. Some studies have found alternative factor structures (Austin, 2005; Hoekstra et al., 2008; Hurst et al., 2007; Stewart & Austin, 2009); others have found similar factor structures to Baron-Cohen et al.’s original model (Kloosterman, Keefer, Kelley, Summerfeldt, & Parker, 2011; Lau et al., 2013). Due to the variation in these findings, and the theoretical basis of the original factor model, the current study has employed Baron-Cohen et al.’s five-factor model. The five AQ subscales and the overall questionnaire displayed moderate to high Cronbach’s alpha coefficients (see Table 7).

All items were scored on a four point Likert scale (‘definitely’ and ‘slightly agree’, scored one point; ‘definitely’ and ‘slightly disagree’ scored zero). Scale scores were calculated for each subscale (0 to 10) and the total scale (0 to 50). Psychometric evaluation indicated the AQ has good diagnostic validity, including adequate sensitivity (0.95) and specificity (0.52), a positive predictive value (PPV) of 0.84, and negative predictive value (NPV) of 0.78 (Woodbury-Smith et al., 2005b). Further, the AQ has been validated cross-culturally with a Japanese
population (Wakabayashi et al., 2006b) and associated with scientific and cognitive abilities (Baron-Cohen et al., 2001; Bayliss & Tipper, 2005).

Table 7

*Past and Current Cronbach’s Alpha Coefficients for the Subscales of the AQ*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Past α</th>
<th>Current α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills</td>
<td>.77a</td>
<td>.70</td>
</tr>
<tr>
<td>Attention Switching</td>
<td>.67a</td>
<td>.60</td>
</tr>
<tr>
<td>Attention to Detail</td>
<td>.63a</td>
<td>.67</td>
</tr>
<tr>
<td>Communication</td>
<td>.65a</td>
<td>.72</td>
</tr>
<tr>
<td>Imagination</td>
<td>.65a</td>
<td>.42</td>
</tr>
<tr>
<td>Overall AQ</td>
<td>.67b</td>
<td>.81</td>
</tr>
</tbody>
</table>

*aBaron-Cohen et al. (2001). bHurst et al. (2007), non-clinical sample.*

6.2.2.3.3 *Empathy quotient – short form.*

The full version of the EQ was developed by Baron-Cohen and Wheelwright (2004) to determine empathy level among individuals with Asperger syndrome and HFA. The full measure contained 60 items and displayed strong reliability with a Cronbach’s alpha of .92 and has been validated by a large number of studies, including cross-culturally (Berthoz, Wessa, Kedia, Wicker, & Grezes, 2008; Preti et al., 2011) and gender (Baron-Cohen & Wheelwright, 2004). However, due to the length of the clinical interview, the EQ-short (Wakabayashi et al., 2006a) was employed. An item analysis of the EQ reduced the quotient to 22 items (e.g., “I am good at predicting how someone will feel”). The EQ-short has reasonable reliability and is highly correlated to the full scale EQ ($r = .93$) (Wakabayashi et al., 2006a). The EQ-short has been validated cross-culturally with a Chinese nursing sample.
(Guan, Jin, & Qian, 2012) and among British university students (Wakabayashi et al., 2006a). In the current study, the EQ-short has an acceptable Cronbach’s alpha of .84. All items were scored on a four point Likert scale (‘strongly agree’ scored two points, ‘slightly agree’ scored one points, ‘slightly disagree’ and ‘strongly disagree’ scored zero points). Total scores range from zero to 44.

6.2.2.4 Victorian intervention screening and assessment tool.

The VISAT (Ross, Pollard, Van den Bossche, Thomas, & Brown, 2005) is a comprehensive risk and needs assessment tool that is administered to all offenders aged 18 years and older who are sentenced in Victoria, Australia to a minimum of six months for males, and four months for females. It comprises 11 modules used to identify psychosocial factors, dynamic risk factors (e.g., family problems, attitude) and criminogenic needs that are used to determine risk of reoffending. The VISAT is based on both actuarial methods and clinical judgement. The current study utilised three VISAT modules: Module 1: Current offence and criminal history; Module 3: Sexual offending; and Module 8: Physical and mental health. These modules were used to verify information related to offending behaviour and mental health gained during the clinical interview.

Module 1 contains 27 items related to current offences and criminal history as an adult and a juvenile (e.g., “What happened during the offence(s)?”). Module 3 contains 20 items related to sexual offending (e.g., “How many times have you been found guilty of an offence that included a sexual element?”). This module is only completed when there is an offence of a sexual nature. Module 9 consists of 30 questions relating to past and current physical and mental health concerns (e.g., “Have you ever received psychological or psychiatric treatment for any condition?”)
6.2.3 Procedure.

Ethics approval was received from the Department of Justice Human Research Ethics Committee and the Deakin University Human Research Ethics Committee (see Appendix H). Data from both Stage 1 and Stage 2 was collected over a 13-month period from November 2010 to November 2011.

6.2.3.1 Training programme.

Prior to commencing Stage 1, the Assessment Officers completed a training programme on ASD and administration of the ASD Screening Tool. The Assessment Officers were provided with the training manual. Two training programmes were conducted as part of the current study; each ran for approximately four hours.

6.2.3.2 Stage 1 – screening protocol.

During the administration of the VISAT by Corrections Victoria Assessment Officers, all eligible prisoners were provided with basic information about the study and the consent form (see Appendix M). Participants were provided with the opportunity to discuss the study and consent process, they were informed that they could decline to participate, or remove their consent at any point without impact to themselves. Administration of the VISAT occurs within the initial months of a prisoner being receipted into custody. The Stage 1 ASD Screening Tool was administered to all consenting prisoners over a five-month period. To ensure confidentiality, no identifiable information was recorded on the ASD Screening Tool; participants were assigned a code that was linked to a database, enabling the researcher to follow-up eligible prisoners for the Stage 2-clinical interview. The ASD Screening Tool took between five and 10 minutes to complete.
6.2.3.3 Stage 2 – clinical interview.

In order to minimise the likelihood that the order of questioning would result in any unintended or systematic participant response effects, the open ended questions based on the characteristics of ASD were completed prior to and following each of the psychometric scales. Prisoners were invited to participate in the Stage 2 clinical interview irrespective of Stage 1 ASD Screening Tool score. Individuals with higher ASD Screening Tool scores were initially prioritised and invited to participate to minimise potential attrition associated with prison release. A sample of consenting individuals with low scores on the Stage 1 ASD Screening Tool was also invited to participate. Whilst random sampling of participants was attempted, this was restricted by methodological issues and environmental constraints, including prisoner behaviour and availability for participation and support from prison locations, as such purposive sampling methods were used. The majority of Stage 2 participants had screening scores under two, consistent with the Stage 1 sample screening scores of Stage 1 participants. The participants screening score was known to the researcher conducting the Stage 2 clinical interview.

The researcher, a trained provisional psychologist with experience in both forensic and disability settings conducted the clinical interview. At the commencement of the clinical interview, participants were reminded of the confidential nature of the study and that they could withdraw from the study at any point with no consequence. The clinical interview took between 45 and 60 minutes to complete.

6.2.3.4 Variable computation.

Total scores were computed for the Screening Tool, the EQ, the AQ, as well as the five AQ subscales. Two offence variables were computed: interpersonal and
other offences. The information from the clinical interview was coded against the DSM-IV-TR Asperger Syndrome criteria, as well as for the newly released DSM-5 criteria for ASD. The researcher and an independent autism expert jointly assessed participant responses to items from the clinical interview to determine if the participant met, partially met, or did not meet each diagnostic criterion.

6.2.3.5 Determining a referral.

Due to the pilot nature of this study, participants who displayed ASD characteristics were unable to be referred for a full ASD assessment. However, as a means of highlighting potential cases of ASD, criteria were developed to determine a referral recommendation for a full ASD assessment. These criteria were consistent with diagnostic criteria, but required a lower threshold (fewer or partial deficit). There were three possible pathways to receive a recommendation for a referral. These aimed to be over inclusive due to difficulties in accurately identifying the presence of ASD during the short clinical interview (see Figure 2).
Autism Quotient
Met the cut-off score of ≥ 32

DSM-IV-TR criteria for AS
Category A: At least partially met two or more criteria
AND
Category B: At least partially met one or more criteria

DSM-5 criteria for ASD
Category A: At least partially met three or more criteria
AND
Category B: At least partially met two or more criteria

Referral Recommendation for an ASD Assessment

Figure 2. The three pathways for participants to receive a referral recommendation for an ASD assessment. \textsuperscript{a}Asperger Syndrome
6.3. Results

The data were analysed using SPSS (Version 20). The results are presented in three sections in line with the hypotheses. First, the psychometric properties of the ASD Screening Tool data \((n=294)\) were examined. Second, the clinical interview \((n=85)\) data was analysed for concordance rates with the ASD Screening Tool and to examine the ASD characteristics present among participants. Finally, participant offending behaviour was examined.

6.3.1 Data screening.

Data were screened for entry errors and variable ranges were examined. No missing data were present. The data were screened for univariate and multivariate outliers. Univariate outliers \((z = \pm 3.29)\) were identified on all continuous dependent variables (Screen Score, AQ and EQ), examination of the 5% trim statistic indicated that the outliers had little impact on the means. Further inspection revealed the outliers represented participants that displayed ASD characteristics, as such, they were retained in the study. Multivariate outliers were screened for using Mahalohbas distance, no multivariate outliers were identified in the Screen Score, AQ, EQ, interpersonal offences and other offences variables \((p < .001)\).

Variable distribution checks were conducted on the continuous dependent variables. Skewness and kurtosis statistics fell within the acceptable ranges of \(\pm 2\) and \(\pm 7\) respectively on all three variables (Curran et al., 1996; Tabachnick & Fidell, 2007). Visual inspection of the histograms indicated normally distributed data on the AQ and EQ. However, the Screen Score data was positively skewed on both the screening sample \((n=294)\) and clinical interview sample \((n=85)\). Due to the nature of the variable, normally distributed data was not expected.
6.3.2 Evaluation of the ASD screening tool.

In order to assess the accuracy and psychometric properties of the Stage 1 ASD Screening Tool, findings from the Stage 2 clinical interview were used to determine the concordance rate between the two stages. Participants were classified into the recommended referral group (n=9) and the non-referral group (n=76), using the procedure displayed in Figure 2 above. Due to limited participant numbers, particularly in the recommended referral group, the predictive power of the three points of data in determining a referral could not be conducted as planned using Logistic Regression.

6.3.2.1 Reliability.

Reliability analysis of the 10 screening items revealed acceptable internal consistency (Cronbach’s \( \alpha = .71 \)). The items-total correlations (see Table 8) revealed three items with weak correlations (\( r < .3 \)). Given that ASD characteristics vary, strong correlations were not expected and all items were retained.

6.3.2.2 Validity.

External validity

A weak yet significant relationship was found between scores on the ASD Screening Tool and AQ scores, \( r(85) = .409, p < .01 \). This indicates that higher scores on the screening tool are associated with higher scores on the AQ and demonstrates the external validity of the ASD screening tool.

Discriminant power

A Mann-Whitney \( U \) test revealed significant differences between the screen scores for the recommended referral (\( Md = 4; n=9 \)) and the non-referral (\( Md = 2; n=76 \)) groups, \( U = 174, z = -2.44, p < .05; r = .26 \). Figure 3 displays the range of
screen scores by referral recommendation outcome. Specifically, it highlights the large variation in responses in the recommended referral group when compared to the non-referral group.

Table 8

*Item-Total Correlations and Cronbach’s Alpha if the Item was Deleted*

<table>
<thead>
<tr>
<th>Item</th>
<th>Item-Total Correlation (r)</th>
<th>Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.  Nonverbal communication</td>
<td>.43</td>
<td>.68</td>
</tr>
<tr>
<td>2.  Verbal communication</td>
<td>.43</td>
<td>.67</td>
</tr>
<tr>
<td>3.  Verbal expression</td>
<td>.38</td>
<td>.68</td>
</tr>
<tr>
<td>4.  Odd, eccentric</td>
<td>.38</td>
<td>.68</td>
</tr>
<tr>
<td>5.  Literal thinking</td>
<td>.28</td>
<td>.70</td>
</tr>
<tr>
<td>6.  Clothing, personal care</td>
<td>.24</td>
<td>.70</td>
</tr>
<tr>
<td>7.  Inflexibility</td>
<td>.41</td>
<td>.68</td>
</tr>
<tr>
<td>8.  Intense preoccupations</td>
<td>.45</td>
<td>.67</td>
</tr>
<tr>
<td>9.  Patterns of behaviours</td>
<td>.42</td>
<td>.68</td>
</tr>
<tr>
<td>10. Common sense</td>
<td>.24</td>
<td>.70</td>
</tr>
</tbody>
</table>

*Note.* Refer to Appendix K for detailed item descriptions.
Receiver operator characteristics (ROC) and area under curve (AUC) analyses were used to examine the accuracy of the ASD Screening Tool in classifying Stage 2 participants to the recommended referral group and to determine an optimal cut-off score. The area under the ROC curve is indicative of the overall accuracy of a test, representing the probability that a randomly selected ‘true-positive’ participant will score higher on the test than a randomly selected ‘true-negative’ participant (see Figure 4). The AUC = 0.75 (Std Err .10; 95%; CI .59 - .93) indicating accuracy of the ASD Screening Tool in the moderate range. The ROC curve classified the groups significantly better than chance $p < .05$.

Figure 3. Range of screen scores for the referred and non-referred groups.
Table 9 displays the sensitivity and specificity statistics for the possible cut-off values. Two possible cut-off scores were considered, initially the cut-off value of four or above was reviewed due to the significant median differences between the recommended referral and non-referral groups reported above. Probability analysis at this cut-off (see Table 10) revealed 55.6% of the recommended referral cases were correctly classified and 81.6% of non-referred cases were correctly classified. The false negative rate (44.4%) indicated that two in five participants with ASD characteristics would be missed by the screen at this cut-off. The cut-off of 4 had a PPV of .26 and a strong NPV of .94.
Table 9

_Cut-off Values and Corresponding Sensitivity and Specificity Rating for the ASD Screening Tool_

<table>
<thead>
<tr>
<th>Cut-off</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 0</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>≥ 1</td>
<td>.89</td>
<td>.21</td>
</tr>
<tr>
<td>≥ 2</td>
<td>.89</td>
<td>.42</td>
</tr>
<tr>
<td>≥ 3</td>
<td>.78</td>
<td>.60</td>
</tr>
<tr>
<td>≥ 4</td>
<td>.56</td>
<td>.82</td>
</tr>
<tr>
<td>≥ 5</td>
<td>.33</td>
<td>.92</td>
</tr>
<tr>
<td>≥ 6</td>
<td>.22</td>
<td>.95</td>
</tr>
<tr>
<td>≥ 7</td>
<td>.22</td>
<td>1.00</td>
</tr>
<tr>
<td>≥ 9</td>
<td>.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 10

_Probability of Receiving a Referral Recommendation at a Cut-off of Four or Above_

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Referral</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
</tr>
<tr>
<td>SS ≥ 4</td>
<td>5 (55.6)</td>
</tr>
<tr>
<td>SS &lt; 4</td>
<td>4 (44.4)</td>
</tr>
<tr>
<td>Total</td>
<td>9 (100)</td>
</tr>
</tbody>
</table>

*Note. SS = Screen score*

A cut-off of three or above was also considered. This was consistent with the box plot in Figure 3 that indicated most recommended referral cases had a screen
score of 3 or above. Probability analysis at the $\geq 3$ cut-off (see Table 11) revealed 77.8% of the recommended referral cases were correctly classified, and 60.5% of the non-referred cases were correctly classified. The false negative rate (22.2%) indicated one in five participants with ASD characteristics was missed. When reducing the cut-off from 4 to 3, three less participants were classified as false negatives and the scale had a PPV of .19, NPV of .96.

Table 11

*Probability of Receiving a Referral Recommendation at a Cut-off of Three or Above*

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Referral n (%)</th>
<th>Non-referral n (%)</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS $\geq 3$</td>
<td>7 (77.8)</td>
<td>30 (39.5)</td>
<td>37</td>
</tr>
<tr>
<td>SS &lt; 3</td>
<td>2 (22.2)</td>
<td>46 (60.5)</td>
<td>48</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9 (100)</td>
<td>76 (100)</td>
<td><strong>85</strong></td>
</tr>
</tbody>
</table>

*Note.* SS = Screen score

Data analysis revealed the ASD Screening Tool was both a valid and reliable instrument that can discriminate between participants recommended for a referral and those who were not. A cut-off of three appears to be optimal in the current sample.

6.3.3 Findings from the ASD screening tool in the total sample (Stage 1).

6.3.3.1 Characteristics identified.

Table 12 outlines the percentage of each characteristic identified on the ASD Screening Tool for the total sample ($n=294$). Deficits in verbal communication were the most frequently recorded characteristic among participants (16.3%), followed by
odd or eccentric behaviour (14.3%). The least recorded characteristic related to
clothing and personal care (2%). The ‘no opportunity to assess’ (NOA) response
option was seldom utilised. Assessment Officers were more likely to indicate NOA
for items that they could not directly observe (items 7, 8 and 9).

Table 12

Characteristics of ASD Displayed Among Participants on the ASD Screening Tool

<table>
<thead>
<tr>
<th>Response</th>
<th>Yes</th>
<th>No</th>
<th>NOA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>1. Nonverbal communication</td>
<td>34 (11.6)</td>
<td>258 (87.8)</td>
<td>2 (0.7)</td>
</tr>
<tr>
<td>2. Verbal communication</td>
<td>48 (16.3)</td>
<td>244 (83.0)</td>
<td>2 (0.7)</td>
</tr>
<tr>
<td>3. Verbal expression</td>
<td>26 (8.8)</td>
<td>268 (91.2)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>4. Odd, eccentric</td>
<td>42 (14.3)</td>
<td>250 (85.0)</td>
<td>2 (0.7)</td>
</tr>
<tr>
<td>5. Literal thinking</td>
<td>23 (7.6)</td>
<td>269 (91.5)</td>
<td>2 (0.7)</td>
</tr>
<tr>
<td>6. Clothing, personal care</td>
<td>6 (2.0)</td>
<td>286 (97.3)</td>
<td>2 (0.7)</td>
</tr>
<tr>
<td>7. Inflexibility</td>
<td>32 (10.9)</td>
<td>249 (84.7)</td>
<td>13 (4.4)</td>
</tr>
<tr>
<td>8. Intense preoccupations</td>
<td>36 (12.2)</td>
<td>245 (83.3)</td>
<td>13 (4.4)</td>
</tr>
<tr>
<td>9. Patterns of behaviours</td>
<td>34 (11.6)</td>
<td>247 (84.0)</td>
<td>13 (4.4)</td>
</tr>
<tr>
<td>10. Common sense</td>
<td>19 (6.5)</td>
<td>272 (92.5)</td>
<td>3 (1.0)</td>
</tr>
</tbody>
</table>

Note. Refer to Appendix K for detailed item descriptions; N=294; NOA = No opportunity to assess

6.3.3.2 Screen scores.

Table 13 displays the computed screen scores; these scores indicate the total
number of characteristics identified for each participant. The majority of participants
displayed no characteristics of ASD, 37.8% (n=111) of participants displayed at least
one characteristic. No participants displayed nine or more characteristics.
Table 13

Number and Percentage of Participants per Screen Score

<table>
<thead>
<tr>
<th>Screen Score</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>183</td>
<td>62.2</td>
</tr>
<tr>
<td>1</td>
<td>30</td>
<td>10.2</td>
</tr>
<tr>
<td>2</td>
<td>28</td>
<td>9.5</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>8.2</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
<td>4.8</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>2.7</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>1.7</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>294</td>
<td>100</td>
</tr>
</tbody>
</table>

6.3.4 Characteristics of ASD among the clinical interview sample (Stage 2).

The following sections relate to the ASD characteristics present among the 85 participants who undertook the Stage 2 clinical interview as measure by the ASD Screening Tool, the AQ, DSM-IV-TR and DSM-5 diagnostic criteria, and the EQ. Of the 85 interviewed, nine (10.6%) participants displayed characteristics indicative of ASD and therefore comprised the recommended referral group; the remaining 76 (89.4%) participants did not display characteristics indicative of ASD and comprised the non-referral group. Table 14 displays the demographic details of the overall Stage 2 sample by referral recommendation.
Table 14

Details of the Stage 2 Participants Overall and by Referral Recommendation

<table>
<thead>
<tr>
<th></th>
<th>Recommendation</th>
<th></th>
<th>Overall Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Referral  (n=9)</td>
<td>Non-referral (n=76)</td>
<td>(N=85)</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>34.33</td>
<td>35.72</td>
<td>35.58</td>
</tr>
<tr>
<td>SD</td>
<td>10.12</td>
<td>12.26</td>
<td>12.01</td>
</tr>
<tr>
<td>Number of times sentenced to adult prison</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>33.3%</td>
<td>44.7%</td>
<td>43.5%</td>
</tr>
<tr>
<td>2 to 5</td>
<td>44.4%</td>
<td>23.7%</td>
<td>25.9%</td>
</tr>
<tr>
<td>6 to 10</td>
<td>11.1%</td>
<td>14.5%</td>
<td>14.1%</td>
</tr>
<tr>
<td>&gt; 10</td>
<td>11.1%</td>
<td>17.1%</td>
<td>16.5%</td>
</tr>
<tr>
<td>Number of community-based sentences served</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>22.2%</td>
<td>37.3%</td>
<td>35.3%</td>
</tr>
<tr>
<td>1</td>
<td>0.0%</td>
<td>25.3%</td>
<td>22.4%</td>
</tr>
<tr>
<td>2 to 5</td>
<td>66.7%</td>
<td>29.3%</td>
<td>32.9%</td>
</tr>
<tr>
<td>6 to 10</td>
<td>11.1%</td>
<td>5.3%</td>
<td>5.9%</td>
</tr>
<tr>
<td>&gt; 10</td>
<td>0.0%</td>
<td>2.7%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Past psychological or psychiatric treatment</td>
<td>88.9%</td>
<td>65.8%</td>
<td>68.2%</td>
</tr>
<tr>
<td>Current psychological or psychiatric treatment</td>
<td>44.4%</td>
<td>36.8%</td>
<td>37.6%</td>
</tr>
</tbody>
</table>

6.3.4.1 ASD screening tool.

A weak yet significant relationship was found between scores on the ASD Screening Tool and recommended referral group, \( r (85) = .266, p< .05 \). This indicates that higher scores on the screening tool are associated with receiving a referral recommendation (see Table 15). The most frequently displayed characteristics by participants in the recommended referral group included verbal
communication, nonverbal communication, and odd and eccentric behaviour.

Although verbal communication and odd eccentric behaviour were also the most commonly observed characteristics in the non-referral group, these characteristics were observed more frequently in the recommended referred group than the non-referred group. Deficits with clothing and personal care were the least frequently observed in both the recommended referral and non-referral groups. Inflexibility was observed more often in the non-referral group than the recommended referral group.

Table 15

*Characteristics of the ASD Identified on the ASD Screening Tool*

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Recommendation</th>
<th>Referral (n=9)</th>
<th>Non-referral (n=76)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No (%)</td>
<td>Yes</td>
</tr>
<tr>
<td>1. Nonverbal communication</td>
<td>6 (66.7)</td>
<td>3 (33.3)</td>
<td>17 (22.4)</td>
</tr>
<tr>
<td>2. Verbal communication</td>
<td>7 (77.8)</td>
<td>2 (22.2)</td>
<td>22 (28.9)</td>
</tr>
<tr>
<td>3. Verbal expression</td>
<td>5 (55.6)</td>
<td>4 (44.4)</td>
<td>12 (15.8)</td>
</tr>
<tr>
<td>4. Odd, eccentric</td>
<td>6 (66.7)</td>
<td>3 (33.3)</td>
<td>22 (28.9)</td>
</tr>
<tr>
<td>5. Literal thinking</td>
<td>4 (44.4)</td>
<td>5 (55.6)</td>
<td>12 (15.8)</td>
</tr>
<tr>
<td>6. Clothing, personal care</td>
<td>1 (11.1)</td>
<td>7 (77.8)</td>
<td>3 (3.9)</td>
</tr>
<tr>
<td>7. Inflexibility</td>
<td>1 (11.1)</td>
<td>8 (88.9)</td>
<td>20 (26.3)</td>
</tr>
<tr>
<td>8. Intense preoccupations</td>
<td>2 (22.2)</td>
<td>7 (77.8)</td>
<td>20 (26.3)</td>
</tr>
<tr>
<td>9. Patterns of behaviours</td>
<td>2 (22.2)</td>
<td>7 (77.8)</td>
<td>18 (23.7)</td>
</tr>
<tr>
<td>10. Common sense</td>
<td>3 (33.3)</td>
<td>6 (66.7)</td>
<td>10 (13.2)</td>
</tr>
</tbody>
</table>

*Note.* Refer to Appendix K for detailed item descriptions; *N*=85.
6.3.4.2 *Autism quotient.*

The AQ measured deficits in the areas of social and interpersonal functioning (including communication), and special interest and routine behaviour related to hypotheses 2C and 2D respectively. Grouped AQ scores, means and standard deviation on the AQ are displayed in Table 16. Of the 85 participants, eight achieved scores over the clinical cut-off of 32 as determined by Baron-Cohen et al., 2001. The scores of a large percentage of participants (36.5%) fell just below the cut-off, indicating the presence of ASD characteristics in this forensic sample. An independent sample t-test indicated a significant difference between the total AQ scores of the recommended referral and non-referral groups, \( t(83) = 8.16, p < .001, \eta^2 = 0.45 \) (see Table 17).

*AQ subscale analysis.*

A discriminant function analysis was conducted with the recommended referral group as the dependent variable and the five AQ subscales as predictor variables (see Table 17). The model was a good fit, Wilks’ Lambda = .468, df = 5, \( p < .001 \). A series of univariate ANOVAs with Bonferroni corrections (reducing \( p \) to .01) revealed the two groups differed significantly on four of the five subscales. The group did not differ significantly on the *Attention to Detail* subscale; on the remaining four subscales, the recommended referral group had significantly greater mean scores than the non-referral group.
Table 16

*Grouped scores, Means and Standard Deviations on the Autism Quotient*

<table>
<thead>
<tr>
<th>AQ Score</th>
<th>n</th>
<th>%</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 10</td>
<td>5</td>
<td>5.9</td>
<td>8.60</td>
<td>1.95</td>
</tr>
<tr>
<td>11 – 20</td>
<td>41</td>
<td>48.2</td>
<td>16.32</td>
<td>2.70</td>
</tr>
<tr>
<td>21 – 31</td>
<td>31</td>
<td>36.5</td>
<td>23.71</td>
<td>2.64</td>
</tr>
<tr>
<td>32 – 50*</td>
<td>8</td>
<td>9.4</td>
<td>36.38</td>
<td>3.46</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>100.0</td>
<td>20.45</td>
<td>7.20</td>
</tr>
</tbody>
</table>

*Baron-Cohen et al. (2001) AQ cut-off value

In relation to the subscales means that predicted if a participant received a referral recommendation, the single discriminant function with an eigenvalue = 1.14 showed a high statistically significant canonical correlation (.73) indicating the function significantly discriminates between the means of the recommended referral and non-referral groups, $\Lambda=.47$; $\chi^2 = 61.08$, df = 5, $p < .001$, sensitivity = 93.4%, specificity = 88.9%. The standardised discriminant correlation shows the order of importance of each predictor variable's unique contribution to the discriminant function. The highest predictor of a referral recommendation was communication, followed by social skills (see Table 17).

The classification table (Table 18) displays the discriminant analysis' ability to predicting group membership. The current model was found to be a successful predictor of outcomes with 92.9% of the originally grouped cases being correctly classified by the DFA. The analysis revealed 88.9% of the recommended referral cases were correctly predicted as positive and 93.4% of non-referred cases were correctly predicted as negative. The model predicted a single false negative case.
### Table 17

*Means, Standard Deviations and Significance Tests for the Five Subscales of the AQ by Referral Recommendation and the Total Sample*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Referral&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Non-Referral&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Total Sample&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Significance Tests&lt;sup&gt;d&lt;/sup&gt;</th>
<th>r&lt;sup&gt;e&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Social Skills</td>
<td>7.78</td>
<td>1.64</td>
<td>3.07</td>
<td>2.01</td>
<td>3.56</td>
</tr>
<tr>
<td>Attention Switching</td>
<td>7.00</td>
<td>2.65</td>
<td>4.39</td>
<td>1.95</td>
<td>4.67</td>
</tr>
<tr>
<td>Attention to Detail</td>
<td>5.44</td>
<td>2.19</td>
<td>4.63</td>
<td>2.44</td>
<td>4.72</td>
</tr>
<tr>
<td>Communication</td>
<td>7.56</td>
<td>1.51</td>
<td>2.39</td>
<td>1.77</td>
<td>2.94</td>
</tr>
<tr>
<td>Imagination</td>
<td>6.56</td>
<td>1.94</td>
<td>4.32</td>
<td>1.78</td>
<td>4.55</td>
</tr>
<tr>
<td>Total AQ</td>
<td>34.33</td>
<td>6.93</td>
<td>18.80</td>
<td>5.21</td>
<td>20.45</td>
</tr>
</tbody>
</table>

<sup>a</sup>n=9, <sup>b</sup>n=79, <sup>c</sup>n=85. <sup>d</sup>Significant difference between recommended referral and non-referral group means. <sup>e</sup>Standardised discriminant correlation coefficients
Table 18

**Discriminate Analysis Classification of Participants According to AQ Scores**

<table>
<thead>
<tr>
<th>Actual Group Membership</th>
<th>Predicted Group Membership</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rec. Referral</td>
<td>Non-referral</td>
</tr>
<tr>
<td>Rep. Referral</td>
<td>8 (88.9)</td>
<td>1 (11.1)</td>
</tr>
<tr>
<td>Non-referral</td>
<td>5 (6.6)</td>
<td>71 (93.4)</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>72</td>
</tr>
</tbody>
</table>

*Note.* Rec. Referral = Recommended Referral

### 6.3.4.3 Diagnostic criteria.

The DSM-IV-TR and DSM-5 criteria measured the characteristics of ASD among the sample in relation to the hypotheses. Deficits in social and interpersonal functioning (including communication) (hypothesis 2C), and special interest and routine behaviour (hypothesis 2D) were measured. The characteristics most frequently displayed by the interviewed sample related to social factors, including a lack of interest in seeking shared enjoyment, and a lack of social-emotional reciprocity; this was consistent across both versions of the diagnostic criteria (see Table 19).
Table 19

*Frequencies and Percentage of Participants who met and did not meet the DSM-IV-TR and DSM-5 Criteria by Group*

<table>
<thead>
<tr>
<th>DSM-IV-TR Asperger Disorder Criteria</th>
<th>Recommendation</th>
<th>Interviewed Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Referral (n=9)</td>
<td>Non-referral (n=76)</td>
</tr>
<tr>
<td>A (1) Non-verbal communication</td>
<td>2 (22.2)</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>A (2) Relationships</td>
<td>2 (22.2)</td>
<td>3 (3.9)</td>
</tr>
<tr>
<td>A (3) Shared enjoyment</td>
<td>4 (44.4)</td>
<td>3 (3.9)</td>
</tr>
<tr>
<td>A (4) Social-emotional reciprocity</td>
<td>5 (55.6)</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>B (1) Preoccupation / fixated interests</td>
<td>1 (11.1)</td>
<td>3 (3.9)</td>
</tr>
<tr>
<td>B (2) Inflexible routines</td>
<td>2 (22.2)</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>B (3) Repetitive motor movements</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>B (4) Preoccupation with parts of objects</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>C Clinically significant impairment</td>
<td>9 (100)</td>
<td>6 (7.9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DSM-5 Autism Spectrum Disorder Criteria</th>
<th>Recommendation</th>
<th>Interviewed Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Referral (n=9)</td>
<td>Non-referral (n=76)</td>
</tr>
<tr>
<td>A (1) Social-emotional reciprocity</td>
<td>6 (66.7)</td>
<td>4 (5.3)</td>
</tr>
<tr>
<td>A (2) Non-verbal communication</td>
<td>4 (44.4)</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>A (3) Relationships</td>
<td>3 (33.3)</td>
<td>5 (6.6)</td>
</tr>
<tr>
<td>B (1) Repetitive motor movements</td>
<td>2 (22.2)</td>
<td>3 (3.9)</td>
</tr>
<tr>
<td>B (2) Inflexible routines</td>
<td>3 (33.3)</td>
<td>3 (3.9)</td>
</tr>
<tr>
<td>B (3) Preoccupation / fixated interests</td>
<td>0 (0.0)</td>
<td>2 (2.6)</td>
</tr>
<tr>
<td>B (4) Sensory sensitivity</td>
<td>1 (11.1)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>D Clinically significant impairment</td>
<td>7 (77.8)</td>
<td>3 (3.9)</td>
</tr>
</tbody>
</table>

*Note.* Refer to Appendices B and C for full criteria descriptions.

Analysis of the differences between referral groups indicated a higher prevalence of symptoms among the recommended referral group when compared to the non-referral group. The most predominant deficit among the recommended
referral group related to social and emotional reciprocity, this criterion was also the largest frequency difference between the recommended referral and non-referral groups on both versions of the DSM criteria. Considerable differences between the two groups were also found in non-verbal communication, impairments in shared enjoyment and inflexible routines, with the recommended referral group displaying a greater frequency of deficits than the non-referral group. Characteristics of ASD recorded on both versions of the DSM criteria led to clinically significant impairments in functioning among the recommended referral group (criterion C on the DSM-IV-TR and criterion D on the DSM-5). Differences between the two versions of the DSM criteria were evident, particularly in relation to preoccupations, special interests and motor movements. This finding represents the changes in the criteria from the DSM-IV-TR to the DSM-5.

A number of participants displayed deficits in line with the DSM criteria, however not to the extent required to meet the criteria. These deficits were coded as partially meeting the DSM criteria. Appendix N provides a detailed table of findings related to participants who met, partially met and did not meet the DSM criteria. Partial deficits were particularly evident in relation to the development of relationships; all participants who were recommended for a referral at least partially met this criterion on both versions of the DSM (criterion A(2) on the DSM-IV-TR and criterion A(3) on the DSM-5).

Relationship between DSM criteria and referral outcome

Probability analysis of the DSM-IV-TR criteria for Asperger Syndrome revealed 88.9% of the recommended referral cases were correctly classified as positive, and 100% of the non-referral cases were correctly classified as negative. One referred case did not meet the DSM-IV-TR criteria (see Table 20)
Table 20

*Probability of Receiving a Referral Recommendation from the DSM-IV-TR Criteria*

<table>
<thead>
<tr>
<th>DSM-IV-TR Criteria</th>
<th>Recommendation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Referral</td>
<td>Non-referral</td>
</tr>
<tr>
<td>Met criteria</td>
<td>8 (88.9)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Did not meet criteria</td>
<td>1 (11.1)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Total</td>
<td>9 (100)</td>
<td>76 (100)</td>
</tr>
</tbody>
</table>

Probability analysis of the DSM-5 criteria for ASD revealed 44.4% of the recommended referral cases were correctly classified as positive, the remaining 55.6% were false positive cases. Consistent with the DSM-IV-TR criteria, 100% of the non-referral cases were correctly classified as negative (see Table 21).

Table 21

*Probability of Receiving a Referral Recommendation from the DSM-5 Criteria*

<table>
<thead>
<tr>
<th>DSM-5 Criteria</th>
<th>Recommendation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Referral</td>
<td>Non-referral</td>
</tr>
<tr>
<td>Met criteria</td>
<td>4 (44.4)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Did not meet criteria</td>
<td>5 (55.6)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>Total</td>
<td>9 (100)</td>
<td>76 (100)</td>
</tr>
</tbody>
</table>

6.3.4.1 *Empathy quotient – short form.*

The EQ measured levels of empathy among the sample in line with hypothesis 2E. Low scores on the EQ are suggestive of low empathy. To facilitate interpretation, EQ scores were coded into four groups as displayed in Table 22.
Significant differences were observed between all grouped EQ means, $p < .001$ (Bonferroni correction, $p = .008$). Of the total sample, 51.8% of participants had EQ scores between 21 and 30, 7.1% of participants had empathy scores less than 10.

*Empathy quotient score by referral recommendation group.*

An independent sample t-test indicated a significant difference between the mean total EQ scores of the participants who received a referral recommendation when compared to those who did not, $t(83) = 4.39$, $p < .001$, $\eta^2 = 0.19$ (see Table 22). Of the recommended referral group, 44.4% of participants scored less than 10, no participants scored greater than 30, whereas 55.3% of participants in the non-referral group had EQ scores between 21 and 30.

A comparison of the percentage of participants who fell into each range of EQ scores by referral group are displayed in Figure 5. The largest differences observed between the recommended referral and non-referral groups was the 1 to 10 and 21 to 30 ranges of EQ scores. Scores that ranged from 11 to 20 were more evenly distributed across the referral groups.
Table 22

*Grouped and Total EQ scores, Mean and Standard Deviations*

<table>
<thead>
<tr>
<th></th>
<th>1 - 10</th>
<th>11 - 20</th>
<th>21 - 30</th>
<th>31 - 44</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended Referral</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td>4 (44.4)</td>
<td>3 (33.3)</td>
<td>2 (22.2)</td>
<td>0 (0.0)</td>
<td>9 (100)</td>
</tr>
<tr>
<td>M</td>
<td>5.75</td>
<td>14.33</td>
<td>23.50</td>
<td>—</td>
<td>12.56*</td>
</tr>
<tr>
<td>SD</td>
<td>3.10</td>
<td>2.09</td>
<td>3.54</td>
<td>—</td>
<td>7.78</td>
</tr>
<tr>
<td><strong>Non-referral</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n (%)</td>
<td>2 (2.6)</td>
<td>20 (26.3)</td>
<td>42 (55.3)</td>
<td>12 (15.8)</td>
<td>76 (100)</td>
</tr>
<tr>
<td>M</td>
<td>8.50</td>
<td>15.90</td>
<td>25.33</td>
<td>35.08</td>
<td>23.95*</td>
</tr>
<tr>
<td>SD</td>
<td>0.71</td>
<td>3.23</td>
<td>2.83</td>
<td>3.61</td>
<td>7.31</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N (%)</td>
<td>6 (7.1)</td>
<td>23 (27.1)</td>
<td>44 (51.8)</td>
<td>12 (14.1)</td>
<td>85 (100)</td>
</tr>
<tr>
<td>M</td>
<td>6.67</td>
<td>15.70</td>
<td>25.25</td>
<td>35.08</td>
<td>22.74</td>
</tr>
<tr>
<td>SD</td>
<td>2.81</td>
<td>3.11</td>
<td>2.84</td>
<td>3.61</td>
<td>8.12</td>
</tr>
</tbody>
</table>

*Significant difference p < .001

6.3.5 Overall comparison of the recommended referral group characteristics.

Table 23 displays the correlations between the dependent variables used to determine if a referral should be recommended. The correlations between the dependent variables ranged from moderate to strong. As expected, the EQ correlated negatively with the other measures, indicating empathy decreases as ASD characteristics increase.
Figure 5. Percentage of participants in each Empathy Quotient (EQ) score range by referral recommendation group. *Rec. Referral = Recommended referral.

Table 23

Bivariate Correlations between Dependent Variables

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Screen Score</td>
<td>—</td>
<td>.41**</td>
<td>-.35**</td>
<td>.32**</td>
</tr>
<tr>
<td>2. AQ score</td>
<td>—</td>
<td>—</td>
<td>-.51**</td>
<td>.61**</td>
</tr>
<tr>
<td>3. EQ score</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>-.44**</td>
</tr>
<tr>
<td>4. Meets DSM-IV-TR Criteria</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

*Note. DSM-5 criteria were not included as more participants met DSM-IV-TR Criteria
**Correlation is significant p = .01 (2-tailed).
Nine participants (10.5% of the Stage 1 clinical interview sample) displayed characteristics indicative of ASD and were therefore recommended for a referral for a comprehensive ASD assessment. The outcomes on each of the dependent variable for these nine participants are displayed in Table 24. The majority of participants met the inclusion criteria on three or more dependent variables. Two participants indicated a previous diagnosis of Asperger syndrome. One of these participants met the criteria for all three points of referral. The other scored below the required cut-off of 32 on AQ.

Table 24

*The Outcomes of each of the Dependent Variables for Participants Recommended for a Referral*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Screen Score</th>
<th>AQ</th>
<th>EQ</th>
<th>AS&lt;sup&gt;a&lt;/sup&gt;</th>
<th>ASD&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Self-report diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>43</td>
<td>4</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>39</td>
<td>6</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>2&lt;sup&gt;c&lt;/sup&gt;</td>
<td>38</td>
<td>3</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>0&lt;sup&gt;c&lt;/sup&gt;</td>
<td>35</td>
<td>15</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>35</td>
<td>10</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>35</td>
<td>16</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>34</td>
<td>12</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>32</td>
<td>21</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>18&lt;sup&gt;d&lt;/sup&gt;</td>
<td>26</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<sup>a</sup>Asperger Syndrome, as measured by the DSM-IV-TR diagnostic criteria. <sup>b</sup>Autism Spectrum Disorder, as measured by the DSM-5 diagnostic criteria. <sup>c</sup>Did not meet Screen cut-off of ≥ 3. <sup>d</sup>Did not meet AQ cut-off ≥ 32
6.3.6 Offending behaviour.

The offending behaviour of participants was examined by offence type and by the nature of the offending. The most serious index offence of each participant was used for analysis (see Table 25) in line with the Australian Bureau of Statistics, National Offence Index (2009) and the Australian and New Zealand Offence Classification (Pink, 2011). The most frequent convictions for the total sample included acts intended to cause injury; convictions of a sexual nature; and robbery, extortion and related offences. All three of these categories of offences were more frequently recorded for the recommended referral group than the non-referral group. Sexual offences were the most frequent committed offence by participants in both groups; however, they were recorded at a higher frequency in the recommended referral group than the non-referral group.

A comparison of interpersonal offences with other offences revealed participants in the recommended referral group were more likely to have an index offence of an interpersonal nature than those in the non-referral group (see Table 26). Participants in the non-referral group more frequently displayed an index offence that was not interpersonal.
Table 25

Participants most Serious Conviction by Referral Recommendation

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Referral $n$ (%)</th>
<th>Non-referral $n$ (%)</th>
<th>Total $N$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homicide and related offences(^a)</td>
<td>0 (0.0)</td>
<td>2 (2.6)</td>
<td>2 (2.4)</td>
</tr>
<tr>
<td>Acts intended to cause injury(^a)</td>
<td>2 (22.2)</td>
<td>14 (18.4)</td>
<td>16 (18.8)</td>
</tr>
<tr>
<td>Sexual assault and related offences(^a)</td>
<td>3 (33.3)</td>
<td>14 (18.4)</td>
<td>17 (20.0)</td>
</tr>
<tr>
<td>Dangerous or negligent acts endangering persons(^a)</td>
<td>1 (11.1)</td>
<td>5 (6.6)</td>
<td>6 (7.1)</td>
</tr>
<tr>
<td>Robbery, extortion and related offences(^a)</td>
<td>2 (22.2)</td>
<td>9 (11.8)</td>
<td>11 (12.9)</td>
</tr>
<tr>
<td>Unlawful entry with intent / burglary, break and enter</td>
<td>0 (0.0)</td>
<td>9 (11.8)</td>
<td>9 (10.6)</td>
</tr>
<tr>
<td>Theft and related offences</td>
<td>0 (0.0)</td>
<td>3 (3.9)</td>
<td>3 (3.5)</td>
</tr>
<tr>
<td>Illicit drug offences</td>
<td>0 (0.0)</td>
<td>8 (10.5)</td>
<td>8 (9.4)</td>
</tr>
<tr>
<td>Prohibited and regulated weapons and explosive offences</td>
<td>0 (0.0)</td>
<td>2 (2.6)</td>
<td>2 (2.4)</td>
</tr>
<tr>
<td>Miscellaneous offences</td>
<td>0 (0.0)</td>
<td>1 (1.3)</td>
<td>1 (1.2)</td>
</tr>
<tr>
<td>Breach of an order</td>
<td>1 (11.1)</td>
<td>9 (11.8)</td>
<td>10 (11.8)</td>
</tr>
<tr>
<td>Total</td>
<td>9 (100)</td>
<td>76 (100)</td>
<td>85 (100)</td>
</tr>
</tbody>
</table>

Note. Offence category included only if a relevant offence was recorded, refer to Appendix D for a list of all offence categories.

\(^a\)Interpersonal offences
Table 26

The Frequency and Percentage of Cases by Offence Type and Referral

<table>
<thead>
<tr>
<th>Offence type</th>
<th>Recommendation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Referral</td>
<td>Non-referral</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Interpersonal offences</td>
<td>8 (88.9)</td>
<td>44 (57.9)</td>
<td></td>
</tr>
<tr>
<td>Other offences</td>
<td>1 (11.1)</td>
<td>32 (42.1)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9 (100)</td>
<td>76 (100)</td>
<td></td>
</tr>
</tbody>
</table>

6.3.7 Summary of results.

Psychometric evaluation of the ASD Screening Tool indicated that when employing a cut-off of 3, the instrument could reliably discriminate between prisoners who were subsequently recommended for a referral and those who were not. The screening tool was over-inclusive and inaccurately identified a number of individuals who were not subsequently recommended for a referral. Further, the screening tool did not initially identify two individuals who went on to display characteristics indicative of ASD at Stage 2.

Analyses of the Stage 2 clinical interview findings revealed a number of ASD characteristics were present among prisoners in the Victorian prison system. The participants who were recommended for a referral for a comprehensive ASD assessment displayed deficits in social interaction and communication, low levels of empathy and repetitive patterns of behaviour and interests at a higher frequency than participants who were not recommended for a referral. Finally, participants who displayed characteristics indicative of ASD committed a higher frequency of interpersonal offences than the participants who did not display significant ASD traits.
6.4. Discussion

The overarching aim of the current study was to investigate the extent and nature of ASD characteristics within a sample of Victorian prisoners. To achieve this, a two-stage screening and interview protocol was trialled.

It has been suggested that that individuals with ASD have characteristics that may predispose them to offending behaviour (Katz & Zemishlany, 2006; Murrie et al., 2002; Palermo, 2004; Smith & O’Brien, 2004), yet the literature suggests that these individuals may remain unidentified within legal systems. Research findings regarding offending behaviour in individuals with ASD have been inconsistent, based on narrow populations, and comprised mainly of case reports (Bjorkly, 2009; Haskins & Silva, 2006; Mawson et al., 1985; Murrie et al., 2002), as such there is a need for systematic research to increase knowledge and awareness and of individuals with ASD within the CJS. To date, there has been little Australian research in this area. The current study is the first to implement a two-stage screening and identification protocol within the Victorian prison system and the first known to investigate the characteristics of ASD among Australian prisoners.

In the following sections of this chapter, the findings of this study in relation to its hypotheses, research questions and previous research are reviewed. This includes a focus on the utility of the ASD Screening Tool, the characteristics of ASD that presented in the sample of Victorian prisoners, and the nature of offending behaviour of those presenting with characteristics indicative of ASD. Finally, the implications of the findings, methodological limitations, and recommendations for future research are presented.
6.4.1 Evaluation of the ASD screening tool.

The ASD Screening Tool is a 10-item instrument used to identify characteristics of ASD among prisoners. It is intended to be over inclusive to ensure a low rate of false negatives. Corrections Victoria Assessment Officers administered the ASD Screening Tool to prisoners as part of the standard reception assessment protocol (VISAT) following completion of an ASD training programme.

The absence of relevant and psychometrically sound screening tools for ASD among adult prisoners in the literature signalled a need for the development and evaluation of a tool for ASD screening among prisoners (Ferriter et al., 2001; Hare et al., 1999). Thus, two hypotheses were proposed: First, hypothesis 2A proposed that the Stage 1 ASD Screening Tool, when administered by Assessment Officers in conjunction with the VISAT, would enable the identification of prisoners in the Victoria prison system that have characteristics indicative of ASD. Second, hypothesis 2B proposed that there would be a high rate of agreement between prisoners identified with characteristics indicative of ASD through the Stage 1 ASD Screening Tool and those subsequently identified with characteristics indicative of ASD through the Stage 2 clinical interview. While the first hypothesis was supported by the identification of seven participants who displayed characteristics indicative of ASD, the second hypothesis was partially supported. The ASD Screening Tool showed promise as a brief screening questionnaire; however, it failed to identify some individuals with characteristics of ASD. These findings will be discussed.

Reliability analysis of the ASD Screening Tool indicated acceptable internal consistency. Three items contributed poorly to the overall questionnaire; these items measured characteristics of ASD that were the least frequent among the sample. This suggests that these characteristics are either less prevalent in a CJS sample, or were
difficult for an Assessment Officer to detect during the VISAT assessment session. It is likely that item 6 (*Does this individual have trouble with clothing, grooming and personal care?*) was unable to be accurately determined by assessment offices as all prisoners are issued with standard prison attire. Surprisingly, however, the Assessment Officers did not utilise the ‘no opportunity to assess’ response option for this item. It is also possible that items 5 (*Does the individual appear literal or ‘black and white’ in their thinking or responding to questions?*) and 10 (*Does this individual seem to have a lack of common sense, or lack the ability to understand and foresee the consequences of their doings or sayings?*) related to characteristics common among offenders in general, and Assessment Officers were endorsing this item only when the individual displayed marked differences to what they perceived as a typical presentation.

A cut-off score of three or above on the ASD Screening Tool was determined post-hoc and found to be optimal for discriminating between participants who received a recommendation for referral for ASD assessment and those who were not. At this cut-off, the sensitivity and specificity of the measure resulted in the ASD Screening Tool accurately identifying 77.8% of participants who subsequently displayed characteristics indicative of ASD during the Stage 2 clinical interview. Further, the ASD Screening Tool correlated with the AQ, indicating that it is likely an accurate measure of autistic traits. Nonetheless, the false negative rate indicated that the screen would miss one in every five offenders with ASD traits; specifically, two participants in the recommended referral group had screen scores below the cut-off. A large proportion of false positives (39.5%) would also be included with a cut-off of three on the ASD Screening Tool. It is possible that if the cut-off score of three had been set a-priori to classify the groups independent of Stage 2 clinical interview
findings, differences between the recommended referral and non-referral groups may have been greater. However, the rate of false positives identified may have been higher using this methodology.

In a study similar to the current study conducted in the United Kingdom, Robinson et al. (2012) administered and evaluated the utility of an ASD screening tool in two stages across 12 prisons in the United Kingdom. The screening tool utilised was developed by Wing, Howlin, Cullen, Crocombe and Brugha (unpublished; as cited in Robinson et al., 2012) and was administered to 2,458 prisoners. The accuracy of this screening tool was validated using the outcomes from a follow-up clinical interview, the screening tool was found to be slightly better than chance, with 59.6% of ASD cases correctly identified. It is noteworthy that it appeared to have poorer sensitivity and specificity than the screening tool employed in the current study. Methodological differences between Robinson et al.’s study and the design of the current study may explain the differences in the accuracy of the respective screening tools. In Robinson et al.’s study, untrained prison officers administered the tool in approximately 1.5 minutes. In the current study, Assessment Officers, who had attended an ASD training programme and were experienced in interviewing prisoners, administered the ASD Screening Tool (five to ten minutes in duration). The discrepancy in findings suggests the importance of ASD knowledge among the personnel who are undertaking the screening for ASD.

6.4.2 Characteristics.

The characteristics of ASD present among the sample of Victorian prisoners were determined from the ASD Screening Tool, as well as from information gathered during the clinical interview coded against the DSM-IV-TR and DSM-5
criteria and from self-report responses to the AQ and EQ. As predicted, a small sample of individuals with characteristics indicative of ASD were identified in the Victorian prison system through the Stage 2 clinical interview. Specifically, nine individuals (10.5%) in the current sample displayed characteristics indicative of ASD. The nine participants required a referral for a comprehensive assessment to determine the presence of ASD and to develop treatment and rehabilitation programmes to meet their specific criminogenic needs. However, as mentioned earlier, due to ethical constraints, the individuals identified with characteristics indicative of ASD were unable to be referred to an ASD specialist for a comprehensive follow-up clinical assessment.

Due to the dearth of systematic research on the characteristics of ASD present among generic prison populations and the theoretical explanation for offending behaviour in this population, three hypotheses were proposed in the current study. Prisoners who display characteristics indicative of ASD would have greater deficits in social and interpersonal abilities (hypothesis 2C); a greater level of special interests and routine behaviours (hypothesis 2D); and lower levels of empathy (hypothesis 2E) than other prisoners. The findings of the current study supported all three hypotheses; the following sections explore the findings related to these hypotheses.

6.4.2.1 Social and communication deficits.

The current findings revealed that social skills deficits and interpersonal naiveté were more frequently displayed in the group recommended for referral when compared to the non-referral group on both the AQ and DSM criteria, thus supporting hypothesis 2C. Participants who display characteristics indicative of ASD exhibit greater deficits in social functioning and interpersonal communication than
other areas of deficit. These participants displayed marked impairments in verbal and nonverbal communication, and poor social–emotional reciprocation. With regard to the high rate of communication deficits identified in the current study, it is possible that deficits of this nature are more observable, and therefore, easier to detect, during an assessment interview than the more behavioural characteristics of ASD, as discussed below. Social interaction and nonverbal communication difficulties have previously been identified as diagnostic indicators among individuals with ASD in the CJS (Anckarsater et al., 2008).

Deficits in this area have been linked to offending behaviour among individuals with ASD. For example, both Anckarsater et al. (2008) and Allen et al. (2008) reported impairments in social interaction and reciprocal communication among the majority of their samples of offenders with ASD. In addition, deficits in social and interpersonal functioning have been reported in many forensic case studies of individuals with ASD (Barry-Walsh & Mullen, 2004; Katz & Zemishlany, 2006; Murrie et al., 2002) (see introduction chapters for sample cases). Interpersonal offending has particularly been associated with social and interpersonal naiveté among individuals with ASD, including staking, sexual assault, and violent behaviour. This population may react in an aggressive manner as a result of misinterpreting social gestures when social or sexual advances are not reciprocated (Allen et al., 2008; Katz & Zemishlany, 2006; Stokes et al., 2007), or due to difficulties understanding and managing their emotions (Hare et al., 1999; Siponmaa et al., 2001).

Deficits in social and interpersonal functioning have potential negative implications for individuals in forensic settings. In particular, interpersonal functioning and reciprocal communication deficits can be a significant barrier to
treatment, rehabilitation and reintegration. As a result, individuals with deficits in these areas may not be suitable for the group treatment and rehabilitation programmes that are currently offered throughout Victorian prisons. Further, an individual with impaired social functioning and deficits in communication may misinterpret social cues and lack awareness of the consequences of their actions. In a custodial environment, deficits of this kind may result in interpersonal difficulties with other prisoners due to the many unwritten social rules that dictate appropriate and inappropriate behaviour. Such individuals may be more vulnerable to being bullied or manipulated by others, which may have an adverse effect on their mental health (Allen et al., 2008; Hare et al., 1999). Similar to typically functioning individuals, it has been reported that those with ASD may act with malice or violence in an attempt to regain control when they feel victimised and powerless. Woodbury-Smith et al.’s (2006) findings suggested that individuals with ASD may respond to perceived victimisation in an antisocial manner, the authors described a man who damaged the bathrooms at his workplace when he was made redundant.

6.4.2.2 Special interests and routines.

The group of participants who were recommended for a referral based on the findings from the Stage 2 clinical interview displayed a greater frequency of special interests and routine behaviours when compared to the non-referral group, thus supporting hypothesis 2D. Participants reported adherence to non-functional routines and a strong focus of their attention on an item, topic or activity. In particular, they had marked difficulty in changing their focus of their attention from one topic to another.

These findings are consistent with those previously reported. Although it is not possible to draw a connection between the pursuit of special interest areas and
offending behaviour among individuals with ASD in the current study, such connections have been proposed elsewhere (Barry-Walsh & Mullen, 2004; Woodbury-Smith et al., 2010). For example, it has been stated that individuals with ASD may steal in order to pursue their interest area, or as a result of the antisocial nature of their special interest (e.g., sexual fantasies or weapons) (Hare et al., 1999; Scragg & Shah, 1994; Woodbury-Smith et al., 2010). It has also been demonstrated that such individuals may react aggressively when they have had to compromise or had difficulty considering the intentions of another person (Siponmaa et al., 2001).

Hare et al. (1999) reported that the pursuit of special interests and fixations on antisocial subjects were highly prevalent among individuals with ASD in a forensic psychiatric hospital. Similarly, in a sample of 42 individuals engaged with forensic psychiatric services in Sweden, Anckarsater et al. (2008) found fixated interests and stereotyped behaviour common. These individuals were often fixated on an item, topic or activity and had difficulty switching their attention to another task.

In the current study, intense attention to detail, without considering ‘the bigger picture’, was a predominant characteristic among the total clinical sample. There was no significant difference between the referral groups in relation to attention to detail. Likewise, fixated attention and difficulty switching attention were frequently reported by those participants who engaged in the clinical interview. It is possible that the structured nature of prison environments influences adherence to non-functional routine behaviour reported by participants with characteristics indicative of ASD. Incarcerated individuals may develop behavioural routines in line with the structured prison day of specified meal times, prisoner counts, and unlock and lock-up procedures. Therefore, routine behaviours may become necessary to adhere to prison requirements and may make the prison environment more
predictable. As a result, participants may have reported inflexible routines related to the prison environment, which would not occur in other contexts. This may have influenced the findings of the current study.

6.4.2.3 Empathy.

Deficits in social and communication abilities can affect an individual’s ability to experience empathy, particularly the cognitive components of empathy. There is a large evidence base that links low levels of empathy to offending behaviour (Burke, 2001; Geer et al., 2000; Jolliffe & Farrington, 2004; Jolliffe & Farrington, 2007). In the current study, the sample as a whole had substantially lower mean empathy scores than Wakabayashi et al. (2006a) sample of 1,761 students ($M=44.3; SD=12.23$). This supports research findings that people who engage in offending behaviour have lower levels of empathy than non-offenders (Burke, 2001).

The study found significantly lower levels of empathy among participants who displayed characteristics indicative of ASD than those who did not display ASD traits. This is consistent with findings that some individuals with ASD have deficits in empathy (Baron-Cohen, 2009; Barry-Walsh & Mullen, 2004; Freckelton & List, 2009), which has also been suggested to affect offending behaviour in this population (Allen et al., 2008; Haskins & Silva, 2006). Individuals with ASD have difficulty identifying and understanding the feelings of others (cognitive empathy) and may not respond to others in an emotionally appropriate manner (affective empathy). They are often unable to infer the intentions or feelings of another person and may misinterpret nonverbal communication. Individuals with ASD may pursue relationships in an inappropriate and aggressive fashion, and fail to consider the experience of the other person. Distress and fear in others may go unnoticed by an
offender with ASD (Stokes et al., 2007). Low levels of empathy among individuals with ASD have been linked to violence (Tantam, 1991; Wing, 1981); stalking (Stokes et al., 2007) and sexual offending (Murrie et al., 2002).

6.4.3 Offending behaviour.

The current study focused on the most serious conviction of participants, not on all current convictions, in line with the Australian Bureau of Statistics National Offence Index (2009) and the Australian and New Zealand Offence Classification (Pink, 2011). The offending behaviour of the Stage 2 sample differed between those participants who displayed characteristics indicative of ASD and those who did not. Individuals with features of ASD committed considerably more interpersonal offences (88.9%) when compared with those who did not display ASD traits (57.9%). This provides support for hypothesis 2F that prisoners with characteristics indicative of ASD will have committed a higher frequency of interpersonal offences when compared with prisoners who do not display ASD traits. This finding concurs with previous research that has shown higher rates of interpersonal offending among individuals with ASD when compared with individuals without ASD (Anckarsater et al., 2008; Cheely et al., 2012; Kumagami & Matsuura, 2009). Cheely et al. (2012) found the highest rate of interpersonal offending behaviour among youth with ASD, whereas the highest rates of offending for the matched controls were property offences.

The finding that sexual offences were the most frequent serious offence committed by those with characteristics indicative of ASD (33.3%) needs to be considered in the context that this was also the most frequent index offence among those without ASD traits, although to a lesser extent (18.4%). This is consistent with
the findings of Kumagami and Matsuura (2009), who reported significantly high levels of sexual offending among participants with PDD (17.8%) when compared with those without PDD (5.5%). However, this is in contrast to other studies that reported non-sexual violent offending most frequent among individuals with ASD (Allen et al., 2008; Anckarsater et al., 2008; Hare et al., 1999). In the current study, non-sexual violent offences were committed with the second greatest degree of frequency among participants with characteristics indicative of ASD. The offences included acts intended to cause injury (22.2%); and robbery, extortion and related offences\textsuperscript{14} (22.2%); these were committed at a higher rate than those with ASD characteristics than in those without ASD characteristics (18.4% and 11.8% respectively). Contrary to literature reporting arson-related offences as frequent among individuals with ASD (Mouridsen et al., 2008; Palermo, 2004; Siponmaa et al., 2001; Tantam, 1991), no cases of arson were identified in the current study.

Due to the low sample size, no direct connections can be drawn between the most serious offence committed and specific characteristics of ASD. However, past research has identified links between interpersonal offending and deficits in social interaction, the pursuit of special interests, inflexible routines and low levels of empathy among individuals with ASD (Cheely et al., 2012; Mouridsen et al., 2008).

\textbf{6.4.4 Implications of the findings.}

The finding that there are individuals within the Victorian prison system who present with characteristics indicative of ASD, and who can be identified through a screen administered by Assessment Officers at the early stage of incarceration has

\textsuperscript{14}Acts intended to unlawfully gain money, property or other items of value from (or to cause detriment to) another person by using the threat of force or any other coercive measure (Pink, 2011).
important implications. First, previous research has shown that individuals with ASD face particular difficulties when incarcerated. These individuals are often at risk of being manipulated by others, have difficulties living by the unwritten prisoner code and may be averse to the rigid routines of prisons: prisoners with ASD often require additional support and guidance while incarcerated. Second, the screening and identification for ASD among prisoners is vital in determining the specific and often unique needs of this group to inform treatment and rehabilitation programmes for these offenders, with the ultimate aim of reducing recidivism. The findings from the current study have practical implications for policies regarding the development and delivery of specialised treatment programmes targeted at the characteristics of ASD that may influence offending behaviour.

The current study is well aligned with the Corrections Research Agenda (2009–2012) and the Corrections Victoria Disability Frameworks (Department of Justice-Corrections Victoria, 2009, 2013), which promote the development of customised responses for offenders with disabilities. The Correction Victoria Disability Framework focused on the specific needs of individuals with ASD and aims to address service gaps for this population. Identifying specific disabilities and understanding the effect of characteristics may inform targeted responses that maximise outcomes for individuals with ASD and community safety.

6.4.5 Limitations of the current study and recommendations for future research.

Due to the pilot nature of the current study, as well as limitations imposed by ethical and service-delivery restrictions, it was not possible for a diagnosis of ASD to be confirmed in individuals who displayed indications of ASD. It was therefore,
not possible to determine prevalence rates of ASD in the Victorian prison system. Further, the number of participants was restricted by a limitation in the period permitted for the administration of the ASD Screening Tool and was affected by the high turnover of Assessment Officers that were completing the ASD Screening Tool.

6.4.5.1 ASD screening tool.

Despite the indications of merit, the ASD Screening Tool requires further development to improve sensitivity, specificity and the overall accuracy of the tool. This was the first time the ASD Screening Tool was utilised and a number of basic changes have the potential to increase the validity and reliability of the tool. The frequency of social and communication difficulties among those with a suspected ASD suggests these features may be instrumental in identifying individuals with ASD in forensic settings. Therefore, the accuracy of the ASD Screening Tool could increase if items related to social interaction and developing relationships were included.

It is recommended that the ASD Screening Tool be administered to individuals from other settings to further its development and validation, including community forensic services. Further, screening for ASD should be considered part of the current standard intake VISAT assessment for incarcerated and community-based offenders.

6.4.5.2 Identifying ASD characteristics among prisoners.

As reported by Paterson (2008), the identification of the behavioural characteristics of ASD requires observation of the affected individual (Paterson, 2008). Insight into ASD characteristics vary between research participants who have an ASD and observational researchers, with observational and self-report methods showing different findings related to the behaviour of individuals with ASD (Allen
et al., 2008; Paterson, 2008). Paterson (2008) highlighted how an individual with Asperger syndrome incorrectly interpreted other prisoners’ intentions as positive. Observation of the individual by the researcher showed that the individual lacked awareness of his own misinterpretations and vulnerability. A potential lack of awareness among participants could lead to the underreporting of characteristics. Observation of participants or consultation with a case manager or contact person may be required to accurately measure the behavioural characteristics of ASD and augment a brief screening tool.

**6.4.5.3 Comorbidity.**

It has been suggested that mental illness’ and personality traits play a role in offending behaviour among individuals with ASD (Newman & Ghaziuddin, 2008). However, due to low participant number and a lack of collateral information in the current study, the effect of comorbid mental illness' on the AQ and EQ could not be explored. It is well understood that forensic populations display a greater number of antisocial traits and have higher rates of mental illness when compared to individuals in the community (Dudeck et al., 2011; Fazel & Seewald, 2012; Hare, 1999; Hare, Hart, & Harpur, 1991; Ogloff et al., 2011). These comorbidities may affect scores on the AQ and the EQ, as well as coding of the DSM criteria. Individuals with a personality disorder may receive elevated scores on the AQ and lower scores on the EQ as a result of the beliefs and traits of their personality; they may also carefully select responses for secondary gain (e.g. accessing a service or for placement in a certain prison location) (Murphy, 2011). For example, an individual with a personality disorder may inaccurately endorse items (Haskins & Silva, 2006). Further, young offenders may associate with older, more experienced offenders to increase their criminal status, rather than because of deficits in forming relationships.
As such, clinical judgement should be used with the AQ and EQ in forensic samples (Murphy, 2011). Further investigation into the role and effects of a co-excising mental illness, ID or personality traits among this population is clearly needed.

6.4.5.4 Sample size.

The small sample size was a key limitation of this study and therefore, caution is required when interpreting results. The sample was too small to complete comprehensive statistical analysis of the data. However, this is likely to be an ongoing concern when exploring the characteristics of a minority group. Larger sample sizes would allow the data to be modelled to determine the manner in which specific factors of ASD contribute to offending behaviour.

6.4.5.5 Recommendations.

The frequency of ASD characteristics identified in the present study supports a recommendation for further study to be undertaken in this area and with a larger sample. This would assist in understanding the relationship between ASD characteristics and offending behaviour, as well as provide opportunity to better support these individuals and address their offending behaviour. It is also recommended that research be extended to include a broader sample of individuals engaged with community forensic services, the courts and forensic mental health services. This expansion in focus would also potentially provide information on the placement of offenders with ASD. It is possible that individuals with a known diagnosis of ASD are diverted from the courts to address their offending behaviour and treatment needs in the community or in a mental health facility.

There is a critical need for the development of specialised ASD programmes for custodial settings to address the specific characteristics and responsivity needs of this population. Consistent with past suggestions for managing offenders with ASD
(Woodbury-Smith et al., 2005a), this study has identified deficits in empathy and emotions reciprocity that may be responsive to interventions based on understanding emotions and empathy. For example, there are a number of ASD-specific social-skills training programmes that have been developed and evaluated with positive outcomes. These programmes provide individuals with ASD with the opportunity to develop conversational skills and reciprocal friendships; reduce problem behaviours; learn social etiquette and how to manage peer pressure and exploitation (DeMatteo, Arter, Sworen-Parise, Fasciana, & Panihamus, 2012; Gantman, Kapp, Orenski, & Laugeson, 2012; Nuernberger, Ringdahl, Vargo, Crumpecker, & Gunnarsson, 2013; Tse, Strulovitch, Tagalakis, Meng, & Fombonne, 2007). Social-skills training has been found to be effective among individuals with ASD (Nuernberger et al., 2013; Tse et al., 2007; Wang, Parrila, & Cui, 2012) and has shown positive effects on developing empathy (Gantman et al., 2012) and perspective-taking abilities (Tse et al., 2007).

Further, the cognitive distortions related to offending behaviour have been shown to decrease following participation in the Equipping Youth to Help One Another Programme (EQUIP), which is focused at youth offenders with developmental delays in moral reasoning, cognitive distortions and social skills (Langdon, Murphy, Clare, Palmer, & Rees, 2013). Group programmes of this nature have been found to decrease the thinking errors associated with offending (Brugman & Bink, 2011) and increase social skills (Leeman, Gibbs, & Fuller, 1993) among offenders with ASD.
6.5. Chapter Summary

In the current study, male prisoners entering the prison system were recruited by Corrections Victoria Assessment Officers, and screened for characteristics of ASD. Of the 294 participants screened, 85 attend a semi-structured clinical interview that employed the AQ, the EQ and questions related to the DSM-IV-TR criteria for Asperger syndrome to determine characteristics of ASD further. The information gathered was used to distinguish between participants requiring a referral for a comprehensive ASD assessment and those who do not, and to explore the characteristics of ASD in a forensic population. The results indicated a distinct difference between participants with characteristics indicative of ASD and those without such characteristics. Deficits among those with ASD traits included a lack of shared enjoyment, difficulties with social interaction, low levels of empathy, and offending behaviour of an interpersonal nature. Although similar characteristics were found in the total sample, these occurred to a lesser extent.

Despite some acknowledged limitations, the screening protocol identified a number of individuals with characteristics indicative of ASD within the Victorian prison system and this has important implications for service delivery. These individuals are likely to have specific criminogenic, social and health needs that require addressing during the treatment of their offending behaviour to reduce recidivism. Individuals with ASD are also likely to require specialised support and management within the prison system. This pilot study provides preliminary evidence of ASD among a Victorian prison sample and informs a recommendation for routine screening of prisons upon entry into the Victorian prison system.
Chapter 7.

Overall Conclusion

7.1. Brief Overview of Findings

The first of the two studies reported in this thesis examined ASD in the CJS by determining the level of knowledge of ASD characteristics among CJS personnel. Through the development and trial of a screening protocol, the second study enabled the identification of individuals with characteristics indicative of ASD and the examination of these characteristics present among males in the Victorian prison system. The findings have provided further evidence to the current body of literature regarding the characteristics of ASD present among prisoners and the deficits in knowledge of ASD among CJS personnel. CJS personnel have incomplete knowledge of ASD, particularly Assessment Officers and nursing professionals. Language (verbal and nonverbal) and communication deficits were the areas of greatest understanding among CJS personnel, followed by deficits in social interaction and relationships. Knowledge related to diagnosis, research, findings and prognosis were the least understood. Interestingly, examination of incarcerated males indicated that individuals who displayed characteristics indicative of ASD had high rates of social and communication deficits. Communication was the area of greatest knowledge among CJS personnel, further confirming the importance of knowledge of this characteristic. Offenders with characteristics indicative of ASD also displayed inflexible routines, fixated interests and low levels of empathy. Offending behaviour of an interpersonal nature was more frequent among those with ASD traits than those without.
7.2. Clinical and Theoretical Implications

The findings of the two studies reported in this thesis provided a significant contribution to the clinical and forensic literature on ASD and offending behaviour. They have provided additional evidence on the characteristics of ASD present among a forensic population and the importance of identifying individuals with such characteristics.

The knowledge of ASD among CJS personnel was incomplete and findings highlight the potential that individuals with ASD will not be readily identified within the CJS. A lack of knowledge among CJS personnel also has the potential to negatively impact the rehabilitation and treatment of individuals with ASD (Browning & Caulfield, 2011). Such individuals may be placed in a general group programme aimed at addressing offending behaviour, yet there may be limited or no benefit to the individuals with ASD due to difficulties in social communication. In fact, individuals with ASD may become anxious or frustrated in response to their social and communication difficulties in a group setting, thereby compounding their difficulties. As argued in much of the literature (Allen et al., 2008; Browning & Caulfield, 2011; Freckelton, 2011; Haskins & Silva, 2006; Woodbury-Smith et al., 2006), the identification of individuals with a disability, including ASD, is of crucial importance to the correctional system for informing operational responses and particularly the development and delivery of person-centred rehabilitation programmes aimed at minimising recidivism.

Despite being unable to determine the connection between the characteristics of ASD displayed among participants in Study 2 and their offending behaviour, the findings have added to the understanding of offending behaviour in this population. The characteristics of ASD displayed among participants add to the theoretical
frameworks that provide an explanation for offending behaviour among this population.

The characteristics identified among individuals with potential ASD in Study 2 can be examined from a number of different theoretical perspectives. The findings highlighted significant social communication and social interaction deficits among individuals with potential ASD in the CJS. Three theoretical frameworks contribute to explaining this finding: Baron-Cohen et al.’s (1985) theory of mind, Baron-Cohen’s (2008) mind-blindness theory, and Bandura’s (1962, 1977, 1978, 2001) social learning theory. These theories explain how deficits in social interaction and abilities in perspective taking affect an individual’s ability to infer the beliefs, emotions, desires and intentions of others. A lack of theory of mind or mind-blindness has been suggested to influence offending behaviour. Individuals with ASD may misinterpret the behaviour of others and may subsequently respond inappropriately. Further, an individual with ASD may be unaware of the effect of their actions on others.

The second area of key deficit identified in Study 2 related to empathy. In line with the empathising component of Baron-Cohen’s (2009) empathising–systemising theory, low levels of empathy were found among participants with characteristics indicative of ASD. Low levels of empathy can lead to difficulties in social interaction and communication (Baron-Cohen, 2009) and have been linked to antisocial and offending behaviour (Geer et al., 2000; Jolliffe & Farrington, 2007; Tantam, 1991). The preference for sameness and non-functional routine behaviour identified in Study 2 is consistent with the systemising component on the empathising–systemising theory; however, systemising was not formally measured in the current study. Non-functional routine behaviour, preoccupation with a special
interest, and difficulty switching attention displayed by participants of Study 2 can be explained by the weak central coherence theory and components of the theory of executive functioning. The weak central coherence theory states that individuals with ASD process information by focusing on the small details without considering the global meaning (Frith, 1989). Offending behaviour may be the result of an individual’s intense focus on an interest while failing to consider the wider effects of their behaviour; difficulties focusing on the overall picture of an event or situation can result in difficulties identifying or understanding the consequences of behaviour (Gomez, 2010; Haskins & Silva, 2006). The theory of executive functioning has been used to explain rigidity and difficulties switching attention (intense focus) (Ozonoff et al., 1991; Stuss & Knight, 2002). These characteristics have also been linked to difficulty in social interaction; an individual with ASD may have difficulty engaging with others due to rigid behaviour that causes them to become ‘stuck’ in a topic and have difficulty focusing on a conversations. Deficits in executive functioning have been found among offender samples (Anckarsäter, 2005; Dolan & Anderson, 2002; Morgan & Lilienfeld, 2000).

7.3. Conclusion

There is a reluctance to link any disorder to offending behaviour. There have been claims that the characteristics of ASD may predispose affected individuals to antisocial or offending behaviour (Scrugg & Shah, 1994; Sutton et al., 2013), although this is clearly not a feature of the majority of individuals on the autism spectrum. Further research is required to determine any specific connection between the characteristics of ASD and offending behaviour; to understand the experience of individuals with ASD in custody; and to develop tailored rehabilitation programmes
to address offending behaviour and reduce recidivism among this population. Very little systematic research is available either in Australia or abroad to inform service delivery of appropriate, empirically validated programmes for individuals with ASD who engage in offending behaviour (Woodbury-Smith et al., 2006). Additionally, increasing the knowledge of police, court personnel, community-based and custodial forensic personnel is vital to providing support to these individuals throughout the judicial process (Allen et al., 2008; Paterson, 2008).

This research successfully implemented a screening and interview protocol that enabled the identification of a number of individuals in the Victorian prison system who have characteristics indicative of ASD. Yet the experience of these individuals remains unknown. It is recommended that a screening protocol for ASD be included within the routine assessment protocol undertaken with offenders when they enter the Victorian prison system. The identification and an understanding of the experience of individuals with suspected ASD in the CJS has important implications for disposition, treatment, management and recidivism. Knowledge of ASD among CJS personnel plays a fundamental role in identification and treatment. This research indicates that CJS personnel have incomplete knowledge of the characteristics of ASD, which may negatively affect the experience of this population in the CJS. It is strongly recommended that CJS personnel receive training on ASD and the manner in which it may present in offenders in the CJS. The goal of this training and further research in this area would be to increase the identification and understanding of the characteristics and service needs of prisoners with ASD in the CJS.
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Murphy, D. (2007). Hare Psychopathy Checklist Revised profiles of male patients with Asperger's syndrome detained in high security psychiatric care. *The*


APPENDICES
APPENDIX A

DSM-IV-TR Criteria for Autistic Disorder

A. A total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):

1. qualitative impairment in social interaction, as manifested by at least two of the following:
   (a) marked impairment in the use of multiple nonverbal behaviors such as eye to eye gaze, facial expression, body postures, and gestures to regulate social interaction
   (b) failure to develop peer relationships appropriate to developmental level
   (c) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
   (d) lack of social or emotional reciprocity

2. qualitative impairments in communication as manifested by at least one of the following:
   (a) delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)
   (b) in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
   (c) stereotyped and repetitive use of language or idiosyncratic language
   (d) lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level

3. restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:
   (a) encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
   (b) apparently inflexible adherence to specific, nonfunctional routines or rituals
   (c) stereotyped and repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements)
   (d) persistent preoccupation with parts of objects

B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett’s Disorder or Childhood Disintegrative Disorder.
APPENDIX B

DSM-IV-TR Criteria for Asperger's Disorder

A. Qualitative impairment in social interaction, as manifested by at least two of the following:

   (1) marked impairment in the use of multiple nonverbal behaviours such as eye to eye gaze, facial expression, body postures, and gestures to regulate social interaction
   (2) failure to develop peer relationships appropriate to developmental level
   (3) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
   (4) lack of social or emotional reciprocity

B. Restricted repetitive and stereotyped patterns of behaviour, interests, and activities, as manifested by at least one of the following:

   (1) encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
   (2) apparently inflexible adherence to specific, non-functional routines or rituals
   (3) stereotyped and repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements)
   (4) persistent preoccupation with parts of objects

C. The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning.

D. There is no clinically significant general delay in language (e.g., single words used by age 2 years, communicative phrases used by age 3 years).

E. There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behaviour (other than in social interaction), and curiosity about the environment in childhood.

F. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia.
APPENDIX C

DSM-5 Diagnostic criteria for Autism Spectrum Disorder

A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Deficits in social-emotional reciprocity; ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.
2. Deficits in nonverbal communicative behaviours used for social interaction; ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expression and nonverbal communication.
3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behaviour to suit various social contexts; to difficulties in sharing imaginative play and in making friends; to absence of interest in peers.

Specify current severity:

Severity is based on social communication impairments and restricted, repetitive patterns of behaviour (see Table below)

B. Restricted, repetitive patterns of behaviour, interests, or activities as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Stereotyped or repetitive motor movements, use of objects or speech; (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).
2. Insistence on sameness, inflexible adherence to routines, or ritualised patterns of verbal or nonverbal behaviour (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat same food every day).
3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).
4. Hyper- or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

Specify current severity:

Severity is based on social communication impairments and restricted, repetitive patterns of behaviour (see Table below)
C. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life)

D. Symptoms cause clinically significant impairment in social, occupation, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

**Note:** Individuals with a well-established DSM-IV diagnosis of autistic disorder, Asperger’s disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder. Individuals who have marked deficits in social communication but whose symptoms do not otherwise meet the criteria for autism spectrum disorder, should be evaluated for social (pragmatic) communication disorder.

*Specify if:*

- **With or without accompanying intellectual impairment**
- **With or without accompanying language impairment**
- **Associated with a known medical or genetic condition or environmental factor**
- **Associated with another neurodevelopmental, mental, or behavioural disorder**
- **With catatonia**
### Severity levels for Autism Spectrum Disorder

<table>
<thead>
<tr>
<th>Severity level</th>
<th>Social communication</th>
<th>Restricted, repetitive behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 3</strong></td>
<td>Severe deficits in verbal and nonverbal social communication skills cause severe impairments in functioning, very limited initiation of social interactions, and minimal response to social overtures from others. For example, a person with few words of intelligible speech who rarely initiates interaction and, when he or she does, makes unusual approaches to meet needs only and responds to only very direct social approaches.</td>
<td>Inflexibility of behaviour, extreme difficulty coping with change, or other restricted/repetitive behaviours markedly interfere with functioning in all spheres. Great distress/difficulty changing focus or action.</td>
</tr>
<tr>
<td>&quot;Requiring very substantial support&quot;</td>
<td>Marked deficits in verbal and nonverbal social communication skills; social impairments apparent even with supports in place; limited initiation of social interactions; and reduced or abnormal responses to social overtures from others. For example, a person who speaks simple sentences, whose interaction is limited to narrow special interests, and how has markedly odd nonverbal communication.</td>
<td>Inflexibility of behaviour, difficulty coping with change, or other restricted/repetitive behaviours appear frequently enough to be obvious to the casual observer and interfere with functioning in a variety of contexts. Distress and/or difficulty changing focus or action.</td>
</tr>
<tr>
<td><strong>Level 2</strong></td>
<td>Without supports in place, deficits in social communication cause noticeable impairments. Difficulty initiating social interactions, and clear examples of atypical or unsuccessful response to social overtures of others. May appear to have decreased interest in social interactions. For example, a person who is able to speak in full sentences and engages in communication but whose to-and-fro conversation with others fails, and whose attempts to make friends are odd and typically unsuccessful.</td>
<td>Inflexibility of behaviour causes significant interference with functioning in one or more contexts. Difficulty switching between activities. Problems of organization and planning hamper independence.</td>
</tr>
<tr>
<td>&quot;Requiring substantial support&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Level 1</strong></td>
<td>Inflexibility of behaviour, difficulty coping with change, or other restricted/repetitive behaviours appear frequently enough to be obvious to the casual observer and interfere with functioning in a variety of contexts. Distress and/or difficulty changing focus or action.</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D

The Australian and New Zealand Standard of Offence Classification

<table>
<thead>
<tr>
<th>Division</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>01*</td>
<td>Homicide and related offences</td>
</tr>
<tr>
<td>02*</td>
<td>Acts intended to cause injury</td>
</tr>
<tr>
<td>03*</td>
<td>Sexual assault and related offences</td>
</tr>
<tr>
<td>04*</td>
<td>Dangerous or negligent acts endangering persons</td>
</tr>
<tr>
<td>05*</td>
<td>Abduction, harassment and other offences against the person</td>
</tr>
<tr>
<td>06*</td>
<td>Robbery, extortion and related offences</td>
</tr>
<tr>
<td>07</td>
<td>Unlawful entry with intent/burglary, break and enter</td>
</tr>
<tr>
<td>08</td>
<td>Theft and related offences</td>
</tr>
<tr>
<td>09</td>
<td>Fraud, deception and related offences</td>
</tr>
<tr>
<td>10</td>
<td>Illicit drug offences</td>
</tr>
<tr>
<td>11</td>
<td>Prohibited and regulated weapons and explosives offences</td>
</tr>
<tr>
<td>12</td>
<td>Property damage and environmental pollution</td>
</tr>
<tr>
<td>13</td>
<td>Public order offences</td>
</tr>
<tr>
<td>14</td>
<td>Traffic and vehicle regulatory offences</td>
</tr>
<tr>
<td>15</td>
<td>Offences against government procedures, government security and government operations</td>
</tr>
<tr>
<td>16</td>
<td>Miscellaneous offences</td>
</tr>
</tbody>
</table>

APPENDIX E
Study 1 Questionnaires

In this questionnaire Autism Spectrum Disorders are referred to as ASD. This group of disorders includes: Autistic Disorder, Asperger’s Syndrome and Pervasive Developmental Disorder Not Otherwise Specified.

Section A: Some basic information about you

1. What is your current position?
    _______________________________________________________________

2. Your gender:
   Male ○
   Female ○

3. Your age: ________

4. What qualifications do you have?
   _______________________________________________________________
   _______________________________________________________________

5. How long have you been employed in your current or similar position?
   _______________________________________________________________

6. Please indicate the extent to which you have had contact with people who have an ASD outside the forensic system
   None ○ ○ ○ ○ ○ ○ ○ ○ A lot ○ ○ ○ ○ ○ ○ ○ ○
   Please indicate the circumstances _______________________________________
   _______________________________________________________________
   _______________________________________________________________

7. Have you had contact with people who have an ASD (or you think may have an ASD) in your current or similar positions?
   No ○→ Please go to question 10.
   Yes ○→ Go to next question
8. Approximately how many cases of diagnosed ASD have you seen in your current or similar positions ____________________________

9. Since your employment in your current or similar positions, approximately how many other individuals have you thought may have an ASD? ____________________________

10. How confident do you feel in being able to identify an individual with an ASD in the correctional setting?

Not at all  ○  ○  ○  ○  ○  ○  Completely

11. How competent do you feel in being able to provide support to an individual with ASD in the correctional setting?

Not at all  ○  ○  ○  ○  ○  ○  Completely

12. What training have you had in respect to working with people with ASD?

No ASD specific training  ○
Limited - only what was provided during my initial studies  ○
Basic ASD training (e.g., provided with written materials or a short seminar)  ○
Advanced / extra ASD training (e.g., attended an interactive workshop)  ○
Specialist ASD training (e.g., numerous workshops / hands on training)  ○

13. Would you be interested in receiving training on the needs of people with ASD within the forensic system?

○  Yes
○  Maybe
○  No
## Section B: Autism Knowledge Questionnaire

Below are a series of statements about ASD. For each statement please indicate **Yes** if you think it is true, **No** if you think is not true and **Unsure** if you are not sure whether it is true or false. Please select only ONE option.

**Do not guess - if you are uncertain in your answer, please select the Unsure option.**

<table>
<thead>
<tr>
<th></th>
<th>The number of diagnosed cases of ASD has increased over the past 10 years</th>
<th>〇</th>
<th>〇</th>
<th>〇</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Impairment in using nonverbal expressions is a key characteristic of ASD</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>3</td>
<td>ASD can be diagnosed by a medical test</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>4</td>
<td>People with ASD vary in intelligence from intellectually disabled through to above average intelligence</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>5</td>
<td>Individuals with ASD commonly engage in repetitive movements</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>6</td>
<td>Abruptness is a common feature in people with ASD</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>7</td>
<td>People with ASD commonly experience hallucinations</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>8</td>
<td>ASD occur in roughly equal numbers of males and females</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>9</td>
<td>People with ASD often have difficulty understanding the point of a joke</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>10</td>
<td>Research has demonstrated that heredity and genes play a role in ASD</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>11</td>
<td>ASD affects people of all races and ethnicities at about the same rate</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>12</td>
<td>Typically, ASD can be outgrown</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>13</td>
<td>Many people with ASD have trouble tolerating loud noises</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>14</td>
<td>Many people with ASD are very sensitive to touch</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>15</td>
<td>Most people with ASD enjoy social chit-chat</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>16</td>
<td>The needs of others are seldom considered by people with ASD</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>17</td>
<td>Children with an ASD usually grow up to be schizophrenic adults</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>18</td>
<td>People with ASD have trouble understanding facial expressions and gestures</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>19</td>
<td>In adulthood, people with an ASD no longer benefit from specific autism interventions</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>20</td>
<td>It is difficult to determine if an adult has an ASD</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>21</td>
<td>Most people with ASD take things very literally</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td></td>
<td>Statement</td>
<td>Yes</td>
<td>No</td>
<td>Unsure</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>--------</td>
</tr>
<tr>
<td>22</td>
<td>Obsessional interests are common in people with ASD</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>23</td>
<td>If someone has a diagnosis of ASD, they would not have any other mental health diagnoses</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>24</td>
<td>People with ASD are usually aware of what others are thinking or feeling</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>25</td>
<td>People with ASD usually lack discretion</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>26</td>
<td>Typically, people with ASD are drawn more strongly to people than to things</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>27</td>
<td>People with ASD have difficulty switching back to a task following an interruption</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>28</td>
<td>People with ASD readily adjust to change in their routine</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>29</td>
<td>People with ASD can form strong attachment to their family members and caregivers</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>30</td>
<td>People with ASD often appear aloof and distant</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>31</td>
<td>Most people with ASD have intact speech</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>32</td>
<td>People with ASD have no interest in forming relationships with others</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>
Section C: Perception of ASD Needs Questionnaire-Forensic

Below are a series of statements about ASD. For each statement please indicate how strongly you agree or disagree. Please select only ONE option.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. People with ASD have characteristics that make them particularly vulnerable to offending behaviour</td>
<td>○ ○ ○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. People with ASD require additional support throughout the legal process</td>
<td>○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Specialised prison services are required for people with an ASD</td>
<td>○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. There is no advantage in screening for ASD in offenders on entry into the prison system</td>
<td>○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Staff require specialised training to support individuals with ASD in the forensic system</td>
<td>○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Criminal justice personnel are mostly not clear on the distinction between mental illness and ASD</td>
<td>○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Individuals with ASD are likely to go unrecognized in the forensic system</td>
<td>○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. The needs of people with ASD required greater recognition within the forensic system</td>
<td>○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Staff within the forensic system require additional training in how to recognise individuals with ASD</td>
<td>○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. The needs of offenders with ASD would be better met outside the prison system</td>
<td>○ ○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX F

Development of the Autism Knowledge Questionnaire

Design

Although there are a number of existing measures available to determine knowledge of ASD, these predominately relate to the presentation of ASD in children and the impact of ASD on child development. There appear to be no published instruments that measure knowledge of ASD as it presents in adulthood. To address this deficit, the current study comprises the development and trial of the Autism Knowledge Questionnaire (AKQ) to determine its validity and reliability as a measure of ASD knowledge.

Aims and hypotheses

The aims of the study were to develop a valid and reliable measure of knowledge of the characteristics of ASD in adults for administration to CJS personnel. Specifically, the AKQ was developed and trialled to establish its psychometric properties and to determine its ability to differentiate between levels of knowledge held by participants. The following hypotheses will be evaluated:

1. The AKQ is a valid and reliable measure of ASD knowledge as it presents in adults.
2. The AKQ will differentiate between levels of ASD knowledge. Specifically, it will distinguish between people with minimal knowledge of ASD characteristics and people with expert knowledge of ASD characteristics.

Method

Participants.

The development and trial of the AKQ included 17 participants who were recruited into three groups. Details of the groups of participant are displayed in Table F1. The six participants in the expert group had post graduate qualifications in psychology and five or more years clinical or research experience with ASD. These participants were recruited from contacts in the autism field and faculty at Deakin University, Australia. The seven participants in the basic knowledge group were
qualified in a health discipline and were less familiar with the DSM-IV-TR (APA, 2000) than the expert group. They had less than five years professional experience with ASD. The four participants in the minimal knowledge group had no training in ASD or the health field. They had little or no direct contact with individuals with ASD.

Table F1

<table>
<thead>
<tr>
<th>Group</th>
<th>Male</th>
<th>Female</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Basic knowledge</td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Minimal knowledge</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Sample</strong></td>
<td>7</td>
<td>10</td>
<td>17</td>
</tr>
</tbody>
</table>

**Materials.**

The questionnaire contained two sections: the AKQ and a comments and feedback section. The questionnaire was available in both electronic and paper format.

*The autism knowledge questionnaire.*

The AKQ was developed with reference to the DSM-IV-TR (APA, 2000); the ICD-10 (WHO, 2007); current literature on ASD; and through consultation with experts in the ASD field. A number of published questionnaires were used to frame the items including: The AQ (Baron-Cohen et al., 2001); Autism Spectrum Screening Questionnaire (Ehlers et al., 1999); The Autism Survey: Education and Competence with Autism (Schwartz & Drager, 2008); Autism questionnaire for students (Shah, 2001); and The Autism Survey (Stone, 1987).

Forty-seven items were devised to assess knowledge of ASD as it presents in adults. The items related to ASD characteristics and diagnostic criteria across key areas of impairment: communication; social interaction and relationships; behaviours and interests; cognitive; comorbidity and prognosis (e.g., People with ASD are usually aware of what others are thinking or feeling and ASD occur in roughly equal numbers of males and females). Response options included: yes, no or unsure. A score of one was given for every correct item, incorrect or unsure responses scored zero. The questionnaire took approximately 20 minutes to complete.
Feedback and comments section.

In the final section of the AKQ participants were asked to comment on the questionnaire, including the specific items and the overall design.

Procedure.

Potential participants were invited to participate via telephone and email. The invitation included an outline of the study and the requirements of participation, with an emphasis on the confidential and voluntary nature of the study. Those who expressed interest were provided with an electronic or paper copy of the questionnaire and a replied paid envelope to return the completed questionnaire. Consent was inferred from the return of the completed questionnaire.

Results

Data analysis.

Prior to analyses, negatively worded items were reverse coded. The data were screened for missing data and outliers, and the assumptions for each of the analysis were conducted. Reliability was assessed through Cronbach’s alpha and examination of item-total correlations. Validity testing included consultations with professionals and analysis of group differences. Due to the small number of participants, the underlying factor structure could not be analysed.

Reliability.

Reliability analyses were conducted to determine if the items measured the same underlying construct. Strong internal consistency was found with a Cronbach’s alpha of .92. To further assess the reliability of the questionnaire, the item-total correlations were analysed (refer to Table F2). Although opinion varies, correlations of .30 or less are considered to not correlate well with the total score and therefore to not make meaningful contributions to the overall questionnaire (Field, 2009; Kline, 2005). To consolidate the questionnaire and improve reliability, all correlations less than .4 were removed. Of the 47 items, 13 correlated poorly with the total score. A further two items (24 and 41) displayed no variance, with all participants correctly responding to the items. These 15 items were removed from the questionnaire. Table F3 displays the means and standard deviations of the removed items.
### Table F2

**Item-Total Correlations and Cronbach’s Alpha if Item is Deleted**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item-Total Correlation</th>
<th>Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Most people with ASD have special talents or abilities</td>
<td>.93</td>
<td>.28</td>
</tr>
<tr>
<td>2. The number of diagnosed cases of ASD has increased over the past 10 years</td>
<td>.93</td>
<td>.67</td>
</tr>
<tr>
<td>3. Impairment in using nonverbal expressions is a key characteristic of ASD</td>
<td>.93</td>
<td>.45</td>
</tr>
<tr>
<td>4. ASD can be diagnosed by a medical test</td>
<td>.93</td>
<td>.48</td>
</tr>
<tr>
<td>5. People with ASD vary in intelligence from intellectually disabled through to above average intelligence</td>
<td>.93</td>
<td>.78</td>
</tr>
<tr>
<td>6. Many people with ASD have difficulty using everyday language to communicate their needs</td>
<td>.93</td>
<td>.25</td>
</tr>
<tr>
<td>7. ASD are developmental disorders</td>
<td>.93</td>
<td>-.13</td>
</tr>
<tr>
<td>8. People with ASD adjust well to change</td>
<td>.93</td>
<td>.10</td>
</tr>
<tr>
<td>9. Individuals with ASD commonly engage in repetitive movements</td>
<td>.93</td>
<td>.41</td>
</tr>
<tr>
<td>10. Abruptness is a common feature in people with ASD</td>
<td>.93</td>
<td>.65</td>
</tr>
<tr>
<td>11. People with ASD commonly experience hallucinations</td>
<td>.93</td>
<td>.57</td>
</tr>
<tr>
<td>12. ASD occur in roughly equal numbers of males and females</td>
<td>.92</td>
<td>.74</td>
</tr>
<tr>
<td>13. People with ASD often have difficulty understanding the point of a joke</td>
<td>.93</td>
<td>.60</td>
</tr>
<tr>
<td>14. Research has demonstrated that heredity and genes play a role in ASD</td>
<td>.93</td>
<td>.60</td>
</tr>
<tr>
<td>15. People across the spectrum of ASD display very similar characteristics and behaviours</td>
<td>.93</td>
<td>.38</td>
</tr>
<tr>
<td>16. ASD affects people of all races and ethnicities at about the same rate</td>
<td>.93</td>
<td>.48</td>
</tr>
<tr>
<td>17. Typically, ASD can be out grown</td>
<td>.93</td>
<td>.60</td>
</tr>
<tr>
<td>18. Many people with ASD have trouble tolerating loud noises</td>
<td>.93</td>
<td>.65</td>
</tr>
<tr>
<td>19. Many people with ASD are very sensitive to touch</td>
<td>.92</td>
<td>.89</td>
</tr>
<tr>
<td>20. People with ASD typically become upset or agitated if they cannot complete a task or pursue an area of interest</td>
<td>.93</td>
<td>.33</td>
</tr>
<tr>
<td>21. Most people with ASD enjoy social chit-chat</td>
<td>.93</td>
<td>.66</td>
</tr>
<tr>
<td>22. The needs of others are seldom considered by people with ASD</td>
<td>.93</td>
<td>.47</td>
</tr>
<tr>
<td>23. Children with an ASD usually grow up to be schizophrenic adults</td>
<td>.93</td>
<td>.49</td>
</tr>
<tr>
<td>24. Many people with ASD may become upset or anxious if their routine is changed</td>
<td>.93</td>
<td>-</td>
</tr>
<tr>
<td>25. People with ASD have trouble understanding facial expressions and gestures</td>
<td>.92</td>
<td>.42</td>
</tr>
<tr>
<td>26. In adulthood, people with an ASD no longer benefit from specific autism interventions</td>
<td>.93</td>
<td>.75</td>
</tr>
<tr>
<td>27. It is difficult to determine if an adult has an ASD</td>
<td>.93</td>
<td>.54</td>
</tr>
<tr>
<td>28. People with ASD are able to actively maintain eye contact when conversing with others</td>
<td>.93</td>
<td>.19</td>
</tr>
<tr>
<td>29. People with ASD require more routine than those without ASD</td>
<td>.93</td>
<td>-.14</td>
</tr>
<tr>
<td>30. Many people with ASD engage in repetitive behaviours and rituals</td>
<td>.93</td>
<td>.28</td>
</tr>
<tr>
<td>31. People with ASD prefer variability in their day</td>
<td>.93</td>
<td>.60</td>
</tr>
<tr>
<td>32. Most people with ASD take things very literally</td>
<td>.93</td>
<td>.54</td>
</tr>
<tr>
<td>33. Obsessional interests are common in people with ASD</td>
<td>.93</td>
<td>.60</td>
</tr>
<tr>
<td>34. If someone has a diagnosis of ASD, they would not have any other mental health diagnoses</td>
<td>.93</td>
<td>.42</td>
</tr>
<tr>
<td>35. People with ASD are usually aware of what others are thinking or feeling</td>
<td>.93</td>
<td>.60</td>
</tr>
<tr>
<td>36. Odd and eccentric behaviour is typical of individuals with an ASD</td>
<td>.93</td>
<td>.36</td>
</tr>
</tbody>
</table>
37. People with ASD lack discretion .93 .57
38. Many individuals with ASD are fascinated by dates, patterns and other detailed information^ .93 .23
39. Typically, people with ASD are drawn more strongly to people than to things^ .92 .57
40. People with ASD have difficulty switching back to a task following an interruption .93 .81
41. People with ASD often have difficulty with social interaction^ .93 -
42. People with ASD readily adjust when their routine is disrupted^ .93 .60
43. People with ASD can form strong attachment to their family members and caregivers .93 .43
44. People with ASD often appear aloof and distant .93 .50
45. Individuals with ASD have no impairment in their use of language^ .93 .58
46. Comprehension ability is often overestimated in people with ASD who have good vocabulary skills^ .93 .34
47. People with ASD have no interest in forming relationships with others^ .93 .46

^Item was reverse coded prior to analysis. ^Item removed due to low correlations with the total score. ^Item displayed no variance.

Validity.

Face validity.

Face validity was measured through the feedback section of the questionnaire and consultation with two experts in the autism field. No comments were made regarding the nature or content of the items. All the items refer directly to ASD and the diagnostic criteria. Overall, the AKQ has sound face validity.

Content validity.

To assess content validity, two autism experts were consulted on the pilot version of the questionnaire. In addition, the expert group provided written feedback on the wording of two items. This resulted in changes to the two items: Item 42 was altered from “People with ASD readily adjust when their routine is disrupted” to “People with ASD readily adjust to change in their routine”; and item 47 was altered from “A defining characteristic of ASD is a lack of desire to socialise with others” to “People with ASD have no interest in forming relationships with others”.

Construct validity.

The dependent variable of total knowledge score violated the assumption of normality. Although a non-significant Kolmogorov-Smirnov statistic was recorded (p = .200), analysis of the scatter plots, histograms, skewness and kurtosis indicated that the data had violated the assumption of normality. The categorical variables: gender and group, also violated the assumption of normality. The minimal knowledge category had one outlier due to low knowledge levels. The mean would not change significantly if the outlier was removed. It was therefore retained in the
analyses to allow accurate representation of knowledge. There was no data missing from participant responses.

Table F3

Means and Standard Deviations of Removed Items

<table>
<thead>
<tr>
<th>Items</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Most people with ASD have special talents or abilities</td>
<td>0.94</td>
<td>.43</td>
</tr>
<tr>
<td>6. Many people with an ASD have difficulty using everyday language</td>
<td>1.00</td>
<td>.35</td>
</tr>
<tr>
<td>to communicate their needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. ASD are developmental disorders</td>
<td>1.24</td>
<td>.56</td>
</tr>
<tr>
<td>8. People with ASD adjust well to change(^a)</td>
<td>0.88</td>
<td>.33</td>
</tr>
<tr>
<td>15. People across the spectrum of ASD display very similar</td>
<td>1.12</td>
<td>.60</td>
</tr>
<tr>
<td>characteristics and behaviours(^a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. People with ASD typically become upset or agitated if they cannot</td>
<td>1.00</td>
<td>.50</td>
</tr>
<tr>
<td>complete a task or pursue an area of interest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Many people with ASD may become upset or anxious if their routine</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>is changed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. People with ASD are able to actively maintain eye contact when</td>
<td>1.12</td>
<td>.49</td>
</tr>
<tr>
<td>Conversing with others(^a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. People with ASD require more routine than those without ASD</td>
<td>0.94</td>
<td>.24</td>
</tr>
<tr>
<td>30. Many people with ASD engage in repetitive behaviours and rituals</td>
<td>1.00</td>
<td>.35</td>
</tr>
<tr>
<td>31. People with ASD prefer variability in their day</td>
<td>0.88</td>
<td>.33</td>
</tr>
<tr>
<td>36. Odd and eccentric behaviour is typical of individuals with an ASD</td>
<td>1.24</td>
<td>.56</td>
</tr>
<tr>
<td>38. Many individuals with ASD are fascinated by dates, patterns and</td>
<td>1.06</td>
<td>.43</td>
</tr>
<tr>
<td>other detailed information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41. People with ASD often have difficulty with social interaction</td>
<td>1.00</td>
<td>.00</td>
</tr>
<tr>
<td>46. Comprehension ability is often overestimated in people with ASD</td>
<td>0.82</td>
<td>.53</td>
</tr>
<tr>
<td>(^a)Items were reverse coded prior to analysis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gender differences would not be expected in responses to the AKQ and would indicate poor construct validity of the scale. Due to the skewed distribution, an independent sample Mann-Whitney \(U\) test was used and indicated no significance difference between the knowledge of males and females on the AKQ, \(U = 30.50, z = -.442, p = .659, r = .10\) (refer to Table F4).

A Kruskal-Wallis test was conducted to assess the knowledge differences between the three groups of participants. Knowledge as measured by the AKQ significantly differs across the three groups, \(\chi^2(2, N=17) = 12.767, p = .002\). Post Hoc tests were conducted to evaluate pairwise differences among the three groups using Mann-Whitney \(U\) procedures. To control for Type 1 error, Bonferroni
corrections were made that reduced the alpha to .017. All three groups differed significantly from each other at the \( p < .017 \) level (Refer to Table F5). This indicated that responses on the questionnaire strongly discriminated between the three knowledge groups. The expert group had significantly higher knowledge scores than both the other groups, which indicates a greater understanding of ASD.

<table>
<thead>
<tr>
<th>Group</th>
<th>( N )</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert</td>
<td>6</td>
<td>29.5</td>
<td>27 - 32</td>
</tr>
<tr>
<td>Basic knowledge</td>
<td>7</td>
<td>24.0</td>
<td>19 - 27</td>
</tr>
<tr>
<td>Minimal knowledge</td>
<td>4</td>
<td>14.0</td>
<td>5 - 20</td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>23.0</td>
<td>5 - 32</td>
</tr>
<tr>
<td>Female</td>
<td>10</td>
<td>26.0</td>
<td>10 - 31</td>
</tr>
<tr>
<td>Total Sample</td>
<td>17</td>
<td>25.0</td>
<td>5 - 32</td>
</tr>
</tbody>
</table>

The construct validity of the AKQ was further supported by the responses of the expert participants. As the AKQ was based on previous scientific research and the DSM-IV-TR criteria, the accurate responses of the expert participants indicates that the AKQ is a valid measure of the characteristics, diagnosis and research findings of ASD.

Table F5

\( Z \) Scores and Significance Levels for Comparisons between the Three Levels of ASD.

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Group</th>
<th>Comparison Group</th>
<th>( Z )</th>
<th>( p )</th>
<th>( r )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert</td>
<td>Basic Knowledge</td>
<td>-2.752</td>
<td>.006*</td>
<td>.76</td>
<td></td>
</tr>
<tr>
<td>Basic Knowledge</td>
<td>Minimal Knowledge</td>
<td>-2.462</td>
<td>.014*</td>
<td>.74</td>
<td></td>
</tr>
<tr>
<td>Minimal Knowledge</td>
<td>Expert</td>
<td>-2.566</td>
<td>.010*</td>
<td>.81</td>
<td></td>
</tr>
</tbody>
</table>

\*Significant at \( p < .017 \)

Reliability: Revised autism knowledge questionnaire.

The internal consistency of the AKQ was re-evaluated following the removal of the 15 items. Cronbach’s alpha increased to .93 and all items correlated adequately with the total score (see Table F6).
### Table F6

*Item-Total Correlations and Cronbach’s alpha if Item is deleted for the Revised AKQ*

<table>
<thead>
<tr>
<th>Item</th>
<th>Item-Total Correlation</th>
<th>Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The number of diagnosed cases of ASD has increased over the past 10 years</td>
<td>.66</td>
<td>.92</td>
</tr>
<tr>
<td>2. Impairment in using nonverbal expressions is a key characteristic of ASD</td>
<td>.44</td>
<td>.92</td>
</tr>
<tr>
<td>3. ASD can be diagnosed by a medical test&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.51</td>
<td>.92</td>
</tr>
<tr>
<td>4. People with ASD vary in intelligence from intellectually disabled through to above average intelligence</td>
<td>.80</td>
<td>.92</td>
</tr>
<tr>
<td>5. Individuals with ASD commonly engage in repetitive movements</td>
<td>.36</td>
<td>.92</td>
</tr>
<tr>
<td>6. Abruptness is a common feature in people with ASD</td>
<td>.64</td>
<td>.92</td>
</tr>
<tr>
<td>7. People with ASD commonly experience hallucinations&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.60</td>
<td>.92</td>
</tr>
<tr>
<td>8. ASD occur in roughly equal numbers of males and females&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.79</td>
<td>.92</td>
</tr>
<tr>
<td>9. People with ASD often have difficulty understanding the point of a joke</td>
<td>.59</td>
<td>.92</td>
</tr>
<tr>
<td>10. Research has demonstrated that heredity and genes play a role in ASD</td>
<td>.58</td>
<td>.92</td>
</tr>
<tr>
<td>11. ASD affects people of all races and ethnicities at about the same rate</td>
<td>.49</td>
<td>.92</td>
</tr>
<tr>
<td>12. Typically, ASD can be outgrown&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.59</td>
<td>.92</td>
</tr>
<tr>
<td>13. Many people with ASD have trouble tolerating loud noises</td>
<td>.61</td>
<td>.92</td>
</tr>
<tr>
<td>14. Many people with ASD are very sensitive to touch</td>
<td>.61</td>
<td>.92</td>
</tr>
<tr>
<td>15. Most people with ASD enjoy social chit-chat&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.64</td>
<td>.92</td>
</tr>
<tr>
<td>16. The needs of others are seldom considered by people with ASD</td>
<td>.44</td>
<td>.92</td>
</tr>
<tr>
<td>17. Children with ASD usually grow up to be schizophrenic adults&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.46</td>
<td>.92</td>
</tr>
<tr>
<td>18. People with ASD have trouble understanding facial expressions and gestures</td>
<td>.40</td>
<td>.92</td>
</tr>
<tr>
<td>19. In adulthood, people with an ASD no longer benefit from specific autism interventions&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.48</td>
<td>.92</td>
</tr>
<tr>
<td>20. It is difficult to determine if an adult has an ASD</td>
<td>.53</td>
<td>.92</td>
</tr>
<tr>
<td>21. Most people with ASD take things very literally</td>
<td>.56</td>
<td>.92</td>
</tr>
<tr>
<td>22. Obsessional interests are common in people with ASD</td>
<td>.59</td>
<td>.92</td>
</tr>
<tr>
<td>23. If someone has a diagnosis of ASD, they would not have any other mental health diagnoses&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.42</td>
<td>.92</td>
</tr>
<tr>
<td>24. People with ASD are usually aware of what others are thinking or feeling&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.59</td>
<td>.92</td>
</tr>
<tr>
<td>25. People with ASD usually lack discretion</td>
<td>.57</td>
<td>.92</td>
</tr>
<tr>
<td>26. Typically, people with ASD are drawn more strongly to people than to things&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.55</td>
<td>.92</td>
</tr>
<tr>
<td>27. People with ASD have difficulty switching back to a task following an interruption</td>
<td>.80</td>
<td>.92</td>
</tr>
<tr>
<td>28. People with ASD readily adjust to change in their routine&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>.59</td>
<td>.92</td>
</tr>
<tr>
<td>29. People with ASD can form strong attachment to their family members and caregivers</td>
<td>.43</td>
<td>.92</td>
</tr>
<tr>
<td>30. People with ASD often appear aloof and distant</td>
<td>.49</td>
<td>.92</td>
</tr>
<tr>
<td>31. Most people with ASD have intact speech&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.38</td>
<td>.93</td>
</tr>
<tr>
<td>32. People with ASD have no interest in forming relationships with others&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>.45</td>
<td>.92</td>
</tr>
</tbody>
</table>

<sup>a</sup>Item was reverse coded prior to analysis. <sup>b</sup>Item reworded
Discussion

The aim of this study was to develop a measure to determine personnel knowledge of ASD as it presents in adulthood and to assess the psychometric properties of the measure; specifically its capacity to differentiate levels of knowledge. The AKQ was designed to measure knowledge of ASD, including knowledge of the characteristics of Autistic Disorder and Asperger’s Syndrome (APA, 2000; WHO, 2007), and the more subtle characteristics of ASD that are not covered in the diagnostic criteria. This enables individuals to be classified according to knowledge levels, including high-level knowledge of the subtle and often difficult to detect characteristics of ASD. The results indicated that the AKQ had sound psychometric properties. The questionnaire was valid and all items were internally reliable and independent of each other; this is in line with the recommendations on the development of questionnaires for research made by De Vaus (2002) and Kline (2005). Therefore hypothesis one, that the AKQ would be valid and reliable measure of ASD knowledge as it presents in adults, was supported by the current study. Reliability analysis indicated the internal consistency was excellent. Fifteen items were removed based on unacceptable correlations with the total score. Upon deletion of these items, the internal consistency of the AKQ improved. The AKQ is the first known psychometrically sound measure of knowledge of ASD as it presents in adults.

There are a number of explanations for why the 15 removed items did not make a meaningful contribution to the questionnaire. Five of these items related to characteristics and behaviours that were referred to in more than one item of the questionnaire, thus rendering them obsolete to the overall questionnaire. For example, both item 6 (Many people with an ASD have difficulty using everyday language to communicate their needs) and item 45 (Most people with ASD have intact speech) related to language. Inflexibility and routine was the focus of items 8 (People with ASD adjust well to change), 31 (People with ASD prefer variability in their day), 29 (People with ASD require more routine than those without ASD) and 42 (People with ASD readily adjust when their routine is disrupted). Items 20 (People with ASD typically become upset or agitated if they cannot complete a task or pursue an area of interest) and 33 (Obsessional interests are common in people with ASD) related to special interests and behavioural characteristics were referred to
in both item 36 (*Odd and eccentric behaviour is typical of individuals with an ASD*) and item 10 (*Abruptness is a common feature in people with ASD*).

The diverse presentation of ASD may have led to inconsistency in responses on four of the removed items (1, 28, 38, and 46). Item 1 (*Most people with ASD have special talents or abilities*) and item 46 (*Comprehension ability is often overestimated in people with ASD who have good vocabulary skills*) relate to cognitive abilities. Many individuals on the spectrum have intact cognitive abilities and may have expert knowledge in a special interest area; they may be able to discuss this area with verbal fluency. However, in other contexts, the same person may have marked difficulty with verbal communication. This variability can lead to difficulty accurately determining cognitive and verbal abilities. Item 1 may have also elicited varied responses as broad knowledge of a special interest area does not necessarily indicate that an individual has a special ‘talent’ or ‘ability’. In relation to item 28 (*Most people with ASD are comfortable maintaining eye contact when talking with others*), patterns of eye contact vary considerably among individuals, ranging from minimal to intense. Eye-contact may also be positively impacted by targeted interventions. The diversity in presentations highlights the need to consider the full range of characteristics, both present and absent from an individual’s presentation.

The wording of two items may have meant the direction of the response option were unclear. For example, item 15 (*People across the spectrum of ASD display very similar characteristics and behaviours*) may be ambiguous as there are characteristics that must be present to receive a diagnosis of ASD; however the manifestation of these core characteristics can vary dramatically between diagnosed individuals. It is difficult to determine why item 7 (*ASD are developmental disorders*) correlated poorly, it is possible there was ambiguity around the manifestation of ASD characteristics in childhood and adulthood. Participants who work with adults may no longer focus on the developmental nature of the disorder. It is also likely that some participants were unfamiliar with the diagnostic classification of ASD.

Item 30 (*Many people with ASD engage in repetitive behaviours and rituals*) was another rogue item. This was endorsed correctly by the majority of participants and may have correlated poorly due to the lack of variability in participant responses.
There were also a number of other items related to routine and ritualistic behaviour and therefore this item may have been redundant.

Two items elicited agreement from all participants. It is not surprising that item 24 (Many people with ASD may become upset or anxious if their routine is changed), and item 41 (People with ASD often have difficulty with social interaction) were endorsed by all participants, as they relate to fundamental characteristics of ASD.

With respect to validity, it was important to receive consumer input. The readability and language used in the items was considered acceptable, with only minor alterations made for ease of use. Validity analysis indicated the AKQ was able to clearly distinguish between the knowledge levels of participants as significant knowledge differences were found between the expert, the basic knowledge and minimal knowledge groups. This indicated that the AKQ is a robust measure of knowledge of ASD that can adequately differentiate between the knowledge of people with at least five years experiences working with ASD, people who have limited experience, and those who have had no experience with people with ASD as predicted by hypothesis 2. Further, there were no significant differences between males and females, indicating that the questionnaire is not sensitive to gender effects.

A key limitation of the study was the sample characteristics, the small number of participants limited data analysis options. Further, participants were predominantly university educated because the aim of this study was to assess the utility of the AKQ among professionals. Caution is therefore required in use of the questionnaire in different populations.

Conclusion
The final version of the AKQ included 32 items (refer to Appendix F). This was found to be a psychometrically sound version of the AKQ; it is able to establish the degree of ASD knowledge regarding diagnostic criteria, characteristics, behaviours and prognosis of adults with ASD. The use of this questionnaire in health care settings will allow organisations to determine the training and support needs of staff. This, in turn, may contribute to improved identification and enhanced outcomes for people with ASD.
## APPENDIX G

### Domains of the Autism Knowledge Questionnaire

Subgroup 1: Social interaction and relationships.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.</td>
<td>Most people with ASD enjoy social chit-chat</td>
</tr>
<tr>
<td>21.</td>
<td>The needs of others are seldom considered by people with ASD</td>
</tr>
<tr>
<td>31.</td>
<td>People with ASD are usually aware of what others are thinking or feeling</td>
</tr>
<tr>
<td>33.</td>
<td>People with ASD usually lack discretion</td>
</tr>
<tr>
<td>35.</td>
<td>Typically, people with ASD are drawn more strongly to people than to things</td>
</tr>
<tr>
<td>39.</td>
<td>People with ASD can form strong attachment to their family members and caregivers</td>
</tr>
<tr>
<td>40.</td>
<td>People with ASD often appear aloof and distant</td>
</tr>
<tr>
<td>43.</td>
<td>People with ASD have no interest in forming relationships with others</td>
</tr>
</tbody>
</table>

Subgroup 2: Language, communication, cognitive.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Impairment in using nonverbal expressions is a key characteristic of ASD</td>
</tr>
<tr>
<td>10.</td>
<td>Abruptness is a common feature in people with ASD</td>
</tr>
<tr>
<td>13.</td>
<td>People with ASD often have difficulty understanding the point of a joke</td>
</tr>
<tr>
<td>23.</td>
<td>People with ASD have trouble understanding facial expressions and gestures</td>
</tr>
<tr>
<td>28.</td>
<td>Most people with ASD take things very literally</td>
</tr>
<tr>
<td>41.</td>
<td>Most people with ASD have intact speech</td>
</tr>
</tbody>
</table>

Subgroup 3: Behaviour, interests, routines and sensitivities.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>Many people with ASD have trouble tolerating loud noises</td>
</tr>
<tr>
<td>9.</td>
<td>Individuals with ASD commonly engage in repetitive movements</td>
</tr>
<tr>
<td>18.</td>
<td>Many people with ASD are very sensitive to touch</td>
</tr>
<tr>
<td>29.</td>
<td>Obsessional interests are common in people with ASD</td>
</tr>
<tr>
<td>36.</td>
<td>People with ASD have difficulty switching back to a task following an interruption</td>
</tr>
<tr>
<td>38.</td>
<td>People with ASD readily adjust to change in their routine</td>
</tr>
</tbody>
</table>

Subgroup 4: Other characteristics (diagnosis, research findings, outcomes).

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>The number of diagnosed cases of ASD has increased over the past 10 years</td>
</tr>
<tr>
<td>4.</td>
<td>ASD can be diagnosed by a medical test</td>
</tr>
<tr>
<td>5.</td>
<td>People with ASD vary in intelligence from intellectually disabled through to above average intelligence</td>
</tr>
<tr>
<td>11.</td>
<td>People with ASD commonly experience hallucinations</td>
</tr>
<tr>
<td>12.</td>
<td>ASD occur in roughly equal numbers of males and females</td>
</tr>
<tr>
<td>14.</td>
<td>Research has demonstrated that heredity and genes play a role in ASD</td>
</tr>
<tr>
<td>16.</td>
<td>ASD affects people of all races and ethnicities at about the same rate</td>
</tr>
<tr>
<td>17.</td>
<td>Typically, ASD can be outgrown</td>
</tr>
<tr>
<td>22.</td>
<td>Children with an ASD usually grow up to be schizophrenic adults</td>
</tr>
<tr>
<td>24.</td>
<td>In adulthood, people with an ASD no longer benefit from specific autism interventions</td>
</tr>
<tr>
<td>25.</td>
<td>It is difficult to determine if an adult has an ASD</td>
</tr>
<tr>
<td>30.</td>
<td>If someone has a diagnosis of ASD, they would not have any other mental health diagnoses</td>
</tr>
</tbody>
</table>
APPENDIX H

Ethics Approval Letters

DEAKIN UNIVERSITY

Human Ethics Research

Office of Research Integrity
Research Services Division
70 Elgar Road, Burwood Victoria
Postal: 221 Burwood Highway
Burwood Victoria 3125 Australia
Telephone 03 9251 7123 Facsimile 03 9244 6581
research-ethics@deakin.edu.au

Memorandum

To: A/Prof Jane Mc Gillivray
School of Psychology

Deakin University Human Research Ethics Committee (DU-HREC)

cc: Miss Lauren Gook

Date: 14 July, 2010
Subject: Offenders with Autism Spectrum Disorder: Screening, Characteristics and Staff Awareness

Please quote this project number in all future communications

Approval for this project was granted by the Deakin University Human Research Ethics Committee Executive on 14/07/2010.

Approval has been given for Miss Lauren Gook, under the supervision of A/Prof Jane McGillivray, School of Psychology, to undertake this project for three years from 14/07/2010.

The approval given by the Deakin University Human Research Ethics Committee is given only for the project and for the period as stated in the approval. It is your responsibility to contact the Human Research Ethics Unit immediately should any of the following occur:

- Serious or unexpected adverse effects on the participants
- Any proposed changes in the protocol, including extensions of time.
- Any events which might affect the continuing ethical acceptability of the project.
- The project is discontinued before the expected date of completion.
- Modifications are requested by other HREC's.

In addition you will be required to report on the progress of your project at least once every year and at the conclusion of the project. Failure to report as required will result in suspension of your approval to proceed with the project.

DU-HREC may need to audit this project as part of the requirements for monitoring set out in the National Statement on Ethical Conduct in Human Research (2007).

Human Research Ethics Unit
research-ethics@deakin.edu.au
Telephone: 03 9251 7123
Department of Justice

Human Research Ethics Committee

Level 21, 121 Exhibition Street Melbourne 3000
Telephone: (03) 8684 1514
Facsimile: (03) 8684 1525
DX210077

7 June 2010

Reference: CF/10/3524

Associate Professor Jane A. McGillivray,
Deakin University

Re: Offenders with Autism Spectrum Disorder: Screening, Characteristics and Staff Awareness.

Dear Associate Professor Jane McGillivray,

I am happy to inform you that the Department of Justice Human Research Ethics Committee (JHREC) considered your response to the issues raised in relation to the project Offenders with Autism Spectrum Disorder: Screening, Characteristics and Staff Awareness and granted full approval for the duration of the investigation. The Department of Justice reference number for this project is CF/10/3524.

Please note the following requirements:

• Sign the Undertaking form attached and provide an electronic and hardcopy version within ten business days.
• The JHREC is to be notified immediately of any matter that arises that may affect the conduct or continuation of the approved project.
• You are required to provide an Annual Report every 12 months (if applicable) and to report on the completion of your project. Annual Report and Completion of Research forms are available on the Justice Research Ethics website which is located at www.justice.vic.gov.au About Us > Our Values > Ethics.
• Note that for long term/ongoing projects approval is only granted for three years, after which time the original application will need to renewed with a new application.
• The Department of Justice would also appreciate receiving copies of any relevant publications, papers, theses, conferences presentations or audiovisual materials that result from this research.
• All future correspondence regarding this project must be sent electronically to ethics@justice.vic.gov.au and include the reference number and the project title. Hard copies of signed documents or original correspondence are to be sent to The Secretary, JHREC, Level 21, 121 Exhibition St, Melbourne, VIC 3000.

If you have any queries regarding this application you are welcome to contact me on (03) 8684 1514 or email: ethics@justice.vic.gov.au.

Yours sincerely,

Dr Yasmine Fauzee
Secretary,
Department of Justice Human Research Ethics Committee
16 June 2010

Dear Associate Professor Mc Gillivray

Re: Offenders with Autism Spectrum Disorder: Characteristics and Staff Awareness.

The Forensicare Research Committee has given operational approval for your research to be conducted at Forensicare. This approval is subject to approval by the Deakin University Human Research Ethics Committee.

Approval is given for the period between the anticipated commencement and completion dates as set out in the documentation. If the study has not been completed by the nominated completion date, an application for extension will be required.

To enable the Committee to meet its obligations in relation to monitoring Forensicare's research program, you are required to provide a report within 12 months or on completion of your project, whichever is earlier.

Forensicare must report ongoing research activities to the Minister of Mental Health quarterly. As such you may be asked to provide information on the progress of your research.

Please ensure that the Research Committee is notified of any matter that arises that may affect the conduct of the approved program.

Should you have any queries please don’t hesitate to contact Ms Mitali Gupta on 99472601 or email mitali.gupta@forensicare.vic.gov.au.

Yours sincerely

[Signature]

Professor James Ogloff
Chair Forensicare Research Committee
Forensicare
Corrections Victoria Personnel

Project Title: Offenders with Autism Spectrum Disorder: Screening, Characteristics and Staff Awareness.  
Principal Researcher: Associate Professor Jane McGillivray  
Student Researcher: Ms Lauren Gook

This research project is being conducted under the auspices of Deakin University in conjunction with Corrections Victoria. The results of this research may be used in a doctoral thesis and related publications undertaken by Lauren Gook.

Purpose and Background
The purpose of this project is to examine the extent to which Assessment Officers and allied health personnel within the justice system understand the characteristics and needs of individuals with an autism spectrum disorder (ASD). This project is the first part of a larger study involving the screening of offenders for characteristics of ASD and findings will be used to inform the development of training materials.

Procedures
Participation in this project will involve you completing an anonymous questionnaire about your knowledge of ASD and the involvement of people with an ASD in the justice system. The questionnaire should take you approximately 30 minutes to complete. You will be asked some basic questions about yourself, including your current position, qualifications and experience. Some questions in the survey ask you to respond to a statement in terms of how strongly you agree or disagree with it (e.g., Difficulty adjusting to change is a key characteristic of ASD). Others request factual information (e.g., about contact you may have had with individuals diagnosed with an ASD in the justice system?).

On completion, the questionnaire submitted directly through the “submit” button on the webpage.

Consent, Confidentiality and Privacy of Information
To protect your confidentiality, we do not ask for any identifying information from you. By completing and returning the questionnaire you are giving your informed consent for us to include your anonymous responses in our results. In this way, in any publication, information will be displayed in such a way that you cannot be identified, as only aggregated data will be reported. The information will be stored in a secure location at Deakin University.

Possible Outcomes for you
Participation in this project will allow the researchers to provide Forensicare with recommendations on staff training needs in relation to ASD. Indirectly this study may benefit individuals with ASD who are involved with the justice system, in terms of enhanced identification and treatment. It is unlikely that participating in this research will cause you any stress or discomfort, other than the minor time
inconvenience. However, if at any point you feel any stress or discomfort arising from the questions, please discontinue the questionnaire.

Results of Project
A brief summary of results will be available at the completion of the study (anticipated end 2011). This can be accessed at (website to be inserted), or for a paper copy, please contact the researchers (see details below).

Participation is Voluntary
Participation in any research project is voluntary. If you do not wish to take part you are not obliged to. However, as we do not obtain any identifying information from you, we are unable to withdraw your information once submitted. Your decision as to take part in this study, will not affect your relationship with Deakin University or Corrections Victoria.

For further information about the study you may contact the researchers: Associate Professor Jane McGillivray (principal researcher) at: 221 Burwood Hwy, Burwood, VIC, 3125. Telephone: (03) 9244 6426. Email: jane.mcgillivray@deakin.edu.au or Ms Lauren Gook (student researcher) at: 221 Burwood Hwy, Burwood, VIC, 3125. Email: legoo@deakin.edu.au

If you have any concerns about the project you may contact the Secretary of the Department of Justice Research Ethics Committee. The Secretary can be contacted at: 21/121 Exhibition St, Melbourne, VIC, 3000. Telephone: (03) 8684 1514, Email: ethics@justice.vic.gov.au.

You may also contact The Manager, Office of Research Integrity, Deakin University, 221 Burwood Highway, Burwood Victoria 3125, Telephone: 9251 7129, Facsimile: 9244 6581; research-ethics@deakin.edu.au. Please quote project number [2010-130].
Project Title: **Offenders with Autism Spectrum Disorder: Screening, Characteristics and Staff Awareness.**
Principal Researcher: Associate Professor Jane McGillivray
Student Researcher: Ms Lauren Gook

This research project is being conducted by Deakin University in conjunction with Forensicare. It has been granted ethics approval from the Forensicare Research Committee and the Deakin University Human Research Ethics Committee. The results of this research may be used in a doctoral thesis and related publications undertaken by Lauren Gook.

**Purpose and Background**
The purpose of this project is to examine the extent to which allied health personnel who work with offenders understand the characteristics and needs of individuals with an autism spectrum disorder (ASD). This project is the first part of a larger study involving the screening of offenders for characteristics of ASD and findings will be used to inform the development of training materials.

**Procedures**
Participation in this project will involve you completing an anonymous questionnaire about your knowledge of ASD and the involvement of people with an ASD in the justice system. The questionnaire should take you approximately 30 minutes to complete. You will be asked some basic questions about yourself, including your current position, qualifications and experience. Some questions in the survey ask you to respond to a statement in terms of how strongly you agree or disagree with it (e.g., Difficulty adjusting to change is a key characteristic of ASD). Others request factual information (e.g., about contact you may have had with individuals diagnosed with an ASD in the justice system?).

On completion, the questionnaire is submitted directly through the “submit” button on the webpage.

**Consent, Confidentiality and Privacy of Information**
To protect your confidentiality, we do not ask for any identifying information from you. **By completing and returning the questionnaire you are giving your informed consent for us to include your anonymous responses in our results.** In this way, in any publication, information will be displayed in such a way that you cannot be identified, as only aggregated data will be reported. The information will be stored in a secure location at Deakin University.

**Possible Outcomes for you**
Participation in this project will allow the researchers to provide Forensicare with recommendations on staff training needs in relation to ASD. Indirectly this study may benefit individuals with ASD who are involved with the justice system, in terms of enhanced identification and treatment. It is unlikely that participating in this research will cause you any stress or discomfort, other than the minor time inconvenience. However, if at any point you feel any stress or discomfort arising from the questions, please discontinue the questionnaire.

**Results of Project**
A brief summary of results will be available at the completion of the study (anticipated end 2011). This can be accessed at *(website to be inserted)*, or for a paper copy, please contact the researchers (see details below).
**Participation is Voluntary**

Participation in any research project is voluntary. **If you do not wish to take part you are not obliged to.** However, as we do not obtain any identifying information from you, we are unable to withdraw your information once submitted. Your decision as to take part in this study, will not affect your relationship with Deakin University or Forensicare.

For further information about the study you may contact the researchers: Associate Professor Jane McGillivray (principal researcher) at: 221 Burwood Hwy, Burwood, VIC, 3125. Telephone: (03) 9244 6426. Email: jane.mcgillivray@deakin.edu.au or Ms Lauren Gook (student researcher) at: 221 Burwood Hwy, Burwood, VIC, 3125. Email: legoo@deakin.edu.au

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about your rights as a research participant, then you may contact:

The Manager, Office of Research Integrity, Deakin University, 221 Burwood Highway, Burwood Victoria 3125, Telephone: 9251 7129, Facsimile: 9244 6581; research-ethics@deakin.edu.au. Please quote project number [2010-134].

You may also contact the Secretary of the Forensicare Research Committee. The Secretary can be contacted at: Thomas Embling Hospital, Yarra Bend Road, Fairfield, VIC, 3078. Telephone: (03) 9495 9100.
APPENDIX J

Autism Spectrum Disorder in the Criminal Justice System Education Manual

Autism Spectrum Disorders

Information for Corrections Victoria Assessment Officers for the completion of the Stage 1 Screening Tool

Lauren Gook
Associate Professor Jane McGillivray
September 2010
This booklet provides an overview of Autism Spectrum Disorders. It includes basic descriptive information and is designed to assist in the completion of the Stage 1 – screening tool. This is a part of a study by Deakin University researchers, Lauren Gook and Associate Professor Jane McGillivray.

This booklet is intended for this research purpose only.

An Overview of Autism Spectrum Disorders

Autism spectrum disorders (ASD) are a group of similar conditions including, autistic disorder, Asperger’s syndrome and pervasive developmental disorder not otherwise specified. The name ASD will be used in this booklet to cover all of these.

ASD are lifelong neurodevelopmental disabilities marked by impairments in social interaction and communication, together with a range of restrictive, and often repetitive, behaviours and interests.

- Due to the diversity of clinical presentations, autism is described as varying along a spectrum of impairment in communication, social interactions, interests and behaviour.
- ASD affects the brain and causes some difficulties in the way that information from their environment is processed and integrated.
- ASD usually becomes apparent in childhood but can be identified at any point in life.
- ASD can occur with other disabilities. A number of people with autism also have an intellectual disability.
- The characteristics of ASD can lead the individuals to engage in problem behaviours.

Within the Criminal Justice Setting it is more likely that you will come in contact with higher functioning individuals on the autism spectrum. Those who are at the lower end of the spectrum are likely to be identified during the court process or even before they appear in court. Thus, this booklet will focus on higher functioning individuals on the autism spectrum, including those with Asperger’s syndrome.
Key Characteristics of Autism Spectrum Disorders

People with ASD usually present with the following core characteristics. The degree of impairment differs between individuals.

Impairments in communication
Individuals with ASD in a forensic setting are likely to have a reasonable vocabulary, however they commonly have unusual speech characteristics, such as:

- Odd pitch, tone, inflection, and rate
- Pedantic and repetitious speech patterns
- Peculiarities in speech and language, such as using brief sentences, grouping words together, speaking in an overly formal manner or in a monotone
- They may have difficulty understanding figurative language, the meanings of jokes, multiple meaning words and implied meanings in language.

Impairments in nonverbal communication
People with ASD often have impairments in the use and interpretation of nonverbal behaviours. These may be subtle and include:

- Lack of eye contact
- Restricted use of gestures
- Limited or inappropriate facial expressions such as a peculiar, stiff gaze
- Inappropriate regulation of emotions, such as failing to smile when talking about something that made them very happy.

Poor social relationships
People with ASD have marked impairments in social interaction characterised by the following:

- Difficulty understanding social cues
- Misinterpretation of facial expressions, body language and feelings of other people, and as a result, lack reciprocal social or emotional interactions
- Difficulty relating to and establishing relationships with people
- Small talk is often alien to them and they may lack the ability to initiate and engage in general conversation
- They may talk continuously about a particular object or topic of interest to them, but have difficulty engaging in other peoples interests
Preoccupations with interests or activities
- People with ASD commonly have limited areas of interest, but have unusual preoccupations with a particular subject that is abnormal either in intensity or in focus, and may be age-inappropriate
- Interests may include a fascination with dates and times, or memorising facts about a particular topic
- Preoccupations may be evident in past offending behaviour (e.g., offending related to pursuit of a specific activity or object)
- Preoccupations may be displayed through mannerism and behaviour (e.g., wearing their clothes in a particular way or insisting they always have a pen on them).

Inflexible adherence to routines
People with ASD often behave in a ritualistic manner, carrying out the same routines each day or for each activity. For example:
- Arranging objects in a particular order or pattern
- Completing tasks/routines in a particular order
- Working strictly and inflexibly from a list
- They may become upset or anxious when there are interruptions to their environment or routine.

Repetitive motor mannerisms
People with ASD may display stereotyped and repetitive motor mannerisms and tics including:
- Hand flapping, twisting or rubbing
- Body movements (rocking back and forward or pacing)
- Motor mannerisms can be subtle and may be perceived as clumsiness, or anxiety e.g., repeatedly tapping their own knee.
- Tics are repeated sounds or movements and can include motor tics or verbal tics. For example, motor tics include eye blinking and head jerking and verbal tics can include stuttering.
Signs of Possible ASD in Offenders

Characteristics which may be present during an assessment:
- Disinterested due to deficits in verbal and nonverbal communication or a lack of interest in the assessment
- High anxiety (“melt-down”) due to the unfamiliar environment (sounds, smells and touch), new people and difficulties coping with change
- Inappropriate laughing/smiling
- Very intense interests that may include detail knowledge of a narrow area or repeated reference to a particular topic
- Behaviours with a compulsive or ritualistic quality
- Brutally honest descriptions of events related to their offense.

Characteristics which may be absent during an assessment:
- Direct eye contact
- A range of facial expressions, including subtle expressions, which are used to communicate emotions
- Communicative gesture, such as shrugging shoulders, nodding or head shaking, the use of gestures to indicate size or direction to accompany verbal description.
- Understanding of humour
- Conversational about a range of everyday topics
- Elaboration on a question that is for your benefit
- Ability to interact in a manner that is comfortable and appropriate to the context
- Ability to talk about their own emotions or emotions of others
- Understanding of the nature of common social relationships such as friendship or marriage
- Common sense
- Overt guilt or shame
- Attempts to conceal or excuse their behaviour

Common features that may bring a person with an ASD to the attention of the Criminal Justice system are:
- Impairments in nonverbal behaviours, failure to acknowledge verbal clues, poor understanding of body language and facial expressions
- A lack of insight into the unwritten rules of human relationships
- Little empathy for others and appearing to be tactless or rude
- Difficulty understanding or acknowledging the consequences of their actions and their impact on others
- Pursuit of a special interest.
Case Studies

HS

Presentation
- 34 year old man
- Attempted to make eye contact, although this was sporadic and awkward.
- Speech was fast, pausing for a few moments between sentences only.
- Had difficulty understanding and responding to questions, for example when asked: “What happened as a result of the offence?” HS responded: “There was a fire”

History
- Began ruminating over bullying that he had been a victim of during high school
- Became verbally abusive towards his girlfriend who eventually asked him to leave their home, difficulty finding stable housing
- Blamed this on the high school bullies and began trying to track them down, stated that if they had been his friends he would have somewhere to live
- He reported anger towards his ex-girlfriend
- He became increasing preoccupied with finding these people
- He eventually tracked down one of the “bullies” and burnt down their home, he also burnt down the home of his girlfriend which contained a large number of his possessions
- Reported feeling satisfied and calm after the fires.

KH

Presentation:
- Male in his early 20’s
- Presented as highly intelligent, repeatedly spoke about computers and managed to manipulate the conversation into discussing computers.
- Became anxious when the topic was changed, when talking about his girlfriend and the offence.

History:
- Numerous computer qualifications
- KH ‘liked’ a girl that he had met at university. She had a boyfriend.
- He developed a computer virus to destroy the computer of her boyfriend. He had never met the boyfriend.
- He determined who the boyfriend was, followed him home, broke in and placed a virus on his computer. He also damaged the property
- When questioned he confessed everything and was convicted
- He reported feeling angry at the time.
- KH said he did it because he had the skills and needed to protect himself.
GV

**Presentation**
- 45 year old male
- Tapping his index finger onto the back of his other hand at a steady rate
- Answered questions briefly, providing minimal information. He required ongoing prompting to elicit details.
- Sat with his head down and only looked up briefly during the assessment.

**History**
- Past history of drug use and criminal behaviour to support this, index offence of burglary and possession of a controlled substance
- Stated that he needed money because he needed to buy drugs
- Stated that drug his dealers were his only friend and that he enjoyed hanging out with them. If he didn’t have money he was not welcome at their house.

JR

**Presentation:**
- Male 31 years old
- Spent most of the time during the assessment folding and unfolding a piece of paper
- Was unable to concentrate and repeatedly asked to hear the questions again.

**History**
- Ongoing conflicts at work resulting in frequent job changes
- Strongly pre-occupied with women and sex
- Stated this was the reason he had to move out of home
- Reported spending time with women that he met in bars
- He was often taken advantage of by potential partners
- Stated that he wanted more than a once-off sexual encounter and that he was often rejected when he suggested this
- Past sexual contact with men
- Offence: sexual behaviour with a 15 year old female
- JR stated “she was the only one that wanted me and she did not complain”
Differential Diagnosis

In the past ASD have been misinterpreted as other psychiatric conditions. These include schizophrenia, schizoid personality disorder and obsessive compulsive disorder. It is therefore important that a diagnosis of ASD be considered in any prisoner who displays characteristics of these disorders.

Contacts

If any unforeseen events arise during administration of the Stage 1 Screening Tool, please contact the researchers or the Department of Justice on the details below as soon as possible. This will ensure that the event does not happen again.

Ms Lauren Gook (student researcher)
221 Burwood Hwy, Burwood, VIC, 3125.
Telephone: 0422531585
Email: legoo@deakin.edu.au

Associate Professor Jane McGillivray (researcher supervisor)
221 Burwood Hwy, Burwood, VIC, 3125.
Telephone: (03) 9244 6426.
Email: jane.mcgillivray@deakin.edu.au

Secretary of the Department of Justice Human Research Ethics Committee
21/121 Exhibition St Melbourne, 3000
Telephone: (03) 8684 1514
Fax: (03) 8684 1525.
APPENDIX K

ASD Screening Tool*

<table>
<thead>
<tr>
<th>ID number: Please enter the prisoners name and details into the spread sheet provided.</th>
</tr>
</thead>
</table>

Correctional Facility: _______________________________________________________
Name of Assessment Officer: ________________________________________________
Date of Screening: ________________________________________________________

Please answer ALL the following questions on both pages by selecting Yes, No or No Opportunity to Assess (NOA)

- If information is not available in the file or from observing the prisoner please ask the applicable question.

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does this person’s file indicate they have an Autism Spectrum diagnosis? <em>(Including: Autistic disorder, Asperger’s disorder and pervasive developmental disorder)</em></td>
<td>🚫 Do not ask the prisoner about autism spectrum disorders</td>
<td>☐ ☐ ☐</td>
</tr>
<tr>
<td>Does this person have a diagnosis of schizophrenia or psychotic disorder?</td>
<td>☫ Have you ever received a diagnosis of a psychiatric disorder?</td>
<td>☐ ☐ ☐</td>
</tr>
</tbody>
</table>

1. Does the individual use unusual nonverbal communication?
   *(e.g., Abnormalities in gaze, gestures or facial expression)*
   🚫 Do you have trouble looking at someone in the eyes when they are talking to you?
   ☐ ☐ ☐

2. When speaking, does the individual have:
   - Difficulties with verbal expression
   - Difficulties maintaining conversation
   - Bizarre language – e.g., very grammatical or old-fashioned speech, clichés or use language repetitively
   ☫ Do you have difficulties in starting or maintaining conversations with other people?
   ☐ ☐ ☐

3. Does the individual speak in any of the following ways?
   - A strange or unusual voice
   - Monotonous, shrill or whining voice
   - Unnecessarily loud or low voice
   - Lengthy or pedantic speech
   ☐ ☐ ☐
If information is not available in the file or from observing the prisoner please ask the associated question.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NOA = No Opportunity to Assess</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>4. Is this individual odd, eccentric, 'one of a kind'?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. Does the individual appear literal or 'black and white' in their thinking or responding to questions?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(e.g., they do not like abstract or ambiguous concepts, or they may respond more concisely to clear and concrete question)</td>
<td></td>
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<tr>
<td>6. Does this individual have trouble with clothing, grooming and personal care?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(e.g., conspicuously old-fashioned or ill-fitting clothing)</td>
<td></td>
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<tr>
<td>7. Is this individual rigid and inflexible with procedures?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(Do you perform the same routines or activities each day in a particular order? When performing a regular task do you follow exactly the same procedure each time?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Does this individual display an attachment to or an intense preoccupation with an item, topic or activity?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(e.g., an interest that is abnormal either in intensity or in focus for example, continuously attempting to discuss a specific topic)</td>
<td></td>
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<tr>
<td>9. Does this individual display restricted, repetitive, or stereotyped patterns of behaviours?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(e.g., placing items in a particular order, repetitive motor mannerisms (hand flapping or twisting, body rocking))</td>
<td></td>
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</tr>
<tr>
<td>10. Does this individual seem to have a lack of common sense, or lack the ability to understand and foresee the consequences of their doings or sayings?</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

*Adapted from Nylander and Gillberg’s (2001) Autism Spectrum Disorders Adult Screening Questionnaire*
APPENDIX L
Stage 2 – Clinical Interview

Correctional Facility: ________________________________________________
Date of Birth: ______________________________________________________
Date: ____________________________________________________________

You may remember answering a few extra questions as part of your initial assessment. This is the second part of that. I’m going to ask you a few more questions and get you to fill out a questionnaire. Your name will not be linked with your answers. What you say will be kept confidential, except if you tell me about unreported or planned criminal behaviour, or any plans to hurt yourself or other people.

Index offence: ______________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Prior convictions (age and conviction): _________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

1. Discuss the questions endorsed by the Assessment Officer in the Stage 1 Screen
2. Provide the prisoner with the self-report questionnaire
   - Put out response options
   - Read the questions to the prisoner

1. Developmental history
   I am interested to know what you were like as a baby or young child,
   a. What have you been told about what you were like?____________________
      _________________________________________________________________
      _________________________________________________________________
      _________________________________________________________________

____________________________________________________________________
b. Did you find it easy to make friends or play with other children when you were young?
____________________________________________________________________
____________________________________________________________________
c. Do you remember any favourite things or activities?
____________________________________________________________________
____________________________________________________________________
d. Or things you didn’t like?
____________________________________________________________________
e. Tell me about your experiences at school? (Prompts: special school, integration aide, was it difficulty, did you enjoy/were you good at any particular subjects)
____________________________________________________________________
____________________________________________________________________
2. Psychosocial functioning in adulthood
a. Before entering prison did you have close friends?
____________________________________________________________________
b. How did you spend your time with friends? (Prompts: did you organize activities?)
____________________________________________________________________
____________________________________________________________________
c. What did you like to do with your spare time?
____________________________________________________________________
____________________________________________________________________
d. What were you least favourite things or activities? (Prompt: why)
____________________________________________________________________
____________________________________________________________________
3. Sensory
a. How do you tolerate noises - change in noise, or loud noises? For example, crowds of people, loud music, or background noise?
____________________________________________________________________
____________________________________________________________________
b. What about particular smells or other things in the environment such as light?

________________________________________________________________

________________________________________________________________

c. Touch – are you particularly sensitive to touch? ________________

________________________________________________________________

________________________________________________________________

4. **Routine/rituals** – What sort of routines/rituals do you have? ________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

5. **Adjustment to change** – What happens if routine, rituals or other things are changed/prevented? ________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________
### Personality Characteristics Questionnaire

**Section A: Characteristics and Behaviours**

Below are a series of statements about individual characteristics. For each statement please indicate how strongly you agree or disagree with it by ticking ONE box.

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
<th>Definitely Agree</th>
<th>Slightly Agree</th>
<th>Slightly Disagree</th>
<th>Definitely Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I prefer to do things with others rather than on my own.</td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
<td>I prefer to do things the same way over and over again.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>If I try to imagine something, I find it very easy to create a picture in my mind.</td>
<td></td>
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<tr>
<td>4.</td>
<td>I frequently get so strongly absorbed in one thing that I lose sight of other things.</td>
<td></td>
<td></td>
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<tr>
<td>5.</td>
<td>I often notice small sounds when others do not.</td>
<td></td>
<td></td>
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<tr>
<td>6.</td>
<td>I usually notice car number plates or similar strings of information.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7.</td>
<td>Other people frequently tell me that what I've said is impolite, even though I think it is polite.</td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
<td>When I'm reading a story, I can easily imagine what the characters might look like.</td>
<td></td>
<td></td>
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<tr>
<td>9.</td>
<td>I am fascinated by dates.</td>
<td></td>
<td></td>
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<tr>
<td>10.</td>
<td>In a social group, I can easily keep track of several different people's conversations.</td>
<td></td>
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<tr>
<td>11.</td>
<td>I find social situations easy.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>12.</td>
<td>I tend to notice details that others do not.</td>
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<tr>
<td>13.</td>
<td>I would rather go to a library than to a party.</td>
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<tr>
<td>15.</td>
<td>I find myself drawn more strongly to people than to things.</td>
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<tr>
<td>16.</td>
<td>I tend to have very strong interests, which I get upset about if I can't pursue.</td>
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<tr>
<td>17.</td>
<td>I enjoy social chitchat.</td>
<td></td>
<td></td>
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<tr>
<td>18.</td>
<td>When I talk, it isn't always easy for others to get a word in edgewise.</td>
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<tr>
<td></td>
<td></td>
<td>Definitely Agree</td>
<td>Slightly Agree</td>
<td>Slightly Disagree</td>
<td>Definitely Disagree</td>
</tr>
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<tr>
<td>19.</td>
<td>I am fascinated by numbers.</td>
<td></td>
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<tr>
<td>20.</td>
<td>When I'm reading a story, I find it difficult to work out the characters' intentions.</td>
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<tr>
<td>21.</td>
<td>I don't particularly enjoy reading fiction.</td>
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<tr>
<td>22.</td>
<td>I find it hard to make new friends.</td>
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<tr>
<td>23.</td>
<td>I notice patterns in things all the time.</td>
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<tr>
<td>24.</td>
<td>I would rather go to the theatre than a museum.</td>
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<tr>
<td>25.</td>
<td>It does not upset me if my daily routine is disturbed.</td>
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<tr>
<td>26.</td>
<td>I frequently find that I don't know how to keep a conversation going.</td>
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<tr>
<td>27.</td>
<td>I find it easy to 'read between the lines' when someone is talking to me.</td>
<td></td>
<td></td>
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<tr>
<td>28.</td>
<td>I usually concentrate more on the whole picture, rather than on the small details.</td>
<td></td>
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<tr>
<td>29.</td>
<td>I am not very good at remembering phone numbers.</td>
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<tr>
<td>30.</td>
<td>I don't usually notice small changes in a situation or a person's appearance.</td>
<td></td>
<td></td>
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<tr>
<td>31.</td>
<td>I know how to tell if someone listening to me is getting bored.</td>
<td></td>
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<tr>
<td>32.</td>
<td>I find it easy to do more than one thing at once.</td>
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<tr>
<td>33.</td>
<td>When I talk on the phone, I'm not sure when it's my turn to speak.</td>
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<tr>
<td>34.</td>
<td>I enjoy doing things spontaneously.</td>
<td></td>
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<tr>
<td>35.</td>
<td>I am often the last to understand the point of a joke.</td>
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<tr>
<td>36.</td>
<td>I find it easy to work out what someone is thinking or feeling just by looking at their face.</td>
<td></td>
<td></td>
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<tr>
<td>37.</td>
<td>If there is an interruption, I can switch back to what I was doing very quickly.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>38.</td>
<td>I am good at social chitchat.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>People often tell me that I keep going on and on about the same thing.</td>
<td></td>
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</tbody>
</table>
40. When I was young, I used to enjoy playing games involving pretending with other children.

41. I like to collect information about categories of things (e.g., types of cars, birds, trains, plants).

42. I find it difficult to imagine what it would be like to be someone else.

43. I like to carefully plan any activities I participate in.

44. I enjoy social occasions.

45. I find it difficult to work out people’s intentions.

46. New situations make me anxious.

47. I enjoy meeting new people.

48. I am a good diplomat.

49. I am not very good at remembering people’s date of birth.

50. I find it very easy to play games with children that involve pretending.

Section B: Recognising and sharing feelings

Below are a series of statements about individual characteristics. For each statement please indicate how strongly you agree or disagree with it by ticking ONE box.

1. I can easily tell if someone else wants to enter a conversation.

2. I really enjoy caring for other people.

3. I find it hard to know what to do in a social situation.

4. I often find it difficult to judge if something is rude or polite.

5. In a conversation, I tend to focus on my own thoughts.
rather than on what my listener might be thinking

<p>| | | | | |</p>
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</thead>
<tbody>
<tr>
<td>6.</td>
<td>I can pick up quickly if someone says one thing but means another.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>It is hard for me to see why some things upset people so much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>I find it easy to put myself in somebody else’s shoes.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>9.</td>
<td>I am good at predicting how someone will feel.</td>
<td></td>
<td></td>
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<tr>
<td>10.</td>
<td>I am quick to spot when someone in a group is feeling awkward or uncomfortable.</td>
<td></td>
<td></td>
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<tr>
<td>11.</td>
<td>I can't always see why someone should have felt offended by a remark</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>I don't tend to find social situations confusing.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>13.</td>
<td>Other people tell me I am good at understanding how they are feeling and what they are thinking.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>I can easily tell if someone else is interested or bored with what I am saying.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Friends usually talk to me about their problems as they say that I am very understanding.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>I can sense if I am intruding, even if the other person doesn’t tell me.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>17.</td>
<td>Other people often say that I am insensitive, though I don’t always see why</td>
<td></td>
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<tr>
<td>18.</td>
<td>I can tune into how someone else feels rapidly and intuitively.</td>
<td></td>
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</tr>
<tr>
<td>19.</td>
<td>I can easily work out what another person might want to talk about.</td>
<td></td>
<td></td>
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<tr>
<td>20.</td>
<td>I can tell if someone is masking their true emotion.</td>
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<tr>
<td>21.</td>
<td>I am good at predicting what someone will do.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>22.</td>
<td>I tend to get emotionally involved with a friend’s problems.</td>
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</tbody>
</table>
Special Interests

1. **Obsessions in childhood (food obsessions i.e. textures)**
   1) In your childhood, did you know more about a topic than others, and did you enjoy telling people about this?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

   2) Would anyone have ever described you as a fussy eater? Did you like foods only cook in particular ways?

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

2. **Do you have an intense interest in a specific item, topic or activity?**
   
   Yes  ○→ **Go to next question**
   
   No   ○→ Questionnaire finished.

3. **Briefly describe up to three interests:**
   
   1. __________________________________________________________
   
   2. __________________________________________________________
   
   3. __________________________________________________________

4. **How often do you focus on your specified interests?**
   
<table>
<thead>
<tr>
<th>Always</th>
<th>Nearly all of the time</th>
<th>Frequently</th>
<th>Quite often</th>
<th>Occasionally</th>
<th>Hardly ever</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

5. **Does this interest impact on your day to day living? (e.g., impair your ability to maintain employment, or a relationship)**
   
<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>○ ○</td>
<td>○ ○</td>
</tr>
</tbody>
</table>

   1. 2. 3.
Information Sheet

Project Title: **Personality characteristics and interests of prisoners**
Principal Researcher: Associate Professor Jane McGillivray
Student Researcher: Ms Lauren Gook

This research project is being conducted with the support of Deakin University in conjunction with Corrections Victoria. The findings will be used in a doctoral thesis being undertaken by Lauren Gook. By signing the Consent Form, you indicate that you understand the information and that you give your consent to participate in the research project.

**What is the project trying to do?**
The aim of the project is to try out a screening procedure to identify different characteristics of prisoners and their interests. Previous experience has shown that certain personality characteristics may influence offending behaviours and lead to difficulties within the criminal justice system. This research project also aims to estimate the number of prisoners with these characteristics in the Victorian prison system and to increase the knowledge about the characteristics.

**What are these characteristics?**
These personality characteristics may affect thinking, communication and behaviour. Some individuals may have difficulties in social settings and may have intense interests in particular objects or activities. These characteristics are often stronger in some people than in others.

**What are you being asked to do?**
Participation in this project will involve the Assessment Officer completing a short set of questions about your behaviours and characteristics. This will take about 5 minutes. Some people will then be called back at a later time to have an interview with a researcher from Deakin University. This interview will take between 30 minutes and 1 hour, and it will include some questions about your life and your interests, as well as about your current and past convictions. You will also be asked to complete a questionnaire (50 questions), which asks you how strongly you agree or disagree with some sentences. For example "It does not upset me if my daily routine is disturbed". Participation also involves you giving permission for the researchers to get some information you have already given to the Assessment Officer. This will include information about your past and about your offence.
Participation in any research project is voluntary. **If you do not wish to take part you are not obliged to.** If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. Any information obtained from you to that date will not be used and will be destroyed. You do not have to answer any questions you do not want to and you can stop if you do not want to be in the project anymore.

**What could result from this project?**
The research project will tell us how well the identification procedure works, and will give us some idea about how many prisoners might have these personality characteristics. This information could help tailor different services and programmes to meet the needs of different prisoners. Confidentiality of responses is guaranteed, subject to legal requirements; the researchers cannot guarantee absolute confidentiality about illegal behaviours that they are told about.

**Who holds the information?**
Any information obtained in connection with this project that can identify you will remain confidential. The information about you can only be disclosed with your permission, subject to legal requirements. Information such as your response to the questionnaire will be given a code number and stored separately from the consent form that has your name on it. All information will be stored in a locked cabinet in a secure location at Deakin University. In any report or publication, information will be presented in a way that you cannot be identified. All information collected will be combined and presented together.

Before you make your decision, feel free to ask the Assessment Officer any questions you have about the research project. You can ask for any information you want. Sign the Consent Form only after you have had a chance to ask your questions and have received satisfactory answers.

If you decide later on to withdraw from this project, please notify an Assessment Officer or the researcher conducting the interviews when they are next available. You can stop participating in the project at any stage.

If you have any concerns about the conduct of this project you may contact the Official Prison Visitor who can contact on your behalf the secretary of the Department of Justice, Justice Human Research Ethics Committee, 21/121 Exhibition St Melbourne, 3000 Telephone: 03 8684 1514 fax: 03 8684 1525.
Consent Form

I ______________ agree/do not agree to participate in a research project entitled:
(Name of participant)  (Please circle)

Personality characteristics and interests of prisoners, conducted by Deakin University, in conjunction with Corrections Victoria.

Corrections Victoria, on behalf of Deakin University, has discussed this research with me. I have had the opportunity to ask questions about this research and I have received answers that are satisfactory to me. I have read and kept a copy of the attached Information Sheet and understand the general purposes, risks and methods of this research.

I agree / do not agree (please circle) to take part because:

1. I know what I am expected to do and what this involves.
2. The risks, inconvenience and discomfort of participating in the study have been explained to me.
3. All my questions have been answered to my satisfaction.
4. I understand that the project may not be of direct benefit to me.
5. I understand I can withdraw from the study at any time.
6. I am satisfied with the explanation given in relation to the project as it affects me and my consent is freely given.
7. I have received information on what is entailed in all parts of the project (Stage 1: Screening and any possible follow-up sessions).
8. I can obtain a summary of the results of the study when it is completed.
9. I understand that my personal information will be kept private.
10. I agree to the publication of results from this study (provided details that might identify me are removed).

Signed by the participant: ___________________________ Date: _____________

Signed by an independent witness: ___________________________ Date: _____________

(Print Name in Full – independent witness) __________________________________________________________________________

Signed by the researcher: ___________________________ Date: _____________

Any queries or concerns should be raised initially with Official Visitors. Should you have any queries concerning this research please contact the Secretary, Human Research Ethics Committee, Department of Justice, Level 21/121 Exhibition St, Melbourne Vic 3000. Tel: 86841514, or, Helen Casey, Corrections Victoria, Level 22/121 Exhibition St, Melbourne 3000. Tel: 86846622

A signed and witnessed copy must be given to the participant
## APPENDIX N

Frequencies and Percentage of the DSM-IV-TR and DSM-5 Criteria by Referral Recommendation and the Total Interviewed Sample

<table>
<thead>
<tr>
<th></th>
<th>Recommended Referral Group</th>
<th>Non-referral Group</th>
<th>Total Interviewed Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Partially</td>
<td>No</td>
</tr>
<tr>
<td><strong>DSM-IV-TR Asperger’s Disorder Criteria</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A (1) Non-verbal communication</td>
<td>2 (22.2)</td>
<td>2 (22.2)</td>
<td>5 (55.6)</td>
</tr>
<tr>
<td>A (2) Relationships</td>
<td>2 (22.2)</td>
<td>7 (77.8)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>A (3) Shared enjoyment</td>
<td>4 (44.4)</td>
<td>2 (22.2)</td>
<td>3 (33.3)</td>
</tr>
<tr>
<td>A (4) Social-emotional reciprocity</td>
<td>5 (55.6)</td>
<td>4 (44.4)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>B (1) Preoccupation / fixated interests</td>
<td>1 (11.1)</td>
<td>1 (11.1)</td>
<td>7 (77.8)</td>
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<tr>
<td>B (2) Inflexible routines</td>
<td>2 (22.2)</td>
<td>3 (33.3)</td>
<td>4 (44.4)</td>
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<tr>
<td>B (3) Repetitive motor movements</td>
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<td>3 (33.3)</td>
<td>6 (66.7)</td>
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<td>B (4) Preoccupation with parts of objects</td>
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<td>9 (100)</td>
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<td>C Clinically significant impairment</td>
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<td>0 (0.0)</td>
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<td><strong>DSM-5 Autism Spectrum Disorder Criteria</strong></td>
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<td></td>
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<td>A (1) Social-emotional reciprocity</td>
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<td>3 (33.3)</td>
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<tr>
<td>A (2) Non-verbal communication</td>
<td>4 (44.4)</td>
<td>2 (22.2)</td>
<td>3 (33.3)</td>
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<td>A (3) Relationships</td>
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<td>3 (33.3)</td>
<td>4 (44.4)</td>
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<td>3 (33.3)</td>
<td>3 (33.3)</td>
<td>3 (33.3)</td>
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<tr>
<td>B (3) Preoccupation / fixated interests</td>
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<td>7 (77.8)</td>
<td>2 (22.2)</td>
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*Note: Refer to Appendices B and C for full criteria descriptions. N=85*