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## **Screening for offenders with an intellectual disability: the validity of the Learning Disability Screening Questionnaire**

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## **Abstract**

The study assessed the validity of an intellectual disability screening tool, the Learning Disability Screening Questionnaire (LDSQ), in three forensic settings: a community intellectual disability forensic service; a forensic in-patient secure unit and a prison, using data for 94 individuals. A significant positive relationship was found between full scale IQ and LDSQ score, indicating convergent validity. Discriminative validity was indicated by, firstly, a significant difference in the LDSQ scores between those with and without an intellectual disability, with those with a diagnosis of intellectual disability, scoring significantly lower. Secondly, a ROC analysis indicated that the sensitivity and specificity of the LDSQ were both above 80%. The screening tool was found to have lower sensitivity in the forensic populations than was obtained in the original community standardisation sample, but had slightly higher specificity. Limitations and implications of the study are discussed.

Keywords: Screening; intellectual disability; learning disability screening questionnaire; forensic

## **1. Introduction**

The needs of people with an intellectual disability who come in contact with criminal justice services are increasingly being highlighted. A range of recent papers and reports suggest that many such individuals are disadvantaged and discriminated against at all stages of the journey through criminal justice systems from first arrest, through trial, sentencing, detention and probation (Søndena, Palmstierna, & Iversen, 2010; Talbot, 2008); are more likely to receive differential treatment (Cockram, 2005) and to be restrained and segregated compared with the general prison population (Prison Reform Trust, 2009). Offenders with an intellectual disability may also have disproportionately high suicide rates in prison (Fazel, Xenitidis, & Powell, 2008) and are at risk of exploitation and victimisation (Talbot, 2008). This not only impacts negatively on the individual, (Gray, Forell, & Clarke, 2009) but may also result in a number of unwelcome consequences for organisations, including the potential for compensation claims due to a breach of human rights and failure to provide adequate support (Talbot, 2008).

One of the main barriers to providing adequate support is the failure to recognise that a person has an intellectual disability in the first place. Intellectual disability consists of three criteria: significant impairments in general intellectual functioning (i.e. an IQ of less than 70); significant impairments in adaptive functioning; onset before age 18 (American Psychiatric Association, 2000; British Psychological Society [BPS], 2001). Diagnosis is made using individually administered, standardised, valid and reliable assessments of intelligence (BPS, 2001) and adaptive functioning, as well as taking a developmental history to ascertain if the impairments occurred before adulthood. As an intellectual assessment can only be carried out by appropriately qualified applied psychologists or by someone under their supervision (BPS, 2001), the diagnostic process can be time-consuming and expensive. This means it is unlikely

that a comprehensive assessment of intellectual disability will routinely take place at the early stages of the criminal justice process, for example, on arrest.

There is also significant confusion about what an intellectual disability is, with different terminology being used in different countries. For example, the term used in the United Kingdom (UK) is 'learning disability' whereas this term is commonly used to describe those with specific learning difficulties, e.g. dyslexia, in the US. Many professionals and social care staff, including those employed in intellectual disability services, may lack a full understanding about what an intellectual disability is and the needs and characteristics of the heterogeneous group of people who have this diagnosis (McKenzie, Matheson, Patrick, Paxton, & Murray 2000; Rae, McKenzie, & Murray, 2011; Williams & McKenzie, 2009). It is perhaps, therefore, unsurprising that staff in the criminal justice system may also lack this knowledge (Scheyett, Vaughn, Taylor, & Parish, 2009).

These issues, amongst others (see Lindsay, Hastings, Griffiths, & Hayes 2007; Søndena Rasmussen, & Nøttestad, 2008 and Herrington, 2009 for overviews), makes determining the exact prevalence of those with an intellectual disability who come into contact with criminal justice services difficult. Despite this, there appears to be a growing consensus that the numbers are not insignificant. A review of prevalence studies carried out since 2006 by Søndena et al. (2008), suggested prevalence rates which range from 7.1 to 20%, while a systematic review by Fazel, Xenitidis, and Powell (2008) of 10 papers, found prevalence rates ranged from 0-2.8%. This latter review aimed only to include studies which based determination of intellectual disability on all three criteria, but found that a number of studies did not provide information on adaptive functioning. Unfortunately only very few studies (e.g. Hayes, Shackell, Mottram, & Lancaster, 2007) assess intellectual disability taking account of all three criteria. A review of early research by McBrien (2003) found that no studies used all three criteria, none assessed both intellectual and adaptive functioning using

full standardised assessments although one (Mason & Murphy, 2002a) assessed these two criteria, but used a short-form intellectual assessment.

The use of short-form and abbreviated intellectual assessments do, however, have a number of potential limitations when used with people with an intellectual disability, which suggests that prevalence rates based on their use may not be entirely accurate. For example, the Wechsler Abbreviated Scale of Intelligence (WASI: Wechsler, 1999) includes only a small standardisation sample of people with an intellectual disability, who have an intellectual profile which is unlikely to be representative of the wider population of people with an intellectual disability (Paxton, McKenzie, & Murray, 2008; Wechsler, 1999).

The difficulties of carrying out full assessments combined with the urgent need to identify individuals with an intellectual disability at an early stage in criminal justice proceedings, has led to an increasing call for the systematic use of screening assessments (Department of Health [DoH], 2009; Talbot, 2008). Professional bodies also recognise that there can be pragmatic reasons for using screening tools, especially in situations where there are limited psychology resources (e.g. BPS, 2003). The aim of screening tools in criminal justice services is to provide an indication as to whether someone is likely to have an intellectual disability or not. As with any good assessment tool, good screening tools, need to have strong psychometric properties, including reliability, validity, standardisation with the group it is designed to be used with (Glascoe, 2005) and measurement invariance (MacLean, McKenzie, Kidd, Murray, & Schwannauer, 2011). It should also be quick and straightforward to use and have good sensitivity and specificity. In relation to people with an intellectual disability, the former is the probability that a person who has an intellectual disability (a true positive) will be correctly identified by the assessment, while the latter is the probability that a person who does not have an intellectual disability (a true negative) is correctly identified as such. Values ranging between 70-80% are generally considered to be acceptable for

sensitivity while 80% or above are preferred for specificity (Glascoe, 2005). The positive and negative predictive power of the assessment can also provide an indication of its utility (Glascoe, 2005). When considering individuals with an intellectual disability, the former is the proportion of those who are indicated by the assessment as having an intellectual disability who actually do. The latter is the proportion of those who are indicated by the assessment as not having an intellectual disability, who don't have one.

There have been a number of studies which have examined the utility of using a range of screening assessments to identify people with an intellectual disability at various stages of the criminal justice process, including in prisons (e.g. Hayes, 2002; Søndena et al., 2010) and probation services (e.g. Mason & Murphy, 2002b). This work has suggested that screening tools may offer a useful means of indicating whether an individual is likely to have an intellectual disability or not and of highlighting the need for further assessment and additional support. There are, however, a number of potential limitations with these studies. For example, sensitivity and specificity values do not always fall within the generally accepted ranges (e.g. Hayes, 2002), although these values are influenced by the use to which the screening assessment is being put and whether it is more detrimental to have false positives or false negatives (Charman et al., 2007). In addition, determination of intellectual disability is frequently made on the basis of intellectual assessment alone. This, in turn is often based on short form assessments (e.g. Søndena et al., 2010) which, as was discussed above, may have limitations when used with people with an intellectual disability.

A screening tool that has recently been piloted in a range of criminal justice services in the UK is the Learning Disability Screening Questionnaire (LDSQ: McKenzie & Paxton, 2006). Here 'learning disability' refers to the term used in the UK for 'intellectual disability'. The LDSQ consists of 7 items, including literacy, employment and living situation. It was designed to be used with the individual with an intellectual disability or with someone who

knows him/her well and does not require the assessor to have particular qualifications or training. Research has found it to have strong psychometric properties (McKenzie & Paxton, 2006) and when compared with the subtests of the Wechsler Adult Intelligence Scale – third edition (Wechsler, 1997), which parallel those used in the WASI, was found to be more predictive of whether someone had an intellectual disability. The LDSQ has sensitivity of 91% and specificity of 87%, based on a community sample (Paxton et al., 2008).

A recent series of independent pilot projects evaluated the use of the LDSQ in prison, probation and services in England. The assessment was found to be quick and easy to use in these settings and indicated that, based on screening alone, i.e. with no independent measure of whether the individual had an intellectual disability or not, estimated prevalence rates ranged from 4.7% in the prison service to 7.5% in probation services (Jackson, 2011). The LDSQ was, however, not initially standardised for criminal justice populations, having been designed for use in community intellectual disability services. The present study, therefore, aimed to assess the validity of the assessment in forensic settings in the UK, using an independent measure of intellectual disability based on the three diagnostic criteria.

## **2. Method**

### **2.1 Ethical Approval**

Approval for the study was obtained from the Caldicott Guardian in the participating health board and from the participating prison service.

### **2.2 Procedure**

Three services participated in the research: a community intellectual disability forensic service; a forensic in-patient secure unit and a prison. The former two services were part of a specialist forensic service in Scotland, while the prison was in England. Once approval from the study and agreement from the participating services was gained, the LDSQ

was completed using information from existing case-notes and provided by clinical psychology staff for all adults who had been assessed to determine whether they had an intellectual disability or not. Participants were excluded if there was insufficient information to score the LDSQ or if the assessment of intellectual disability was incomplete. Information was also obtained about gender, age, and full scale IQ. Information on index offence was not gathered due to confidentiality issues. All those who were included in the intellectual disability group met the diagnostic criteria for intellectual disability. The information was noted on a pre-prepared data sheet and was anonymous.

### 2.3 Participants

Information was obtained for 94 individuals. Of these, 62 had an intellectual disability and 32 did not. The age range of the former group was 18-61, with a mean of 36 years, 7 months (SD= 11 years, 6 months) and 53 were male and 9 were female. Of those who did not have an intellectual disability, 14 fell within the range of borderline intelligence, 8 fell within the range of low average intelligence and 5 fell within the average range of intelligence. Of the remaining 2 individuals, one fell within the above average range and one within the superior range. Ages ranged from 22-62, with a mean of 40 years (SD = 16 years) and 18 were male and 14 were female. No significant differences were found between the two groups in relation to age, however, there were significantly more males in the intellectual disability group compared to the group without an intellectual disability ( $\chi^2 = 9.76$ ,  $p=0.02$ ). The data were used to examine the convergent and discriminative validity of the LDSQ in the forensic population

## 3. Results

### 3.1 Convergent validity:

Convergent validity was indicated by a significant Pearson's correlation between LDSQ scores and full scale IQ ( $r(77) = 0.71, p < .01$ ).

### 3.2 Discriminative validity

The ability of the LDSQ to discriminate between those with and without an intellectual disability in the forensic population was measured using a receiver operating characteristic (ROC) curve analysis (Schoonjans, 1998). The area under the curve was found to be 0.898, indicating a significant ability ( $p = 0.001$ ) to discriminate between the two groups. Using the LDSQ cut-off score obtained from the original community standardization sample gave sensitivity of 82.3% and specificity of 87.5%. This compares with 91.2% and 87% respectively for the LDSQ as used with the original community sample.

### 3.3 Comparison of LDSQ scores

An independent t test found that the LDSQ score of those who had an intellectual disability (mean = 26.3, SD = 21.9), as based on independent diagnosis, was significantly lower ( $t(92) = -8.89, p = .001$ ) than those who did not (mean = 70.7, SD = 24.8)

### 3.4 Positive predictive power

This was calculated as the number of true positives i.e. those with an intellectual disability who were correctly identified by the LDSQ (N=52) divided by the total number of positives (true and false) the LDSQ identified (N=56). This gave a positive predictive power value of 92.9%.

### 3.5 Negative predictor power

This was calculated as the number of true negatives i.e. those who do not have an intellectual disability who were correctly identified as such by the LDSQ (N=28) divided by

the total number of negatives (both true and false) the LDSQ identified (N=38). This gave a negative predictive power value of 73.7% .

#### **4. Discussion**

The aim of the study was to evaluate the validity of the LDSQ as a screening tool in a forensic population. This was in the context that people with an intellectual disability appear to be over-represented in prison (Hayes, 2002; Lindsay, 2002) that they are disadvantaged and vulnerable in a number of respects when there (Prison Reform Trust, 2009; Søndena et al., 2010; Talbot, 2008); the increasing recognition of the need for early identification of these potentially vulnerable offenders in the criminal justice system (DoH, 2009; Scheyett et al., 2009; Talbot, 2007) and the recommendation that the LDSQ be adopted for use for screening purposes in criminal justice services in the UK (e.g. Jackson, 2011).

The validity of LDSQ was assessed in three different forensic settings and both convergent validity and discriminative validity were supported. In relation to the former, a significant positive relationship was found between full scale IQ and LDSQ score, indicating that the higher the IQ of an individual, the higher his/her LDSQ score will be.

Discriminative validity was indicated in a number of ways. Firstly there was a significant difference in the LDSQ scores between those with and without an intellectual disability, with those with a diagnosis of intellectual disability, scoring significantly lower. Secondly, the ROC analysis indicated that the sensitivity and specificity of the LDSQ were both above the 80% range considered to be acceptable (Glascoe, 2005). The screening tool was found to have lower sensitivity in the forensic population than was obtained in the original community standardisation sample, but had slightly higher specificity. The relative balance between sensitivity and specificity is influenced by whether it is considered to be more detrimental to have false positives or false negatives (Charman et al., 2007). Unfortunately, many people with an intellectual disability experience stigma (Paterson, Mckenzie, & Lindsay, 2011) and

there is a risk that incorrectly classifying someone as having an intellectual disability may bring with it associated stigma and discrimination. By contrast, incorrectly classifying someone as not having an intellectual disability may mean they lose access to appropriate supports, legal protection and financial benefits (Scheyett, et al., 2009). It may be, therefore, that, in forensic settings, where the priority is to identify potentially vulnerable individuals, that a higher cut-off score should be adopted in order to increase the sensitivity of the screening tool.

While the LDSQ appears to offer a quick and accurate method of identifying those individuals within forensic services who may have an intellectual disability, the research did, however, have some limitations. The project gathered data from three different forensic settings, however as a consequence the numbers in each individual setting was relatively small. An area for future research would be to evaluate the LDSQ using larger data sets from specific settings e.g. prison, but also extending the range of settings within which the tool is evaluated to include, for example, probation services, particularly as research suggests that a number of people with an intellectual disability are also found in these settings (Mason & Murphy, 2002a). In addition, the research was conducted with a UK population and the extent to which the results can be generalised to other countries is unknown, although many of the issues identified for offenders with an intellectual disability in the UK have also been reported in other countries (e.g. Scheyett, et al., 2009; Søndena et al., 2010).

A further consideration, is that screening on its own, whatever the setting, is insufficient. Identifying those with a potential intellectual disability is only the first step and the LDSQ, or indeed any screening assessment, is not a substitute for a full assessment of cognitive and adaptive functioning, both of which provide a basis of identifying the support needs of the individual at all stages of the criminal justice process.

There are only a limited number of specialist forensic learning disability services available (Alexander, Crouch, Halstead, & Piachaud, 2006) and there has, therefore, been an increasing emphasis on the importance of meeting the needs of individuals with an intellectual disability in forensic settings through the adoption of coordinated, multi-agency systems (DoH, 2009). In the UK, these include recommendations that an integrated multi-disciplinary and multi-agency strategy is developed to ensure people with intellectual disabilities are identified at the earliest possible point and appropriate coordinated support is provided throughout the criminal justice process; that staff working within the criminal justice system at all levels receive education and training in relation to the needs of people with an intellectual disability and that national guidelines and standards are developed and implemented. It is also recommended that, within forensic settings, information is provided in an accessible format and that interventions are adapted, if required, so that they are open to all (DoH, 2009, Talbot, 2008). Following these recommendations, initiatives such as intellectual disability awareness –raising and training sessions, providing information to staff about ways to adapt communication to meet the needs of people with an intellectual disability and the creation of closer working relationships with community learning disability services have been introduced (Jackson, 2011), although such measures are still to be adopted nationally in all criminal justice settings.

## **5. Conclusion**

In conclusion, the evaluation of the LDSQ provides support for its validity when used with the forensic populations studied, suggesting that it represents a suitable screening tool in some criminal justice settings, for identifying those individuals who are likely to have an intellectual disability. Further research is required to evaluate the screening tool across a wider range of criminal justice settings and with a larger data set.

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