Schizophrenia, insight and fitness to plead in court and stand trial

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Overview

Part one of this thesis is a literature review concerning the relationship between insight and neuropsychological function among individuals with a diagnosis of schizophrenia. It comprises of two sections summarising: 1) the relationship between insight and executive function; and 2) the relationship between insight and general cognitive function. The review concludes with a discussion on the findings, limitations, areas for future research and the clinical implications.

Part two is an empirical investigation into the impact of having a diagnosis of schizophrenia on fitness to plead in court and stand trial. The research compared how individuals with a diagnosis of schizophrenia performed on a novel ecologically valid measure of fitness to plead (FTP) compared to a healthy control sample. The research also investigated whether performance on the FTP test was associated with intellectual ability, memory, executive function and psychiatric symptoms. The results, limitations, recommendations and clinical implications are discussed.

Part three is a critical appraisal of the empirical investigation described in part two. It highlighted two main concerns that arose over the course of the research: 1) the construct of fitness to plead and its impact upon the development of standardised measures, particularly in relation to the novel FTP test that was used in this study; and 2) the challenges of assessing fitness to plead in individuals with a diagnosis of schizophrenia and whether the FTP test is applicable across the spectrum of schizophrenia.

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Part 1: Literature Review

The neuropsychological correlates of insight in schizophrenia

Abstract

Aim: This review examines the neuropsychological correlates of poor insight in schizophrenia which continues to be debated in the research literature.

Method: A systematic search of the literature was conducted on studies published between January 2004 and August 2011. Thirty-two studies were included in the review and organised into two sections: 1) the relationship between insight and executive function (n = 7); and 2) the relationship between insight and general cognitive function (n = 25).

Results: It was found that executive function and general cognitive function are associated with poor insight in individuals with schizophrenia, but that the observed relationships are sporadic and somewhat modest. There also does not appear to be consensus over how the relationship between insight and neuropsychological function changes over time.

Limitations: A limitation of the review was its narrow focus on the relationship between neuropsychological function and insight, as it is evident that other factors might also relate to insight. In addition, the studies included in the review limit the ability to draw conclusions and generalise the results due to inconsistent use of measures to assess insight and neuropsychological function, and the predominant use of relatively small male samples.

Conclusions: Poor neuropsychological function is associated to insight in schizophrenia, but is not in itself sufficient to account for poor insight. Therefore, neuropsychological function should be assessed in conjunction with other capacities to gain a more holistic understanding of the abilities that underpin insight.

Introduction

Insight or self-awareness is a complex construct which can be conceptualised in various ways (Orfei, Robinson, Bria, Caltagirone & Spalleta, 2008). This review focuses on the 'clinical' model of insight. Insight is a term used by mental health professionals to describe a patient's awareness and understanding of their illness. Although there is some debate over the precise definition of the term, it is commonly agreed that insight is a multi-dimensional construct (Baier, 2010; Dam, 2006) that encompasses: 1) awareness of a mental disorder; 2) awareness of specific signs and symptoms of the mental disorder; 3) attribution of symptoms to the mental disorder; 4) understanding of the social consequences of the mental disorder; and 5) awareness of the need for treatment (Amador & David, 2004). It is also commonly agreed that insight is on a continuum and can range from complete denial, to vague awareness of illness, to a full understanding of one's illness (Osatuke, Ciesla, Kasckow, Zisook & Mohamed, 2008).

Insight is of particular interest in patients with psychotic disorders, as lack of insight is frequently associated to psychosis. Psychotic disorders are characterised by delusions and hallucinations and include a range of diagnoses (i.e. brief psychotic disorder, delusional disorder, schizoaffective disorder, schizophrenia, and schizophreniform disorder) that are determined based upon symptom prevalence (Diagnostic and Statistical Manual for Mental Disorder – Fourth Edition: American Psychiatric Association, 1994). Despite the range of psychotic disorders, the majority of studies focus on the relationship between insight and schizophrenia, or insight and a combination of schizophrenia and related disorders (e.g. schizoaffective disorder and schizophreniform disorder). Moreover, few studies have examined whether the different types of psychotic disorders show similar or dissimilar

relationships to insight (David, Buchanan, Reed & Almeida, 1992; David et al. 1995). In regards to the relationship between insight and schizophrenia, Flashman (2002) reported that 67% to 89% of patients with schizophrenia have poor insight and that poor insight is associated with non-adherence to medication (Perkins, 2002), higher symptom levels during treatment (Lincoln, Lüllmann & Winfried, 2007), poor social functioning (Rossi et al., 2000) and poor work quality and work habits (Giugiario et al., 2011; Lysaker, Bryson & Bell, 2002).

There are various methods of assessing insight, some of which assess only one dimension of insight, while others assess multiple dimensions. Uni-dimensional assessments of insight include: 1) the Insight and Treatment Attitudes Questionnaire (ITAQ: McEvoy, Aland, Jr., Wilson, Guy & Hawkins, 1981) which measures a patient's attitudes about his or her mental illness and need for treatment; and 2) the Positive and Negative Symptoms Scale (PANSS: Kay, Fiszbein & Opfer, 1987) which has a single insight sub-scale embedded in the measure. Multi-dimensional assessments of insight include: 1) the Schedule for the Assessment of Insight (SAI: David, 1990) which measures recognition of mental illness, acknowledging unusual mental events as pathological and compliance with treatment; and 2) the Scale to Assess Unawareness of Mental Disorder (SUMD: Amador, Strauss, Yale & Flaum, 1993) which is a semi-structured interview that evaluates multiple domains of insight. Self-administered insight scales are also available and include measures such as the Self-Appraisal of Illness Questionnaire (SAIQ: Marks, Fastenau, Lysaker & Bond, 2000), the Davidhizar Insight Scale (DIS: Davidhizar, 1987) and the Insight Scale (IS: Birchwood, Smith, Drury & Healy, 1994). Evidence for the concurrent validity of self-report and clinician-rated scales varies. Marks et al. (2000) found concurrent validity between a self-report and clinician-rated scale, whereas Young,

Campbell, Zakzanis and Weinstein (2003) found a discrepancy between the two types of measure. Jovanovski, Zakzanis, Atia, Campbell and Young (2007a) counterbalanced administration of measures and found that self-report and clinician-rated scales were associated if the self-report measure was administered prior to the clinician-rated scale, but not vice versa.

Reasons for lack of insight in schizophrenia continue to be debated in the research literature. A review by Chakraborty and Basu (2010) produced a comprehensive summary of models of insight, including deficits in insight being caused by clinical aspects of illness (e.g. positive symptoms, negative symptoms and disorganised symptoms), defence mechanisms, misattribution errors, impaired metacognition, sociocultural processes, individual differences and neuropsychological deficits. Lysaker, Buck, Salvatore, Popolo and Dimaggio (2009) also discussed how lack of insight might arise due to the construction of personal narratives rather than an inability to grasp or accept the 'truth' as offered by mental health professionals.

A systematic review by Cooke, Peters, Kuipers and Kumari (2005) found: 1) little support for the 'clinical model' of insight which posits that poor insight is a symptom of a disease process; 2) some evidence for the 'psychological denial model' of insight which posits that poor insight results from attempts to reduce distress by using denial as a coping strategy; and 3) the majority of evidence for the 'neuropsychological model' of insight which posits that poor insight results from deficits in neurocognition and is related to frontal lobe dysfunction.

The neuropsychological model of insight arose due to the parallels between poor insight in individuals with psychosis and poor insight in individuals with brain lesions (Amador & David, 2004). For example, frontal lobe damage is characterised

by cognitive and behavioural impairments that the patient lacks awareness and concern for. This lack of awareness for cognitive deficits has similarly been observed in patients with schizophrenia (Medalia & Thysen, 2008) and the frontal lobes have also been identified as a key area of dysfunction in individuals with schizophrenia (Dibben, Rice, Laws & McKenna, 2009).

In regards to neuropsychological deficits, the association between insight and neuropsychological functioning in individuals with schizophrenia remains unclear (McCabe, Quayle, Beirne & Duane, 2002; Pia & Tamietto, 2006). Numerous studies have found a relationship between insight in schizophrenia and executive function (Buckley, Hasan, Friedman & Cerny, 2001; Drake & Lewis, 2003; Light & Braff, 2002; Lysaker, Bell, Bryson & Kaplan, 1998; Lysaker & Bell, 1994; Mohamed, Fleming, Penn & Spaulding, 1999; Smith, Hull, Israel & Willson, 2000; Young et al., 1998) and general cognitive function, such as memory and attention (Cuesta & Peralta, 1994; Keshavan, Rabinowitz, DeSmedt, Harvey & Schooler, 2004; Laroi et al., 2000). However, there are also numerous studies which suggest there is no relationship between insight and executive function (Kemp & David, 1996; Sanz, Constable, Lopez-Ibor, Kemp & David, 1998) or general cognitive function (Carroll et al., 1999) and that insight is associated with other factors such as psychopathology (Collins, Remington, Coulter & Birkett, 1997; Mintz, Dobson & Romney, 2003), theory of mind (Langdon & Ward, 2009), metacognition (Gilleen, Greenwood & David, 2011) or social cognition and perceptual organisational capacities (Lysaker et al., 2007). Other studies also suggest there is a curvilinear relationship between insight and neuropsychological deficits (Startup, 1996). The inconsistencies between these studies might be due to methodological differences such as different: sample

groups; working definitions of insight; measures of insight and cognitive function; and different statistical analysis methods.

A systematic review by Shad, Tamminga, Cullum, Haas and Keshavan (2006) examined the relationship between insight and executive functioning in schizophrenia and found that out of the 34 studies reviewed, 21 reported associations between deficits in at least one dimension of insight and a measure of executive function.

A broader meta-analysis by Aleman, Agrawal, Morgan and David (2006) examined the relationship between insight and general neuropsychological function in patients with psychotic disorders. The authors found a small, but statistically significant, positive relationship between insight and general cognitive function which suggests that poor insight can, to some extent, be explained by neuropsychological deficits. More specifically, in patients with general psychotic disorders, a stronger association was found between insight and executive function, compared to the association between insight and intellectual function. However, this trend was not present in samples of patients with a diagnosis of schizophrenia, which might be due to patients with schizophrenia experiencing more profound intellectual difficulties in comparison to those with general psychotic disorders.

This literature review aims to examine studies that explored the relationship between insight and neuropsychological functioning in schizophrenia that were published after the systematic reviews by Shad et al. (2006) and Aleman et al. (2006). The review question is: In individuals with a diagnosis of schizophrenia, is insight associated with: 1) executive function; and/or 2) general cognitive function?

Method

Search strategy

An initial scoping search was conducted using Google Scholar to identify relevant search terms. Search terms were also identified by referring to search strategies used in previous systematic reviews and relevant keywords in past studies. Relevant search terms included: insight, awareness, psychosis, schizophrenia, cognitive function and neuropsychological function.

The MetaLib search engine was then used to identify the databases which generated the most relevant studies for this review using the search terms. The four databases that generated the largest number of studies were: Embase, Medline, Psycinfo and Web of Science. Each of these four databases was then individually searched using multiple search combinations that included the following search terms: schizophren* or psychosis; and insight or awareness or unawareness; and cogniti* or neuropsycholog* or memory or intelligence.

The broad search strategy generated large numbers of studies (Embase = 850, Medline = 498, Psycinfo = 297 and Web of Science = 826), many of which were duplicated across searches or irrelevant. Nevertheless, multiple search terms and combinations were necessary due to the vast variation in terminology used in the literature.

Study selection

Relevant studies (i.e. those that met all the inclusion criteria) were selected by reviewing titles, then abstracts and full articles if necessary. The inclusion criteria included: 1) adults diagnosed with a psychotic disorder (e.g. brief psychotic disorder, delusional disorder, schizoaffective disorder, schizophrenia, or schizophreniform

disorder) based on the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition or the International Classification of Diseases – Tenth Edition; 2) reports standardised measures of insight or awareness (e.g. the Insight and Treatment Attitudes Questionnaire, the Schedule for the Assessment of Insight, the Scale to Assess Unawareness of Mental Disorder, or the Insight Scale); 3) reports standardised measures of cognitive function (e.g. the Wisconsin Card Sorting Test, the Trail Making Test, the Wechsler Adult Intelligence Scale, or the Wechsler Memory Scale); 4) utilises empirical methodologies, namely cross-sectional and longitudinal correlational designs, to investigate the relationship between insight and cognitive function; 5) published between January 2004 and August 2011; 6) published in a peer-reviewed journal; and 7) published in English. Studies that reported only brain imaging findings in relation to insight were excluded from this review.

Based on the search strategy and the study selection process, 32 studies were included in this review. All these studies were systematically reviewed by tabulating information regarding the study design, sample, measures and results.

Results

The 32 studies identified are considered below in two sections: 1) the relationship between insight and executive function; and 2) the relationship between insight and general cognitive function.

Relationship between insight and executive function

Seven studies examined the relationship between insight and executive function in patients with a diagnosis of schizophrenia (Table 1).

Table 1

The relationship between insight and executive function

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Simon, Berger, Giacomini, Ferrero & Mohr (2006)	Design: Cross-sectional Sample: 38 schizophrenia; Age = 24.7 years (SD = 6.4); Illness duration = 62.0 months (SD = 63.0)	CDS PANSS	SUMD	BADS NART Stroop TMT VFT WCST (computerised)	Insight into mental disorder, social consequences and symptom attribution are associated with letter fluency. Association is mediated by depressive symptoms. In regression analysis anti-psychotic dosage was predictive of insight.
Lysaker, Whitney & Davis (2006)	Design: Cross-sectional Sample: 29 schizophrenia & 24 schizoaffective disorder; Age = 47.5 years (SD = 9.1)	PANSS	SUMD	D-KEFS	Insight into mental disorder and need for treatment are associated with executive function (i.e. inhibition, flexibility of thought, planning ahead, completing tasks of increasing complexity and the ability to use context to aid understanding). In regression analysis symptomatology and inhibition switching (executive function) were predictive of insight.
Jovanovski, Zakzanis, Young & Campbell (2007b)	Design: Cross-sectional Sample: 21 schizophrenia; Age = 49.6 (SD = 9.5); Illness duration = 24.3 years (SD = 7.8); Predominantly male	BDI BPRS	SUMD	BADS WAIS (vocabulary & matrix reasoning)	Insight into social consequences is associated with ability to identify and shift between simple and complex rules.

Table 1 (continued)

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Raffard et al. (2009)	Design: Cross-sectional Sample: 50 schizophrenia & 10 schizoaffective disorder; Age = 33.4 years (SD = 9.5); Illness duration = 10.4 years (SD = 9.8)	BDI STAI	SUMD	NART TAP	Poor insight into medication and social consequences is associated with poorer working memory, more errors and omissions. Poor insight into social consequences is also associated with poorer inhibition and divided attention.
Mysore et al. (2007)	Design: Cross-sectional Sample: 56 schizophrenia; Age = 35.0 (SD = 10.0); Illness duration = 10.5 years (SD = 8.5); Predominantly male	SANS SAPS	SAI	HVLT-R NART WCST	Poor insight is associated with more perseverative errors. Insight is not associated with working memory.
Simon, De Hert, Wampers, Peuskens & van Winkel (2009)	Design: Cross-sectional Sample: 132 schizophrenia; Age = 29.7 years (SD = 8.9)	PECC	PECC	TMT WAIS (letter number sequencing) WCST	Awareness of having a mental illness (AMI) is associated with preservative errors. Perseverative errors explained 7.9% of the variance in AMI. Symptomatology explained 20% of variance in AMI. Awareness of having symptoms attributed to a mental illness (ASAMI) is not associated with executive function. Symptomatology explained 16.5% of variance in ASAMI.

Table 1 (continued)

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Barrera, McKenna & Berrios (2009)	Design: Cross-sectional Sample: 31 schizophrenia; Age = 40.0 years (SD = 8.9)	CASH FTD	IS	BADS (six elements) BPV CAWS Camel and cactus test CET Graded naming HB	Insight is associated with graded naming test and symptoms of reality distortion.

Note. BADS, Behavioural Assessment of the Dysexecutive Syndrome; BDI, Beck Depression Inventory; BPRS, Brief Psychiatric Rating Scale; BPV, British Picture Vocabulary scale; CASH, The Comprehensive Assessment Schedule History; CAWS, Concrete and Abstract Word Synonym Test; CDS, Calgary Depression Scale; CET, Cognitive Estimates Test; D-KEFS, Delis-Kaplan Executive Function System; FTD, Formal Though Disorder scale; HB, Hayling and Brixton test; HVLT-R, Hopkins Verbal Learning Test-Revised; IS, Insight Scale; NART, National Adult Reading Test; PANSS, Positive and Negative Syndrome Scale; PECC, Psychosis Evaluation tool for Common use by Caregivers; SAI, Schedule for the Assessment of Insight; SANS, Schedule for the Assessment of Negative Symptoms; SAPS, Schedule for the Assessment of Positive Symptoms; STAI, Spielberger State Trait Anxiety Inventory; SUMD, Scale to Assess Unawareness of Mental Disorder; TAP, Test for Attentional Performance; TMT, Trail Making Test; VFT, Verbal Fluency Task; WAIS, Wechsler Adult Intelligence Scale; WASI, Wechsler Abbreviated Scale of Intelligence; WCST, Wisconsin Card Sorting Test

Simon, Berger, Giacomini, Ferrero and Mohr (2006) administered the Scale to assess Unawareness of Mental Disoders (SUMD) to investigate the relationship between insight and multiple measures of executive function on 38 inpatients with schizophrenia. The authors concluded that executive function is only weakly associated with insight, as only one measure of executive function (letter fluency) was associated with a composite of score of insight (i.e. an awareness of a mental disorder and its social consequences and misattribution for symptoms), where better performance on the letter fluency task was associated with better insight. This correlation remained significant when controlling for positive and negative symptoms of schizophrenia, but not for depressive symptoms, which suggests the relationship between insight and executive functioning might be mediated by depressive symptoms. When carrying out regression analysis, only anti-psychotic medication dosage was predictive of insight into the need for treatment. Only partial associations between insight and executive function might be indicative that insight is a multi-dimensional phenomenon. A limitation of this study was that only patients with resolved symptoms and discharge plans were included in the study and therefore results cannot be generalised to patients with more acute symptoms.

Lysaker, Whitney and Davis (2006) administered a shortened version of the SUMD and the Delis-Kaplan Executive Function System (D-KEFS) to explore the relationship between insight and executive function, respectively, in 53 outpatients with schizophrenia spectrum disorders. Insight into having a disorder and the need for treatment was associated with Colour-Word, Tower and Word Context scores. Insight into having a disorder was also related to Verbal Fluency. These findings suggest that insight is related to capacity to shift attention, inhibition, flexibility of thought, planning ahead, completing tasks of increasing complexity and the ability to

use context to aid understanding. A strength of the study was that the raters who conducted the SUMD were blind to the D-KEFS scores. However, as only three sub-scales of the SUMD were used to measure insight, it is not known how awareness of specific signs and symptoms of the disorder or attribution of symptoms to a disorder relate to executive function.

Similarly to Lysaker et al. (2006), Jovanovski, Zakzanis, Young and Campbell (2007b) utilised the SUMD to measure insight, but used the Behavioural Assessment of the Dysexecutive Syndrome (BADS) to measure executive functioning. Correlations revealed that, in a sample of 21 outpatients with a diagnosis of schizophrenia, insight into the social consequences of mental disorder was associated with the ability to identify and shift between simple and complex rules which is a type of executive function. Prior to controlling for IQ, insight into the social consequences of mental disorder was associated with the ability to make sensible estimates of time needed to perform different activities. However, the results of this study need to be interpreted with caution as statistical corrections for multiple correlations was not carried out due to its small sample size and therefore the probability of making Type I errors is increased.

A larger outpatient sample of 60 participants with schizophrenia was recruited by Raffard et al. (2009) to explore the relationship between insight and executive function. Insight was assessed using the SUMD, whilst executive function was assessed using the Test for Attentional Performance (TAP), which divides executive functioning into four processes: Updating; Shifting; Inhibition; and Divided Attention. Findings suggest that poor insight in schizophrenia is partially related to executive dysfunction, as insight into the need for medication and the social consequences of the disorder were related to poorer working memory

(Updating) and more errors and omissions. Insight into the social consequences was also related to poorer inhibition and divided attention. A strength of the study was that confounding variables such as processing speed, medication and symptomatology were also examined and controlled for because they were significantly correlated to insight.

Using a different measure of insight, Mysore et al. (2007) also investigated the association between insight and executive functioning. The authors divided participants into three groups according to level of insight into illness and ability to attribute experiences as symptoms of their illness as measured by the Schedule for Assessment of Insight (SAI). The three groups did not differ in terms of age, education or duration of illness. Results showed that participants in the 'unaware' group (n = 18) made more perseverative errors (i.e. inappropriate and unintentional repetition of a response despite a change in the stimulus) on the Wisconsin Card Sorting Test (WCST) than the 'aware, correct attributers' group (n = 24) and the 'aware, incorrect attributers' group (n = 14), which indicates lack of awareness is related to greater executive impairment. However, no difference was observed between the three groups in relation to working memory. A limitation of the study was the sample composition, as it mainly consisted of male participants. In addition, not all participants were taking anti-psychotic medication and impact of different levels of medication on performance is not known.

Over a six-year period, Simon, De Hert, Wampers, Peuskens and van Winkel (2009) recruited 132 inpatients with schizophrenia spectrum disorders to measure the association between executive functioning, working memory and insight using the Psychosis Evaluation tool for Common use by Caregivers (PECC). The PECC measures two dimensions of insight: awareness of having a mental illness (AMI) and

awareness of having symptoms attributed to a mental illness (ASAMI). After corrections for multiple comparisons, performance on only one measure of executive function, the WCST 'categories completed,' correlated with AMI which suggests that executive function only somewhat relates to insight. Lack of association between insight and other measures of executive function might have arisen as insight was rated by caregivers and not self-report. In addition, despite having a large sample size, the authors acknowledge a wide range of actual levels of symptom severity amongst the sample population which might explain why symptom severity accounted for 20% of the variance in AMI.

A study by Barrera, McKenna and Berrios (2009) did not find any associations between multiple measures of executive function and insight as measured by the Insight Scale (IS), which is a self-report scale that assesses recognition of being unwell and acknowledgment of the need for help. The results did show an association between insight and reality distortion which is a symptom of schizophrenia. In addition, a correlation was found between insight and semantic ability on the graded naming test where participants are asked to name pictures of objects and animals, which suggests that impaired access to semantic knowledge might be associated with reduced insight. However, the sample size in this study was small and therefore effects might not have been detected.

Summary

These seven studies suggest the relationship between insight and executive function among individuals with a diagnosis of schizophrenia is complex as, although six of the seven studies found an association between at least one dimension of insight and executive function, these associations varied between studies.

Three out of these seven studies explored the relationship between different measures of executive function and a composite score of insight, whilst the remaining four studies investigated the relationship between different measures of executive function and sub-dimensions of insight. A possible reason for examining the relationship between several measures of executive function and sub-dimensions of insight is that evidence suggests that both constructs are multi-dimensional and that a complex relationship might exist between the two variables where only some aspects of each construct relate to one another. However, the theoretical basis for why particular aspects of each construct might be associated together is not known.

Of the three studies that explored the relationship between different measures of executive function and a composite score of insight, two found a relationship between insight and executive function (i.e. letter fluency and perseveration errors), whilst one did not find a relationship between insight and executive function, but found a relationship between insight and semantic ability.

Of the four studies that investigated the relationship between different measures of executive function and sub-dimensions of insight, the results are also mixed. In regards to insight into having a mental disorder, two out of these four studies found an association with executive function (i.e. verbal fluency, inhibition, planning and attention), whilst two studies found no relationship. In regards to insight into the need for treatment, two out of these four studies found an association with executive function (i.e. capacity to shift attention, planning ahead, completing tasks of increasing complexity and the ability to use context to aid understanding), whilst the other two studies showed no association. Regarding insight into the social consequences of the mental disorder, two out of these four studies found an association with executive function (i.e. working memory, divided attention,

inhibition, making sensible estimates of time and ability to identify and shift rules), whilst the other two studies found no association. Finally, insight into the specific signs and symptoms of the disorder was not assessed in any of these four studies, and only one out of these four studies investigated the relationship between insight into the attribution of symptoms to disorder and executive function, but found no association with executive function.

In regards to whether executive function is predictive of insight, only three out of the seven studies performed regression analysis. Two of these three studies found that executive was predictive of insight, but only weakly, whilst one study found that executive function was associated with insight but not predictive of insight. In addition to the limited predictive ability of executive function, these studies would suggest that other variables such as symptomatology are associated with insight and that executive function alone cannot account for degree of insight. One study also suggested that the relationship between insight and executive function is mediated by depression.

The marked variation in results might be due to methodological differences and therefore should be interpreted cautiously. Firstly, the measures used to assess insight and executive function were not consistent across studies and thus comparison is difficult. Insight was most commonly assessed by a multi-dimensional clinician-rated scale, the SUMD, but was also measured by caregiver-report and self-reports. Executive function was measured by numerous tests including the BADS, WCST and D-KEFS. Secondly, sample characteristics limited the ability to generalise findings as the majority of studies had a small sample size of predominantly male participants. Thirdly, all seven studies used a cross-sectional

design, which limits the ability to generalise the findings to the wider population of individuals diagnosed with schizophrenia.

Overall, evidence would suggest that executive function is, to some extent, associated with level of insight. However, the variation in association levels would suggest that this relationship is not simple and executive function cannot solely account for degree of insight. Therefore, the next section of this review goes on to explore the relationship between insight and other aspects of general cognitive function.

Relationship between insight and general cognitive function

Twenty-five studies examined the relationship between insight and general cognitive function in patients with a diagnosis of schizophrenia. These studies were further sub-divided into two sections based on length of diagnosis: a) recent-onset schizophrenia; and b) chronic schizophrenia.

The relationship between insight and general cognitive function in patients with recent-onset schizophrenia

This section includes eight studies that examined the relationship between insight and general cognitive function in patients with recent-onset schizophrenia (Table 2).

Table 2

The relationship between insight and general cognitive function in patients with recent-onset schizophrenia

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Subotnik et al. (2005)	Design: Cross-sectional Sample: 52 schizophrenia, 9 schizoaffective disorder & 8 schizophreniform; Age = 24.7 years (SD = 5.3)	BPRS MMPI	SUMD	CPT	Patients in remission: Insight into mental disorder/attributing symptoms to mental disorder is associated with focused/ sustained attention that requires immediate/working memory. Acutely psychotic patients: Insight into mental disorder/effects of treatment is associated with psychological defences.
Mutsatsa, Joyce, Hutton, and Barnes (2006)	Design: Prospective cross-sectional Sample: 94 schizophrenia; Age = 23.5 years (SD = 10.8); Predominantly male	MADRS SANS SAPS SFS	SAI	CANTAB NART WAIS	Insight is associated with: 1) spatial working memory; 2) negative symptoms and; 3) depression. In regression analysis, cognitive function was not predictive of insight.
Lepage et al. (2008)	Design: Cross-sectional Sample: 30 schizophrenia, 7 schizoaffective disorder, 1 schizophreniform, 1 delusional disorder, 3 bipolar disorder, 5 not otherwise specified & 4 unavailable; Age = 23.2 years (SD = 3.8)	CDSS HAS SANS SAPS	BCIS PANSS SUMD	FFTSI Hinting task TA TMT Tower of London WAIS WMS	Clinical insight is not associated with cognitive function. Cognitive insight is associated with verbal learning and memory. *Please note:* MRI scans were conducted, but will not be discussed.

Table 2 (continued)

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Morgan et al. (2010)	Design: Cross-sectional Sample: 39 schizophrenia, 6 schizoaffective disorder, 10 depressive psychosis & 10 other psychosis; 91 control group; Age = 27.2 years (SD = 7.9)	SCAN	SAI-E	AVLT LNS NART RCPM VF TMT WAIS WMS	Insight is associated with performance IQ and verbal learning. *Please note:* Voxel-based magnetic resonance imaging scans were conducted, but will not be discussed.
Quee et al. (2011)	Design: Cross-sectional Sample: 270 non-affective psychosis; Age = 27.7 years (SD = 6.5); Predominantly male	GAF PANSS	IS PANSS	Performance Test Response Set Shifting WAIS	Insight is associated with composite neurocognitive score, social cognition and clinical symptoms. In regression analysis, neurocognitive score was not predictive of insight when adding clinical symptoms. Phase of illness moderates the relationship between insight and 3 variables.
Mintz, Addington and Addington (2004)	Design: Prospective longitudinal Sample: 180 schizophrenia spectrum disorder; Age = 24.5 years (SD = 8.4); Predominantly male	CDSS PANSS	PANSS	CFT COWAT CROP Grooved pegboard LNS RAVLT ROCF SPAN TMT WCST WMS	Insight is not associated to cognition or demographics at any time point. Insight is associated to higher depression at baseline and less severe positive and negative symptoms at baseline, 3, 6 and 12 months. Insight significantly improved over the 12-month period, where the most improvement occurred in the first 3 months.

Table 2 (continued)

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Saeedi, Addington and Addington (2007)	Design: Prospective longitudinal Sample: 278 psychosis; Age = 24.4 years (SD = 8.0); Predominantly male	CDSS PANSS QLS	PANSS	CFT COWAT Grooved pegboard LNS RAVLT ROCF SPAN TMT WCST WMS	Insight associated with cognitive function at 1-year. Insight associated with depression at baseline. Insight associated with psychopathology and social function at all time points (i.e. baseline, 1-, 2- and 3- years). Overall, insight improved over 1-year.
McEvoy et al. (2006)	Design: Longitudinal Sample: 148 schizophrenia, 26 schizoaffective disorder, 77 schizophreniform disorder; Age = 23.9 (SD = 4.7); Predominantly male	CDSS CGI-S MADRS	ITAQ	CPT COWAT CVLT Letter Number Sequencing NART TMT WAIS WCST WMS	Insight not associated with cognition or demographics at any time point. Insight associated with depression at baseline. Insight associated with positive and negative symptoms at baseline, 3-, 6- and 12-months. Overall, insight improved over 12-months, where the most improvement occurred in the first 3 months.

Note. AVLT, Auditory Verbal Learning Test; BCIS, Beck Cognitive Insight Scale; BPRS, Brief Psychiatric Rating Scale; CANTAB, Cambridge Neuropsychological Test Automated Battery; CDSS, Calgary Depression Scale for Schizophrenia; CFT, Category Fluency Test; CGI-S, Clinical Global Impressions-Severity Scale; COWAT, Controlled Oral Word Association Test; CPT, Continuous Performance Test; CROP, Copy of Rey-Osterrieth picture; CVLT, California Verbal Learning Test; FFTSI, Four-Factor Tests of Social Intelligence; HAS, Hamilton Anxiety Scale; IS, Insight Scale; LNS, Letter-Number Span; MADRS, Montgomery-Asberg Depression Rating Scale; MMPI, Minnesota Multiphasic Personality Inventory; NART, National Adult Reading Test; PANSS, Positive and Negative Syndrome Scale; RAVLT, Rey Auditory Verbal Learning Test; RCPM, Ravens Coloured Progressive Matrices; ROCF, Rey–Osterrieth Complex Figure test; SAI, Schedule for the Assessment of Insight; SANS, Schedule for the Assessment of Negative Symptoms; SAPS, Schedule for the Assessment of Positive Symptoms; SCAN, Schedules for Clinical Assessment in Neuropsychiatry; SFS, Social Function Scale; SPAN, Span of Apprehension; SUMD, Scale to Assess Unawareness of Mental Disorder; TA, Test of Attention; TMT, Trail Making Test; VF, Verbal Fluency; WAIS, Wechsler Adult Intelligence Scale; WCST, Wisconsin Card Sorting Test; WMS, Wechsler Memory Scale

Subotnik et al. (2005) explored the relative contributions of cognitive function and psychological defensiveness as predictors of insight, as measured by the SUMD, in 52 outpatients with recent-onset schizophrenia. In patients whose psychosis was in remission (n = 29), insight into mental disorder and attributing symptoms to mental disorder was associated with poor target discrimination in a task that required immediate or working memory for sustained attention. Insight into the effects of treatment was also associated with focused, sustained attention. However, in patients who were acutely psychotic (n = 23), higher psychological defensiveness, particularly related to social acquiescence and presenting oneself in a socially desirable light, was associated with poorer insight into mental disorder and the effects of treatment whilst cognitive measures were not predictive of insight. A strength of this study was exploring the effect of illness severity upon the relationship between insight and cognitive function by comparing acutely psychotic participants with those in remission. However, the authors acknowledged the need for replication of the study due to the relatively small sample size.

Mutsatsa, Joyce, Hutton and Barnes (2006) carried out a study on 94 patients with first-episode schizophrenia. The authors measured insight, clinical symptoms, cognitive function and social function. Their findings suggest that poor global insight correlated with poorer spatial working memory, which is a facet of executive functioning. Poor global insight also correlated with more severe negative symptoms and disorganisation, but less severe depressive symptoms. Trends were also observed between global insight and current IQ and IQ change score. Selection bias might have impacted the results as only 74 out of 94 patients underwent neuropsychological testing and it was found that patients with poorer insight, but better social functioning, were less likely to have undertaken neuropsychological

testing. Another limitation was that, despite aiming to compare how insight differs between patients with first-episode schizophrenia and established schizophrenia, the authors did not recruit a comparison group to test this hypothesis.

A study by Lepage et al. (2008) also recruited patients with first-onset psychosis and administered two clinician-rated measures of clinical insight and one self-report measure of cognitive insight. Clinical insight was defined as an awareness of the need to treat a mental illness and cognitive insight was defined as the capacity to reflect on distorted beliefs and misinterpretations. A battery of cognitive tests was also administered within around six weeks of beginning treatment. Clinical insight was not found to correlate with any of the cognitive tests. Cognitive insight was found to be associated with verbal learning and memory, which suggests that ability to reflect on one's cognitions, might depend on capacity to retrieve memories. A limitation of the study was that not all participants completed the neuropsychological tests as they either refused or were unable to complete the tasks. In addition, although the three insight measures correlated with one another, the two clinical insight scales were administered on average 17.8 days later than the cognitive insight scale which could have impacted the relationship between insight and cognition, as insight level can fluctuate during first-onset psychosis.

Morgan et al. (2010) recruited 82 consecutively presenting patients with a diagnosis of first-onset psychosis from an epidemiological study. The study focused on examining insight, as measured by semi-structured interviews using the Schedule for the Assessment of Insight – Expanded version (SAI-E), in relation to neuropsychological function and brain structure. After adjusting for multiple comparisons, total insight correlated with verbal learning and performance IQ on the

Wechsler Adult Intelligence Scale (WAIS). Symptom relabelling, a component of insight that encompasses the ability to identify and attribute prominent symptoms of psychosis as pathological also correlated with performance IQ. Further analysis showed that a sub-group of participants with no symptom relabelling ability (n = 20) scored significantly lower than participants with some symptom relabelling ability (n = 64) on current IQ, verbal fluency, verbal learning and set-shifting. Overall, these results suggest that total insight and a sub-component of insight, symptom relabelling, are at least partly dependent on good overall cognitive function. Although the study had a large sample size, a limitation of the study was the cross-sectional design of the study which limits the ability to generalise the results to patients with different durations or severity of illness.

Quee et al. (2011) also carried out a cross-sectional design study to investigate the relationship between insight and cognitive function, social cognition and clinical symptoms. However, they included 270 participants with differing phases of illness including recent-onset psychosis (n = 57) and chronic/multiple episodes of psychosis (n = 210). Three of the participants included in the study had an unknown phase of illness. A composite score of insight was derived from a self-report and clinician-rated scale as the two measures of insight were highly correlated. A composite score of cognitive function was also obtained from seven measures of cognitive function that included tests of attention, processing speed, set-shifting, reasoning, problem solving, verbal learning and memory. Phase of illness was found to moderate the relationship between insight and cognitive function, social cognition and clinical symptoms, where the three variables were predictive of insight in patients with chronic/multiple episodes of psychosis, but not in patients with recent onset psychosis. A limitation of the study was that the use of composite scores of

insight and cognitive function meant that detailed interpretation of the relationship between the different levels of insight and cognitive function could not be carried out. A strength of this study was the large sample of participants who were included in the study. However, the sample largely consisted of patients with chronic/multiple episodes of psychosis rather than recent-onset psychosis.

To improve the ability to generalise the results Mintz, Addington and Addington (2004) carried out a prospective longitudinal study exploring the relationship between insight and cognition in patients with first-episode psychosis consecutively admitted for treatment. Insight was assessed on admission and after three, six and 12 months. Of the 253 individuals admitted to hospital, 73 individuals did not complete the 12 month assessment for various reasons such as, non-English speaking, failed to attend the assessment, dropped out of the program or changed diagnosis. Insight was observed to improve over the 12 month period and correlated with positive symptoms, negative symptoms and depression at admission, but not with cognitive function at any time point. Improvement in level of insight might have occurred due to patients receiving a range of cognitive-behavioural and other psychosocial interventions over the 12 months. However, the impact of these interventions was not investigated further. The authors note that a limitation of the study was that they used a uni-dimensional measure of insight embedded in the Positive and Negative Syndrome Scale (PANSS), which could have reduced chances of finding a relationship between insight and cognitive function as insight is conceptualised as a multi-dimensional construct.

Using the same prospective cohort as Mintz et al. (2004), Saeedi, Addington and Addington (2007) followed up patients at one, two and three years after admission. Insight improved between baseline and one-year follow up. At baseline

(*n* = 278), good insight was associated with higher depressive symptoms, good social functioning and less severe psychopathology, but not cognitive function. At one-year follow-up (*n* = 190), good insight was associated with less severe psychopathology, good social functioning and better immediate and delayed verbal memory, category fluency, WCST categories and perseverative errors and trail making. At two-year follow up (*n* = 190) and three-year follow-up (*n* = 145), good insight was associated with less severe psychopathology and good social functioning. A limitation of the study was that despite documenting reasons for attrition, it is not known whether the participants who returned for follow-up differed significantly from participants who dropped out. In addition, similarly to the study by Mintz et al. (2004), the impact of cognitive-behavioural and other psychosocial interventions upon insight, psychopathology, social functioning and cognitive function is not known and warrants further investigation.

A study by McEvoy et al. (2006) carried out a two-year randomised, double-blind clinical trial that focused on comparing the effectiveness of olanzapine compared with haloperidol in 263 patients experiencing a first episode of schizophrenia. They also assessed the relationships between insight and cognitive function, psychopathology, brain volumes and co-morbid depression. Insight improved significantly over the course of the study and greater insight was associated with older age, female gender, white ethnicity, better cognitive function, larger brain volume, longer time to medication non-adherence and higher levels of depression. Reduced insight was also associated with higher positive and negative psychopathology scores. This study benefited from a large sample size and longitudinal design.

Summary

This section included eight studies that investigated the relationship between insight and cognitive function in patients with recent-onset schizophrenia. Five of these eight studies used a cross-sectional design and the other three used a longitudinal design.

Of the five cross-sectional design studies: two of these studies found a correlation between one dimension of insight and a facet of cognitive function such as spatial memory and performance IQ; one study found a correlation between a composite insight and cognitive function score; one study found no correlation between insight and cognitive function; and one study found a correlation between insight and cognitive function (i.e. immediate memory, working memory and sustained attention) for patients in remission, but not acutely psychotic patients. Results from these five studies suggest that impaired cognitive function might contribute towards poor insight, but that this relationship is complex. In addition, the causal mechanism, if one exists, is not straightforward as only two of the five studies investigated the predictive power of cognitive function for insight. Cognitive function was found to be predictive of insight in one study, but not found to be predictive of insight in a second study after adding symptomatology into the analysis which suggests that symptomatology is a stronger predictor of insight.

The three longitudinal studies similarly suggest that cognitive function relates to insight, but that this relationship is not straightforward. Two of the longitudinal studies utilised the same prospective cohort to investigate the relationship between insight and cognitive function. However, the later study followed up participants over a greater number of years. In regards to these two studies, the initial study found no association between insight and cognitive function at any time point, whilst

the second study found a correlation at one-year follow up. Discrepancies in results might be due to differing psychological and pharmacological treatments that were provided to participants in the studies. However, this was not explored in either of the studies. These two studies also suggest that other factors such as social functioning, pathology and depressive symptoms might provide additional explanatory power of insight, as both of these longitudinal studies found some associations between these factors and insight at different time points. The third longitudinal study used a different sample of participants and found that insight was related to cognitive function at baseline and two-year follow up.

As mentioned in the previous section summary, the variation in results might be due to methodological differences that limit the extent to which the results can be applied and generalised. Common limitations included use of different measures, lack of exploration of attrition rates and lack of control groups. Strengths of some of the eight studies reviewed in this section include the use of a longitudinal design and recruiting a large sample of consecutively presenting patients with first-onset psychosis. The next section of this review goes on to examine the relationship between insight and general cognitive function in patients with chronic schizophrenia, in order to investigate whether this relationship differs depending on duration of illness.

The relationship between insight and general cognitive function in patients with chronic schizophrenia

This second section includes 17 studies that examined the relationship between insight and general cognitive function in patients with chronic schizophrenia (Table 3).

Table 3

The relationship between insight and general cognitive function in patients with chronic schizophrenia

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Stefanopoulou, Lafuente, Saez Fonseca and Huxley (2009)	Design: Cross-sectional Sample: 36 schizophrenia; Age = 34.9 years (SD = 9.8)	BSI GAF	ITAQ	WAIS	Insight is not associated with intellectual performance. Insight is associated with better global functioning, acknowledgement of psychotic symptoms and higher levels of anxiety.
Kurtz and Tolman (2011)	Design: Cross-sectional Sample: 72 schizophrenia; Age = 30.6 years (SD = 10.8); Illness duration = 9.5 years (SD = 9.7)	BDI PANSS SWL	PANSS	CVLT FAS PCET WAIS	Insight is associated with vocabulary. Deficits in vocabulary and digit span associated with poorer subjective quality of life.
Cooke et al. (2007)	Design: Cross-sectional Sample: 67 psychosis; Age = 38.1 years; Illness duration = 8.1 years	BDI PANSS RSES	IS PANSS	Quick Test	Self-reported insight (IS) is associated with IQ and self-esteem. Association between insight and IQ is curvilinear (quadratic). Clinician-rated insight (PANSS) is not associated with IQ, self-esteem or depression.

Table 3 (continued)

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Donohoe, Donnell, Owens and O'Callaghan (2004)	Design: Cross-sectional Sample: 38 schizophrenia; Age = 31.5 years (SD = 8.7)	CRI GAF MHLoC PANSS	SAI	MMSE NART	Insight is associated with pre-morbid IQ, symptomatology and health attribution style. In regression analysis pre-morbid IQ is not predictive of insight. Symptom severity and health attribution are significant predictors.
Chen et al. (2005)	Design: Cross-sectional Sample: 31 schizophrenia; Age = 30.7 years (SD = 8.5); Illness duration = 6.1 years (SD = 7.1)	GAF	SAI KOS PCI	WMS	Clinician-rated insight is associated with verbal memory indices and global functioning (after controlling for age). Patients' and caregivers' insight is not associated with cognitive measures or global functioning.
Ritsner and Blumenkrantz (2007)	Design: Cross-sectional Sample: 85 paranoid schizophrenia; 8 residual, 7 undifferentiated & 7 disorganised; Age = 36.2 years (SD = 10.2); Illness duration = 12.4 years (SD = 8.6); Predominantly male	CISS GSES PANSS RSES TPQ	SUMD	CANTAB	In regression analysis neurocognitive factors (i.e. visual and movement skills, sustained attention and executive function) predict 20-41% of insight. Personality factors (i.e. temperament, autistic preoccupations, novelty seeking behaviour) predict 22-39% of insight.

Table 3 (continued)

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Goodman, Knoll, Isakov and Silver (2005)	Design: Cross-sectional Sample: 35 schizophrenia; Age = 38.0 years (SD = 9.44); Illness duration = 10.0 years (SD = 9.3); All male	AIMS CDS SANS SAPS SASESE	SUMD	BVRT DOT-M Finger tapping test MMSE PNB (computerised) WAIS (digit span)	Insight into symptoms, mental disorder and effects of treatment is associated with visual object learning, verbal working memory, ability to identify facial emotion and occurrence of violent events.
Bora, Sehitoglu, Aslier, Atabay and Veznedaroglu (2007)	Design: Cross-sectional Sample: 39 schizophrenia, 13 undifferentiated & 6 residual; Age = 32.6 years (SD = 8.3); Illness duration = 10.2 years (SD = 7.5); Predominantly male	PANSS	SUMD	TOM WAIS WCST VF	Insight into symptoms is associated with perseverative errors, WCST category score and deficits of first order and second order Theory of Mind (TOM) In regression analysis cognitive function is weakly predictive of insight, whilst TOM is most predictive of insight.
Monteiro, Silva and Louza (2008)	Design: Cross-sectional Sample: 30 paranoid schizophrenia & 10 residual; Age = 34.0 years (SD = 7.2); Predominantly male	PANSS	SUMD	CPT-II ROCF Stroop TMT WAIS (block design & vocabulary) WCST	Insight is associated with executive function (WCST) and symptoms (i.e. negative factor and disorganization factor).

Table 3 (continued)

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Lysaker, France, Hunter, and Davis (2005)	Design: Cross-sectional Sample: 38 schizophrenia & 14 schizoaffective disorder; Age = 47.2 years (SD = 9.0); Predominantly male	PANSS Quality of Life	IPII NCRS SUMD	HVLT WAIS (vocabulary) WCST	Insight on SUMD is not associated to cognitive function. Insight on NCRS is associated to executive function.
Lysaker, Tsai, Maulucci and Stanghellini (2008)	Design: Cross-sectional Sample: 41 schizophrenia & 29 schizoaffective disorder; Age = 47.0 years (SD = 9.9); Predominantly male	MCSDS PANSS Quality of Life	IPII NCRS	BLERT WAIS WCST (vocabulary, block design, arithmetic & digit symbol) WMS (logical memory)	Full insight is associated with better executive functioning, social cognition, verbal memory and quality of life compared to superficial or limited insight.
Lysaker et al. (2011)	Design: Cross-sectional Sample: 41 schizophrenia & 24 schizoaffective disorder; Age = 46.3 years (SD = 8.9)	MAS	IPII SUMD	CPT-II HVLT WAIS (digit symbol & vocabulary) WCST	Insight is associated with verbal memory, visuomotor processing speed, executive function and sustained and selective attention. In regression analysis cognitive function was not predictive of insight after adding metacognition into analysis.

Table 3 (continued)

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Gilleen, Greenwood and David (2011)	Design: Cross-sectional Sample: 31 schizophrenia; Age = 38.2 years (SD = 10.4); Illness duration = 13.71 years (SD = 10.8)	BPRS BDI	BCIS SAI SUMD	BADS Bells test MARS RMBT NART TMT WAIS	Insight on SUMD is associated with TMT. Insight on SAI is associated with some measures of cognitive function. In regression analysis cognitive function is only a weak predictor of insight, whilst symptomatology is strong predictor.
Donohoe, Corvin and Robertson (2005)	Design: Between-groups Sample: 16 controls, 9 poor insight schizophrenia & 21 good insight schizophrenia	–	Insight Scale	NART Sustained attention Stroop TEA WAIS WMS	Both patient groups (i.e. poor and good insight) performed less well on cognitive tasks than controls. The poor insight group performed below the good insight group on executive function and general cognitive function. In regression analysis verbal ability is predictive of insight.
Varga, Magnusson, Flekkoy, David and Opjordsmoen (2007)	Design: Between-groups Sample: 31 control group & 32 schizophrenia	BPRS CGI-S GAF MADRS SADS-C SCLFS	SUMD	AVLT Grooved pegboard Stroop TMT WAIS WCST	The patient group had more cognitive deficits compared to controls. Insight is associated with attention, executive functioning, psychomotor speed, verbal learning and intelligence. Insight also associated with global functioning, emotions and illness severity. In regression analysis psychopathology and working memory were predictive of insight.

Table 3 (continued)

Author(s)	Design and Sample	Clinical measure(s)	Insight measure(s)	Cognitive measure(s)	Results
Cuesta, Peralta, Zarzuela and Zandio (2006)	Design: Longitudinal Sample: 37 schizophrenia, 11 schizoaffective & 27 affective disorder with psychotic symptoms; Age = 33.7 years (SD = 9.0)	CASH CGI-S	AMDP ITAQ SUMD	NAIP Stroop TMT VF WCST WAIS (Information)	Insight is not associated with cognitive function at baseline or follow-up.
Gharabawi et al. (2007)	Design: Longitudinal retrospective cohort study Sample: 323 schizophrenia; Age = 41.0 years (SD = 11.9)	CGI-S LOF PANSS PSP	PANSS	Cogtest	Insight at baseline is weakly associated to visual memory, attention/vigilance, reasoning and problem solving, declarative memory, and social cognition domains. At 1-year follow-up insight is associated with social cognition.

Note. AIMS, Abnormal Involuntary Movements Scale; AMDP, Assessment and Documentation in Psychopathology; AVLT, Auditory Verbal Learning Test; BDI, Beck Depression Inventory; BCIS, Beck Cognitive Insight Scale; BLERT, Bell-Lysaker Emotional Recognition Task; BPRS, Brief Psychiatric Rating Scale; BSI, Brief Symptom Inventory; BVRT, Benton Visual Retention Test; CANTAB, Cambridge Neuropsychological Test Automated Battery; CASH, The Comprehensive Assessment Schedule History; CDS, Calgary Depression Scale; CPT, Continuous Performance Test; CRI, Coping Resources Inventory; CGI-S, Clinical Global Impression-Severity Scale; CISS, Coping Inventory for Stressful Situations; CVLT, California Verbal Learning Test; DOT-M, Dot Test-Modified; FAS, Controlled Oral Word Fluency; GAF, Global Assessment of Functioning Scale; GSES, General Self-Efficacy Scale; HVLT, Hopkins Verbal Memory Test; IPII, Indiana Psychiatric Illness Interview; ITAQ, Insight and Treatment Attitudes Questionnaire; KOS, Knowledge of Schizophrenia; LOF, Carpenter-Strauss Level of Functioning; MADRS, Montgomery-Asberg Depression Rating Scale; MARS, The Memory Awareness Rating Scale; MAS, Metacognition Assessment Scale; MCSDS, Marlowe–Crowne Social Desirability Scale; MHLoC, Multidimensional Health Locus of Control Questionnaire; MMSE, Mini-Mental State Examination; NART, National Adult Reading Test; NAIP, Neuropsychological Assessment Integrated Program; NCRS, Narrative Coherence Rating Scale; PANSS, Positive and Negative Syndrome Scale; PCET, Penn Conditional Exclusion Test; PCI, Perceived Cause of illness; PNB, Penn Neuropsychological Battery; PSP, Personal and Social Performance; RBMT, Rivermead Behavioural Memory Test; ROCF, Rey–Osterrieth Complex Figure test; RSES, Rosenberg Self-Esteem Scale; SADS-C, Schedule of Affective Disorders and Schizophrenia-change version; SAI, Schedule for the Assessment of Insight; SANS, Schedule for the Assessment of Negative Symptoms; SAPS, Schedule for the Assessment of Positive Symptoms; SASESE, Simpson-Angus Scale for Extrapyramidal Side Effects; SCLFS, Strauss-Carpenter Level of Functioning Scale; SWL; SUMD, Scale to Assess Unawareness of Mental Disorder; TEA, Test of Everyday Attention; TMT, Trail Making Test; TOM, Theory of Mind; TPQ, Tri-dimensional Personality Questionnaire; VF, Verbal Fluency; WAIS, Wechsler Adult Intelligence Scale; WCST, Wisconsin Card Sorting Test; WMS, Wechsler Memory Scale

1. Dashes indicate data are not available

Stefanopoulou, Lafuente, Fonseca and Huxley (2009) used the Insight and Treatment Attitudes Questionnaire (ITAQ) to investigate the relationship between insight and intellectual performance, global functioning and psychopathology in 36 inpatients with chronic schizophrenia. After corrections for multiple testing, results showed good insight was related to better global functioning, greater acknowledgement of psychotic symptoms and higher levels of anxiety. However, no relationship was found between insight and intellectual performance, which was used to measure general cognitive functioning. A lack of association between insight and cognitive function might have occurred due to the use of a uni-dimensional measure of insight and only one measure of cognitive function, as insight is a multi-dimensional construct which might be associated with different aspects of cognitive function. Measures were also administered as part of routine clinical evaluation by psychologists and therefore it is not known whether the measures of cognitive function and insight were administered within a close time frame or far apart, as fluctuations in psychopathology might have impacted on performance.

Kurtz and Tolman (2011) also used a uni-dimensional measure of insight, embedded in the PANSS, to investigate the relationship between insight and multiple measures of cognitive function. An association was found between insight and vocabulary as measured by the WAIS. The findings also suggest that increased deficits in vocabulary and digit span were associated with poorer subjective quality of life. A limitation of this study was that corrections for multiple testing were not carried out and therefore the risk of detecting a false positive result is increased. In addition, similarly to Stefanopoulou et al. (2009), the use of a uni-dimensional measure of insight might have resulted in few associations between insight and

cognitive function and the authors note future studies should use a more comprehensive measurement of insight.

Cooke et al. (2007) used a self-report insight scale (IS), as well as a clinician-rated insight scale (PANSS) to explore the relationship between insight, IQ, self-esteem and depression. The clinician-rated insight measure was not associated with IQ, self-esteem or depression, whereas the self-reported insight measure was found to be associated with higher IQ and poorer self-esteem. In addition, there was evidence for a curvilinear relationship between self-reported insight and IQ. These findings suggest high cognitive ability is conducive, but not in itself sufficient, to having good insight. The findings also suggest that some individuals may cope with psychosis in a way that promotes their own positive self-evaluation and thus manifests poor insight. Selection bias might limit the ability to generalise the results, as participants included in the study were recruited from outpatients chosen for a randomised controlled trial of Cognitive Behavioural Therapy (CBT) for psychosis, and therefore the participants might be higher functioning or more motivated or engaged with services than is typical.

Using the Schedule for Assessment of Insight (SAI), which is a semi-structured clinician-administered multi-dimensional measure of insight, Donohoe, Donnell, Owens and O'Callaghan (2004) found an association between insight and pre-morbid intellectual functioning as measured by the National Adult Reading Test (NART) in 38 consecutively admitted inpatients. However, pre-morbid intellectual functioning was not found to be predictive of insight when entered into a regression analysis, whereas, both symptom severity and having internal health attribution styles were found to be predictive of insight. A limitation of the study was that no current measures of cognitive function were administered and therefore conclusions

can be drawn only about the relationship between insight and pre-morbid intelligence.

Chen et al. (2005) also administered the SAI to investigate the relationship between insight, cognitive function (attention and memory) and global function in 31 patients with schizophrenia. The authors also administered an additional insight measure that assessed key caregivers' perception about the disorder. Clinician-rated insight, as measured by the SAI, was found to be associated with verbal memory and global functioning after controlling for age. Insight, as measured by key caregivers, was not associated with cognitive function or global function. In addition, there was no significant correlation between clinician-reported insight and key caregiver reported insight. Together these findings led the authors to conclude that insight is related to cognitive function, but it is not influenced by psychosocial factors, such as caregiver perception. A limitation of the study was the relatively small sample size and the variation in medication dosage between patients as some were drug naïve whilst others were taking medication.

Administering a different multi-dimensional measure of insight, Ritsner and Blumenkrantz (2007) used the Scale to assess Unawareness of Mental Disorder (SUMD) to explore the relationship between the different dimensions of insight and cognitive function, personality traits and clinical characteristics in 107 clinically-stable schizophrenic outpatients. Across the three dimensions of insight measured by the SUMD, regression analysis showed that cognitive function (i.e. executive function, sustained attention, visual and motor skills) accounted for 20-41% of insight, whilst personality traits (i.e. temperament, autistic preoccupations and novelty seeking behaviour) accounted for 22-39% of insight. These findings suggest insight is a multi-dimensional construct that is not only predicted by cognitive

function, but also personality traits. The large sample size was a strength of the study. However, the sample consisted of predominantly male participants who were clinically stable with symptoms in remission, which limits the ability to generalise the results.

Goodman, Knoll, Isakov and Silver (2005) used the SUMD to explore the relationship between insight and demographic variables, clinical variables and cognitive function in a forensic inpatient unit with patients with a diagnosis of schizophrenia. Analyses suggest that insight into having a mental disorder, the need for treatment and attributing symptoms to the mental disorder were significantly associated with visual object learning which indicates the possible involvement of frontotemperoparietal systems in insight. Insight into the need for treatment was also associated with improved verbal working memory. Insight into having a mental disorder was also associated with clinical variables that measured emotion processing and aggression control, where the authors found significantly higher scores on identification of facial emotions in patients with insight, and that poor insight was significantly associated with a higher occurrence of violence in the current hospitalisation. This suggests that insight might share some underlying mechanisms that are associated with emotion processing. A limitation of the study is that the authors do not appear to have used a two-tailed significance set at 5% and not performed corrections for multiple testing, which could have led to the possibility of Type I errors. In addition, the study might have limited generalisability due to the client group recruited and therefore the study would have benefited from a comparison group to reduce this limitation.

Utilising a Turkish version of the SUMD, Bora, Sehitoglu, Aslier, Atabay and Veznedaroglu (2007) investigated the relationship between insight and cognitive

function, symptomatology and Theory of Mind (TOM) in 58 Turkish outpatients with schizophrenia. Results showed that 48% of participants had full insight into the current disorder, 50% had full insight into the effects of treatment and 43% had full insight into the social consequences of the disorder. In addition, results showed participants had greater insight for current episodes of psychosis than past episodes of psychosis. In regards to cognitive function, the misattribution of past positive symptoms of schizophrenia was found to be associated with perseveration on the Wisconsin Card Sorting Test (WCST). Overall insight scores and unawareness of current positive symptoms were also associated with participant's WCST category score. An association was also found between poor insight and deficits of first order and second order TOM, which suggests that in order for an individual to be aware of their disorder, he/she needs to be able to imagine himself/herself from another person's perspective. A limitation of the study was the lack of correction for multiple statistical comparisons which could have inflated the chance of Type I errors.

Monteiro, Silva and Louza (2008) administered a Portuguese version of the SUMD to investigate the relationship between insight, symptomatology and cognitive dysfunction in 40 outpatients with chronic, but stable, schizophrenia. Insight was associated with executive function as measured by the WCST. However, as the neuropsychological battery administered had not been validated on the Brazilian population from which they recruited participants, the authors were only able to consider raw scores, which might have affected the analysis of results.

Lysaker, France, Hunter and Davis (2005) also used the SUMD to assess the relationship between insight and cognitive functioning in 52 participants with schizophrenia. In addition, they administered two novel measures that assess insight

by exploring patients' illness narrative. The Indiana Psychiatric Illness Interview (IPII) is a semi-structured interview which asks individuals: to provide details of their life story; if they think they have a mental illness; how they understand their mental illness; how their illness has affected their lives; how their illness 'controls' their life; and how they 'control' their illness. The Narrative Coherence Rating Scale (NCRS) is an 18-point rating scale, which is then used to score the patient's narrative coherence based on their IPII. Three sub-scales on the NCRS measure insight by looking at whether details of the story are temporally connected in a logical sequential manner, how detailed the participants' story are and whether their life stories are plausible. Insight scores on the SUMD and NCRS were significantly correlated. Insight, as measured by the SUMD, was not associated with cognitive function which was measured by vocabulary or executive function. However, insight, as measured by the NCRS, was correlated with executive function. A later study by Lysaker, Tsai, Maulucci and Stanghellini (2008) also found full awareness, as assessed by the NCRS, was associated with better flexibility in abstract thought (executive functioning), greater ability to detect difficult emotions (social cognition) and better verbal memory than superficial or limited awareness. However, a limitation associated with both the Lysaker et al. (2005) and Lysaker et al. (2008) studies is that the IPII and NCRS measures of insight might be more prone to participants providing socially desirable responses to interviews as both studies rely on participant self-report. A measure to gauge social desirability was administered in Lysaker et al.'s (2008) study at baseline, though no analyses of the data were presented. Collecting socio-cultural background might have also been useful to explore social desirability.

Using the SUMD once more, Lysaker et al. (2011) found that in 65 patients with schizophrenia: poor insight into the mental disorder was associated with poor verbal memory; poor insight into the need for treatment was associated with poor verbal memory, visuomotor processing speed and executive function; and poor insight into the social consequences was associated with poor visuomotor processing speed, sustained attention and selective attention. This study also investigated the relationship between insight and metacognition (i.e. the ability to think about your own thoughts and feelings and the thoughts and feelings of others), where multiple regression analysis showed that metacognition was predictive of insight after controlling for cognitive function. Similarly to other studies, replication of this study with more diverse groups of participants would lead to greater generalisation of the findings, as this study recruited mainly male participants with clinically stable schizophrenia.

Gilleen, Greenwood and David (2011) were interested in the relationship between insight, cognitive insight (i.e. awareness of cognitive impairments and functioning) and cognitive function. Insight into having a mental disorder was associated with a measure of executive function that required speed of attention, sequencing and mental flexibility. Insight into mental illness and labelling symptoms as part of a mental disorder was associated with executive function, current intellectual function and memory. Insight into need for treatment was not associated with any measures of cognitive function, but was associated with cognitive insight. Using regression analysis, cognitive insight was found to predict 23% of the variance of insight into having a mental disorder. A model consisting of psychopathology, self-reflection and executive function performance accounted for 79.5% of the variance of insight into labelling symptoms as part of a mental disorder.

However, results should be interpreted with caution as the small sample size and lack of correction for multiple statistical testing might have led to weak or chance findings. Replication of the study would provide further evidence for the findings. In addition, the authors recommend exploring the impact of variation in level of insight across groups, as discrepancies were observed where some patients were under aware whilst others were over aware.

Using a between-groups design, Donohoe, Corvin and Robertson (2005) explored the relationship between insight and general cognitive measures in 30 outpatients with chronic schizophrenia compared to controls. Significant differences were observed between participants with poor insight, good insight and controls on all measures except reading and inhibition. Good performance on measures of working memory, verbal ability and episodic memory were strongly associated to good insight. In addition, logistic regression showed the WAIS vocabulary score explained 56% of variance in the poor insight group and 91% of variance in the good insight group. These findings led the authors to conclude that insight might be related to verbal generalised deficits and therefore recommend that taking more time when communicating with patients with schizophrenia might compensate for cognitive impairments. Limitations of this study include a relatively small sample size and lack of information on symptomatology which has been reported to impact on insight.

Varga, Magnusson, Flekkoy, David and Opjordsmoen (2007) also used a between-groups design to investigate the relationship between insight and cognitive function. Participants consisted of consecutively admitted outpatients diagnosed with schizophrenia or bipolar I disorder and matched controls. All patients were in remission and/or well stabilised. Both patient groups had significant

neuropsychological deficits compared to controls. In the schizophrenia group, lack of insight was associated with poor global level of functioning, heightened emotions and increased severity of illness. Degree of insight in the schizophrenia group was also associated with cognitive abilities including attention, executive functioning, psychomotor speed, verbal learning and intelligence. A strength of the study was the inclusion of a comparison group of matched controls to see how diagnosis can impact performance on measures of cognitive function. However, a limitation was not having another comparison group of patients with schizophrenia who were acutely unwell or who were not receiving medication.

Cuesta, Peralta, Zarzuela and Zandio (2006) carried out a longitudinal study where they recruited 75 inpatients with a diagnosis of schizophrenia to investigate the relationship between insight and cognitive function, attention, memory and executive function. Assessment took place at the point of discharge and then at follow-up which ranged between six months to two years post discharge once the patient was experiencing a phase of clinical stabilisation. Nineteen patients (25%) dropped out of the study. There were no differences between the patients who remained in the study versus those who dropped out, with the exception of educational background where patients who refused had a lower educational background than those who remained. After controlling for multiple comparisons, no associations between insight and cognitive function were found at baseline or follow-up. A strength of the study was that high inter-rater reliability was demonstrated within measures across authors and each researcher was blind to the measures of the other researchers. A limitation was that participants were followed-up from anywhere between six months to two years post discharge and the mean and standard deviation of this data is not available. Although it was noted that this

variation in follow-up was due to waiting for patients to stabilise, it would be beneficial to know how this period varied between patients and what factors related to clinical stabilisation.

Gharabawi et al. (2007), conducted post-hoc analysis on data collected from a one-year randomised controlled drug trial on 323 patients with schizophrenia. Measures of insight, symptomatology, cognitive function, general function and quality of life were administered at baseline and one-year follow-up. At baseline, insight was highly correlated with measures of symptom severity, moderately correlated with general function and weakly associated to cognitive function (reasoning, problem solving, attention, visual memory and declarative memory). At one-year follow-up, insight was associated with reduced symptomatology, longer adherence to anti-psychotic treatment and improved general functioning. Insight was not related to cognitive function at one-year follow-up. The longitudinal nature of this study allows the investigation of the relationship between insight and cognitive function over time. However, a limitation of the study was the use of a uni-dimensional measure of insight which could have reduced the likelihood of finding correlations between insight and cognitive function. In addition, as data was gathered post-hoc, the authors note they were unaware of whether participants undergoing the study received other forms of treatment within the year such as psychosocial treatments, and therefore could not ascertain whether this impacted the findings of their study.

Summary

This section included 17 studies that investigated the relationship between insight and cognitive function in patients with chronic schizophrenia. Thirteen

studies used a cross-sectional design, whilst two used a between-groups design and two used a longitudinal design.

Twelve out of the 13 cross-sectional design studies found a correlation between at least one dimension of insight and cognitive function such as IQ, memory, attention or executive function. The one study that did not find any association administered only one cognitive measure and a uni-dimensional measure of insight, whereas the other 12 studies used either: one cognitive measure and a multi-dimensional measure of insight; multiple cognitive measures and a uni-dimensional measure of insight; or multiple cognitive measures and a multi-dimensional measure of insight. However, it is important to note that even though several of the twelve studies that found a relationship between insight and cognitive function used the same measures of insight, contradictory results were found between these studies. For example, one study found a correlation between cognitive function and insight as measured by the PANSS, whereas another study did not.

Both of the studies using a between-groups design found a significant difference between cognitive function in participants with a diagnosis of schizophrenia and controls, where participants with schizophrenia had significant neuropsychological deficits compared to controls. The two studies also found an association between insight and cognitive function (i.e. working memory, verbal ability, memory, attention, intelligence and executive function).

In regards to the two longitudinal studies that investigated the relationship between cognitive function and insight, the findings are less supportive of the premise that the two variables are associated. One of the studies found no relationship between insight and cognitive function at baseline or follow-up. The other study found a weak association between insight and cognitive function

(reasoning, problem solving, attention, visual memory and declarative memory) at baseline, but not at follow-up.

In addition to exploring the relationship between insight and cognitive functioning, the majority of the studies investigated the relationship between insight and other capacities such as theory of mind, metacognition and cognitive insight. The impact of symptomatology and medication are also regularly examined. The use of these supplementary measures is suggestive that insight cannot solely be determined by cognitive function and that other factors should also be analysed to explore their influence upon insight.

When considering the relationship between insight and multiple variables in addition to cognitive function, 12 of the 17 studies carried out regression analysis to investigate the relative predictive powers of the multiple variables. Four of the studies found that cognitive function was not predictive of insight. Seven studies found that an aspect of cognitive function was predictive of insight, but that its predictive power was relatively weak. The remaining study found that cognitive function was initially predictive of insight, but became a non-significant predictor once metacognition was added into the analysis.

Variation between the studies findings is likely to be due to methodological differences, as mentioned in the two previous section summaries. In addition, differing methods of statistical analysis and levels of stringency in regards to significance levels appear to impact results, as some studies found associations between insight and cognitive function prior to statistical corrections and no associations following such corrections.

Discussion

Summary of findings

The debate as to whether neuropsychological dysfunction can explain poor insight in patients with a diagnosis of schizophrenia has been ongoing for many years. This is largely due to the impact of poor insight on prognosis (Giugiario et al., 2011; Lysaker et al., 2002; Rossi et al., 2000). The aim of this review was to contribute to the debate and summarise studies that investigated the relationship between neuropsychological dysfunction and insight that were published after recent reviews (Aleman et al., 2006; Shad et al., 2006). The findings of this review largely corroborate earlier reviews and are indicative that although neuropsychological dysfunction is somewhat related to poor insight, that this relationship is by no means definitive, as it appears other factors also contribute towards the understanding of insight. Teasing apart how and why specific cognitive domains are associated to or causally linked to insight is also difficult.

In regards to the relationship between insight and executive function, the studies included in this review generally suggest that better executive functioning is associated with higher levels of insight (Jovanovski et al., 2007b; Lysaker et al., 2006; Mysore et al., 2007; Raffard et al., 2009; Simon et al., 2006; Simon et al., 2009). However, this relationship is complex as different associations between insight and executive function were found and little explanation for why this is the case is available. Differing associations could have arisen due to the multi-dimensional nature of insight and executive function, as the results are indicative that some sub-dimensions of these constructs might relate to one another independently. In addition, differences in associations might be due to methodological limitations, as the studies included in the review administered various measures and recruited

different samples. The findings are also suggestive that executive function alone is not sufficient to understand insight. This is apparent when considering how the majority of studies gathered data on other variables such as symptomatology (Barrera et al., 2009; Simon et al., 2006; Simon et al., 2009) and medication (Raffard et al., 2009; Simon et al., 2006), in addition to executive function in order to consider how these factors also relate to insight. It is also notable that few studies performed regression analysis to examine whether executive function is predictive of insight and that of the studies that did perform regression analysis (Lysaker et al., 2006; Simon et al., 2006; Simon et al., 2009), executive function was found to be weakly predictive of insight, if at all.

The relationship between insight and general cognitive function appears equally complex as the relationship between insight and executive function, as different domains of cognitive function were tested across the studies including: intelligence (Cooke et al., 2007; Morgan et al., 2010; Stefanopoulou et al., 2009); vocabulary (Kurtz & Tolman, 2011); memory (Chen et al., 2005; Goodman et al., 2005; Lysaker et al., 2008; Lysaker et al., 2011); and attention (Ritsner & Blumenkrantz, 2007). Together, theses studies would suggest that greater cognitive function is associated with a higher degree of insight, but that this relationship is more substantive in patients with chronic or stable schizophrenia, rather than in patients with acute or recent-onset schizophrenia (Subotnik et al., 2005). However, few studies made direct comparisons between patients with different durations of illness and therefore the comparisons made across studies raise issues relating to the comparability of studies. Also, few studies examined the relationship between insight and cognitive function over time. The five studies that that did look at this trend (Cuesta et al., 2006; Gharabawi et al., 2007; McEvoy et al., 2006; Mintz et al.,

2004; Saeedi et al., 2007) found mixed results where: insight was found to be related to cognitive function in patients with chronic schizophrenia at one-year follow-up in one study, but not another; and that insight was found to be related to cognitive function in patients with recent-onset schizophrenia at one-year follow-up in one study, at baseline and two-year follow-up in another study, and at no point in another study.

In addition to exploring the relationship between cognitive function and insight, the majority of studies explored how other variables also related to insight. Other factors that related to insight included symptomatology (Mintz et al., 2004; Mutsatsa et al., 2006; Quee et al., 2011), medication (McEvoy et al., 2006), metacognition (Gilleen et al., 2011; Lysaker et al., 2011) and health attributions (Donohoe et al., 2004). Moreover, few studies explored the predictive ability of cognitive function upon insight in patients with schizophrenia. Of the studies that did employ regression analysis some found: cognitive function was predictive of insight (Cooke et al., 2007; Mutsatsa et al., 2006); cognitive function was a weak predictor of insight (Bora et al., 2007; Gilleen et al., 2011); cognitive function was not a significant predictor of insight when other variables were added to the analysis (Quee et al., 2011); and cognitive function was not predictive of insight at all (Cuesta et al., 2006; Donohoe et al., 2004; Gharabawi et al., 2007; Monteiro et al., 2008).

Overall, it appears that executive function and cognitive function combined are only weakly associated with level of insight and the majority of studies explored how other factors such as TOM, metacognition, cognitive insight, symptomatology and medication are also associated with insight. Determining causality from these studies is also problematic as not all the studies employed regression analysis to ascertain whether neuropsychological function was predictive of insight. The studies

that carried out regression analysis tended to find that although neuropsychological function was associated with insight, that it was a weak predictor of insight and that it often became a non-significant predictor when adding other variables into the analysis. It, therefore, seems likely based on these explorations that insight is a multi-dimensional construct that may be partially related to neuropsychological function, but that neuropsychological function needs to be analysed in conjunction with other variables to gain a holistic understanding of insight.

Limitations

It is evident from the studies included in this review that neuropsychological dysfunction cannot exclusively account for poor insight in patients with a diagnosis of schizophrenia. Therefore, this review is limited in gaining a holistic view of the factors that contribute to level of insight, as this review focuses on studies that primarily investigated neuropsychological function and insight. However, it is worth noting that many of the studies included in this review also examined other contributing factors such as symptomatology, metacognition and cognitive insight that were not focused on in this review. This suggests researchers are aware of the need to expand the scope of investigations when examining insight.

The studies included in this review also limit the conclusions that can be drawn, as there were commonly occurring methodological limitations across studies. Such limitations included: small samples of predominantly male participants; lack of comparison between patients of differing diagnoses, symptom severity, phase of illness, duration of illness, therapeutic history or control groups; lack of longitudinal studies; administering different measures of insight and neuropsychological function; and lack of statistical corrections when analysing the data.

Future directions

Several recommendations can be made following this review of studies that investigated the relationship between insight and neuropsychological function. Firstly, to overcome the problems associated with comparing performance on different measures of insight, clinicians and researchers need to establish 'gold standard' measures in order to gain consistency of measurement across studies. Secondly, it is evident that there is a need for studies to recruit a more heterogeneous sample group, as the majority of studies had relatively homogenous samples of male participants. A more heterogeneous sample would allow for greater generalisation to the wider population. Thirdly, it would be valuable for studies to utilise more between-groups designs. This is so that comparisons can be made between groups of participants such as exploring how differing diagnoses, symptom severity or duration of illness impacts the relationship between insight and neuropsychological function, because some studies found this relationship varied depending on some of these group differences. Fourthly, it would be beneficial for future research to gather longitudinal data to enhance understanding around how insight changes over time, what factors mediate or maintain insight and the effect of treatment on insight. Finally, studies would benefit from continuing to explore whether sub-dimensions of neuropsychological predict sub-dimensions of insight and to expand the scope of research to investigate how other abilities relate to insight, as it is apparent that neuropsychological function cannot completely account for level of insight. Researchers that do this will need to ensure their studies are sufficiently powered by recruiting large samples of participants and taking steps to reduce errors associated with multiple statistical comparisons.

Clinical implications

Clinical implications from this review can be considered, notwithstanding the limitations raised. Evidence would suggest that poor insight in individuals with a diagnosis of schizophrenia can have a substantial impact on outcomes due to problems associated with poor insight such as lack of compliance with medication. However, patients with schizophrenia are not a homogeneous group and poor insight cannot be assumed as levels of insight can vary dramatically between patients with recent onset versus chronic schizophrenia, or between patients with acute versus stable symptoms. These findings therefore highlight the importance of assessing insight in order to identify and treat patients who have poor insight and thus reduce the likelihood of poor outcomes.

The findings would suggest that tests of neuropsychological function could be used as a means to potentially identify patients with poor insight, as poor neuropsychological function (i.e. executive function, memory and attention) is somewhat associated with poor insight. However, the results suggest that neuropsychological dysfunction alone does not mean the patient will, without doubt, have poor insight. Therefore, in addition to considering neuropsychological function, clinicians should also assess other likely contributory factors of poor insight such as theory of mind, symptom severity, medication, cognitive insight and metacognition which have also been found to be associated with insight.

In addition to predicting insight by examining possible factors that could impair or promote insight, the results indicate that standardised measures of insight are available to clinicians. Multi-dimensional measures of insight could be particularly beneficial in informing treatment planning, as identifying particular sub-types of poor insight could be used to select aims and goals for an effective clinical

intervention. For example: if a patient has poor insight into attributing symptoms of their illness to a mental disorder a clinician might attempt to help the patient re-label his or her symptoms as pathological; or if a patient has poor insight into the need for treatment a clinician might provide psychoeducation around the costs and benefits of medication.

Overall, this review would suggest that understanding what factors can potentially impair insight in individuals with a diagnosis of schizophrenia is important. This is because poor insight has implications upon prognosis and understanding insight in greater detail can help clinicians design interventions to improve insight and improve prognosis as a result.

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Part 2: Empirical Paper

Schizophrenia and fitness to plead in court and stand trial

Abstract

Aim: In order for a defendant to receive a fair trial, he or she must be fit to plead and stand trial. This study aimed to investigate whether having a diagnosis of schizophrenia impaired fitness to plead, as measured by a novel ecologically valid fitness to plead (FTP) test.

Method: This study utilised a group comparison design to address whether participants with a diagnosis of schizophrenia (n = 26) would perform less well than healthy controls (n = 26) on the FTP test. Standardised tests of intellectual ability, memory, executive function and symptom severity were also administered.

Results: Participants with a diagnosis of schizophrenia performed less well on the FTP test than the healthy control group, despite having attended court more than the control group. Regression analysis showed that diagnostic group predicted FTP test total score, but that education level was also a significant predictor. In the group with a diagnosis of schizophrenia, verbal comprehension and auditory memory were associated with performance on the FTP test sub-scale that assessed understanding of plea options and court processes.

Conclusion: Having a diagnosis of schizophrenia can impair fitness to plead and therefore attention needs to be given to this vulnerable group of defendants.

Introduction

Fitness to plead and stand trial

In England and Wales, a central determinant of a fair trial is whether a defendant is mentally capable of pleading and standing trial. This right is upheld by the concept of fitness to plead which is determined on the basis of legal criteria established in mid-19th century case law (Regina v. Pritchard, 1836), known as the Pritchard criteria. The Pritchard criteria state that a defendant requires the ability to: 1) plead; 2) understand evidence; 3) understand the court proceedings; 4) instruct a lawyer; and 5) know that a juror can be challenged. Where these abilities are found to be lacking, a trial may not lawfully proceed (Regina v. Podola, 1960).

At present, decisions about fitness to plead are based upon psychiatric opinion which is derived from clinical interview and consideration of any corroborating information about a defendants functioning. Clinical psychologists may also assist if there are concerns over a defendant's cognitive abilities (Rogers, Blackwood, Farnham, Pickup & Watts, 2008). If a defendant is declared unfit to plead, the Criminal Procedure (Insanity and Unfitness to Plead) Act (1991) and the Domestic Violence, Crime and Victims Act (2004) state that the defendant can receive a hospital order (with or without a restriction order), a supervision and treatment order in the community or an absolute discharge.

Formal findings of unfitness to plead are rare in England and Wales (Mackay, Mitchell & Howe, 2007). This might be due to the subjective and often arbitrary process by which the Pritchard criteria are applied (Grubin, 1991). Firstly, the criteria are not defined by legislation and therefore have been expanded to include other capabilities such as whether a defendant understands the nature of the charge, the details of the evidence and the meaning and consequences of entering a plea

(James, Duffield, Blizard & Hamilton, 2001). Secondly, the frequency with which the criteria are applied varies (Kearns & Mackay, 2000). A defendant's ability to understand the course of the proceedings and ability to instruct a lawyer have been found to appear most frequently in psychiatric reports (Mackay, 2007; Mackay et al., 2007). Thirdly, the threshold for unfitness is considered to be too high and therefore only the most severely unwell defendants are determined as unfit to plead (Rogers et al., 2008). Fourthly, fitness to plead might not be a unitary construct and, therefore, making definitive decisions might be difficult, as a defendant might be able to enter a plea, but not have the capacity to participate in the trial due to its demanding nature (Whittemore, Ogloff & Roesch, 1997).

Difficulties associated with assessing fitness to plead causes concern. Inaccurate identification can delay legal proceedings and consume resources in both criminal justice and healthcare settings, as evidence suggests that a large majority of defendants for whom the court has ordered competency evaluations are actually fit to plead (Zapf & Viljoen, 2003). Moreover, inaccurate identification might result in a defendant being declared fit to plead when they are, in fact, unfit to plead. This might lead to an unfair trial and potentially incorrect disposal following trial. For example, a defendant with a mental disorder might receive a prison sentence rather than a hospital order. Furthermore, relying upon the fact that a defendant has been involved in previous trials does not guarantee that the individual understands court proceedings (McLeod, Philpin, Sweeting, Joyce & Evans, 2010).

Due to concerns regarding the Pritchard criteria, the London Law Commission (2010) conducted a review of the existing law and recommended that the criteria be replaced with a new legal test which assesses whether a defendant has the decision making capacity for trial. Attempts have also been made to standardise

the assessment of fitness to plead. Nineteen standardised measures are currently available (Rogers et al., 2008). However, the majority of these measures were developed in the United States and refer to the concept of adjudicative competency and not fitness to plead as assessed by the Pritchard criteria. Akinkunmi (2002) adapted the MacArthur Competence Assessment Tool – Criminal Adjudication (MacCAT-CA: Hoge et al., 1999) to measure fitness to plead in England and Wales. Nevertheless, the measure is not much used in routine clinical practice. Moreover, despite the availability of standardised measures in the United States, Borum and Grisso (1995) found that 80% of forensic psychiatrists rarely or never use standardised measures when assessing adjudicative competency.

Schizophrenia and the criminal justice system

A substantial proportion of defendants who are unfit to plead are reported to be experiencing psychotic symptoms (James et al., 2001). Indeed, a meta-analysis of 30 studies (Nicholson & Kugler, 1991) found that having a psychotic diagnosis and severe symptomatology were some of the strongest predictors of unfitness to plead. A more recent meta-analysis of 68 studies (Pirelli, Gottdiener & Zapf, 2011) also found that defendants diagnosed with a psychotic disorder were approximately eight times more likely to be found unfit to plead than defendants without a psychotic disorder. Other studies have similarly found that having a psychotic disorder increases the risk of impairment (Cooper & Zapf, 2003; Rutledge, Kennedy, O'Neill & Kennedy, 2008; Viljoen, Roesch & Zapf, 2002; Viljoen, Zapf & Roesch, 2004).

It is unsurprising that individuals with a psychotic disorder (e.g. schizophrenia) are likely to be declared unfit to plead as the disorder is associated with disordered thinking (Spitzer, 1997), reasoning biases (Garety et al., 2005),

cognitive impairments (O'Carroll, 2000; Sponheim et al., 2010) and social functioning deficits (Couture, Penn & Roberts, 2006), all of which could impact on whether a defendant is capable of participating in a trial (Crown Prosecution Service, 2010).

However, the way in which schizophrenia and its associated deficits impact upon fitness to plead has only been more recently investigated. Hoge et al. (1997) reported that fitness to plead is associated with impaired cognitive function in participants with a diagnosis of schizophrenia. Nestor, Daggett, Haycock and Price (1999) found that defendants declared as unfit to plead scored significantly lower on measures of IQ, attention, and verbal and episodic memory. Viljoen et al. (2002) examined the relationship between fitness to plead and psychopathology in defendants in a forensic inpatient unit in Canada. The authors found that among defendants with psychotic disorders, IQ was a significant predictor of understanding the nature and object of court proceedings. More recently, Ryba and Zapf (2011) evaluated the influence of cognitive function and psychiatric symptoms on fitness to plead in forensic inpatients in the United States. Their findings suggest that cognitive function (i.e. executive function, attention, memory and processing speed) accounted for more variance in the scores of three fitness to plead related abilities (i.e. understanding, reasoning and appreciation) than did psychiatric symptoms (i.e. psychoticism, hostility, depression and withdrawal). However, there was an additive effect when these groups of variables were both considered.

A novel standardised assessment of fitness to plead and stand trial

As the Pritchard criteria and their haphazard application appeared to be failing to protect the best interests of mentally disordered or cognitively impaired

defendants, a research group consisting of psychiatrists, psychologists and legal practitioners was convened in 2006. The research group aimed to develop an ecologically valid, structured, standardised measure of fitness to plead (FTP), which could be used by clinicians, in conjunction with psychiatric opinion, to improve the fairness of the administration of justice in these vulnerable groups and to inform practical improvements in the handling of their cases.

The FTP test was developed in stages. Firstly, the research group carried out a systematic review on the construct of fitness to plead (Rogers et al., 2008) and a qualitative study on the views of experienced Members of the Queen's Counsel (QC) on the utility and validity of the Pritchard criteria (Rogers, Blackwood, Farnham, Pickup & Watts, 2009). To ensure face validity and content validity of the FTP test, the QCs supported the research group in developing a script and filmed representation of a Crown Court proceeding typical of those in England and Wales, and questions pertinent to assessing fitness to plead. The questions were informed by both the Pritchard criteria and consensus views elicited from the qualitative study. Thirdly, the FTP test was piloted on a sample of healthy control participants (n = 50) to assess the psychometric properties of the test. Unreliable items that were endorsed by nearly everyone (ceiling effects) or by no one (floor effects) were discarded. Fourthly, the amended version of the FTP test was administered on a stratified sample of healthy control participants (n = 115) in order to develop performance norms. This sample consisted of: approximately equal numbers of participants in three ability bands (i.e. scores below 89 = 'below average,' scores between 90-109 = 'average,' and scores above 110 = 'above average') as determined by Wechsler Adult Intelligent Scale – Fourth Edition (WAIS-IV); approximately equal numbers of men and women in each of the three ability bands; and approximately equal

numbers of participants from four age groups in each of the three ability bands (i.e. aged 16-31, 32-47, 48-63 and 64-79). This scale had a high level of internal consistency (Cronbach's alpha = .807), which suggests the items are measuring an underlying construct.

Following the development of the FTP test and administering the test on a stratified sample of healthy control participants, the research group aimed to examine how groups of mentally disordered and learning disabled participants performed on the FTP test. This was to provide empirical data on a 'minimum' level of functioning required to satisfactorily meet the demands of engaging with a straightforward trial process. Comparing differences between groups with known group differences would also provide discriminant validity (i.e. whether the test has the ability to distinguish between groups that are known to be different). The FTP test had been piloted on participants with learning disability (n = 19), but not on any participants with metal disorders at the time of the present study. The preliminary results suggest that participants with learning disability perform significantly worse on the FTP test than healthy control participants.

In addition to comparing how different groups perform on the FTP test, the research group aimed to investigate the relationship between performance on the FTP test and domains of cognitive function and specific psychiatric symptoms. At present, the assessment of fitness to plead relies upon psychiatric opinion as to how and to what extent these aspects of psychopathology might interfere with performance. However, there is little empirical evidence to indicate precisely how cognitive function or psychiatric symptoms impacts upon actual court performance. Investigating these relationships would provide convergent validity (i.e. whether a particular measure of a construct is similar to another measure of a theoretically

similar construct), as the current research available suggests that impaired cognitive function (Ryba and Zapf, 2011) and increased psychiatric symptom severity (Nicholson & Kugler, 1991) is associated with unfitness to plead.

The present study

The present study formed part of a larger project by the research group mentioned earlier, which developed a novel standardised FTP test (Blackwood, Peay & Watts, 2012). This study focused on: how having a diagnosis of schizophrenia would impact performance on the FTP test; and how performance on the FTP test related to cognitive function (i.e. intellectual ability, memory and executive function) and psychiatric symptoms. This study also utilised data collected by the research group on healthy control participants (n = 115) to investigate whether the most recent version of the FTP test was a uni-dimensional or multi-dimensional test, and to investigate how participants with a diagnosis of schizophrenia performed on the FTP test compared to the healthy control group.

Aims

This study aimed to investigate the relationship between having a diagnosis of schizophrenia and performance on a novel FTP test. The first research question was: is the FTP test a uni-dimensional or multi-dimensional test? This was because it was not known whether the FTP test was measuring a unitary or multi-dimensional construct. This also allowed for the investigation into the relationship between particular sub-dimensions of the FTP test and psychopathology. The second research question was: would participants with a diagnosis of schizophrenia perform less well on the FTP test than healthy controls? This was because psychopathology associated

with a diagnosis of schizophrenia is likely to compromise various abilities thought to underpin the task of pleading and standing trial. The third research question was: did performance on the FTP test correlate with intellectual ability, memory, executive function and psychiatric symptoms? This was because fitness to plead is likely to require: an understanding of complex language skills; verbal and non-verbal reasoning abilities; capacity to retain information in memory; and the ability to organise information and formulate a response. In addition, symptoms of schizophrenia might interfere with and disrupt abilities that underpin fitness to plead.

Method

Design overview

Factor analysis was used to address the first research question as to whether the FTP test is a uni-dimensional or multi-dimensional test. A group comparison design was used to address the second research question as to whether participants with a diagnosis of schizophrenia would perform less well than healthy controls on the FTP test. A 'clinical group' (i.e. participants with a diagnosis of schizophrenia) was compared to a 'non-clinical group' (i.e. healthy controls). The dependent variable was the total score and sub-scale scores on the FTP test. A correlational design was used to address the third research question regarding the relationship between fitness to plead, cognitive function and psychiatric symptoms. The dependent variable was the total score and sub-scale scores on the FTP test. The independent variables were the performance on measures of intellectual ability, memory, executive function and psychiatric symptoms.

Power analysis

Power analysis was informed by a study by Akinkunmi (2002) which used the MacArthur Competence Assessment Tool – Fitness to Plead (MacCAT-FP) to compare fitness to plead in two groups of prisoners who had been charged with an offence and were awaiting trial. A large effect size (d = 1.59) was observed in the study. Power calculations were conducted using the "G*Power 3" computer programme (Faul, Erdfelder, Lang & Buchner, 2007) specifying two groups of equal sizes, a two-tailed test, a large effect size (d = 0.8), desired power at 80% and alpha at 5%. The sample size required based on this calculation was 52 individuals with 26 individuals per group.

Ethical approval

Ethical approval for the clinical sample (n = 26) was granted by the National Research Ethics Service (NRES) Committee London – Camberwell St Giles (Appendix 1). Ethical approval for the healthy control group (n = 115) was obtained by the larger research group, and granted by the Psychiatry, Nursing and Midwifery Research Ethics Subcommittee at Kings College London (Appendix 2).

Inclusion and exclusion criteria

Participants in both diagnostic groups were eligible if they: 1) were aged 18-65; 2) were fluent in English; and 3) could provide informed consent. Participants in the clinical group were also required to have a diagnosis of schizophrenia or a related disorder based on the Diagnostic and Statistical Manual of Mental Disorders – Version 4 (DSM-IV: 1994) or the International Classification of Diseases – Version 10 (ICD-10: 1992).

Participants in both diagnostic groups were excluded if they: 1) had severely impaired hearing or vision; 2) had a diagnosis of learning disability; and 3) had a history of neurological or psychiatric disease (i.e. major mental illness, head injury, epilepsy or substance abuse in the last month), not including a diagnosis of schizophrenia in the clinical group.

Recruitment procedure

Clinical group

Participants in the clinical group were recruited via convenience sampling from a medium secure unit for mentally disordered offenders. Participants that met the inclusion criteria were identified by the consultant psychiatrist and/or clinical psychologist on the ward. Once identified, the researcher approached the potential participant to verbally describe the study, provide him with an information sheet (Appendix 3) and allow him to ask questions. If the participant expressed an interest in the study, a date and time were arranged for a testing session approximately a week later. This was done to provide the participant with adequate time to decide if he wanted to take part and to allow him to discuss the study with someone he knew well. At the start of the testing session, the researcher reminded the participant about the study using the information sheet and clarified any questions. Informed consent (Appendix 4) was also gathered at this time. The testing session took approximately three hours. Due to time restrictions in which testing could be carried out on the ward, the majority of participants underwent two 1½ hour testing sessions approximately a week apart. Breaks within the 1½ hour testing sessions were also common due to participant request. Participants were paid £25 for taking part.

Of the original pool of 57 participants who met the inclusion criteria, 12 were unable to be contacted (Figure 1). Of the 45 participants who could be contacted, 27 participants agreed to participate and 16 declined. Of the 27 participants who agreed to take part, one participant dropped out of the study and had to be excluded from the analysis due to lack of a complete data set. It is not known if the participants, who were unable to be contacted, declined to take part or dropped out of the study differed from the participants who completed the study because consent was not gained to access these participants' demographic details.

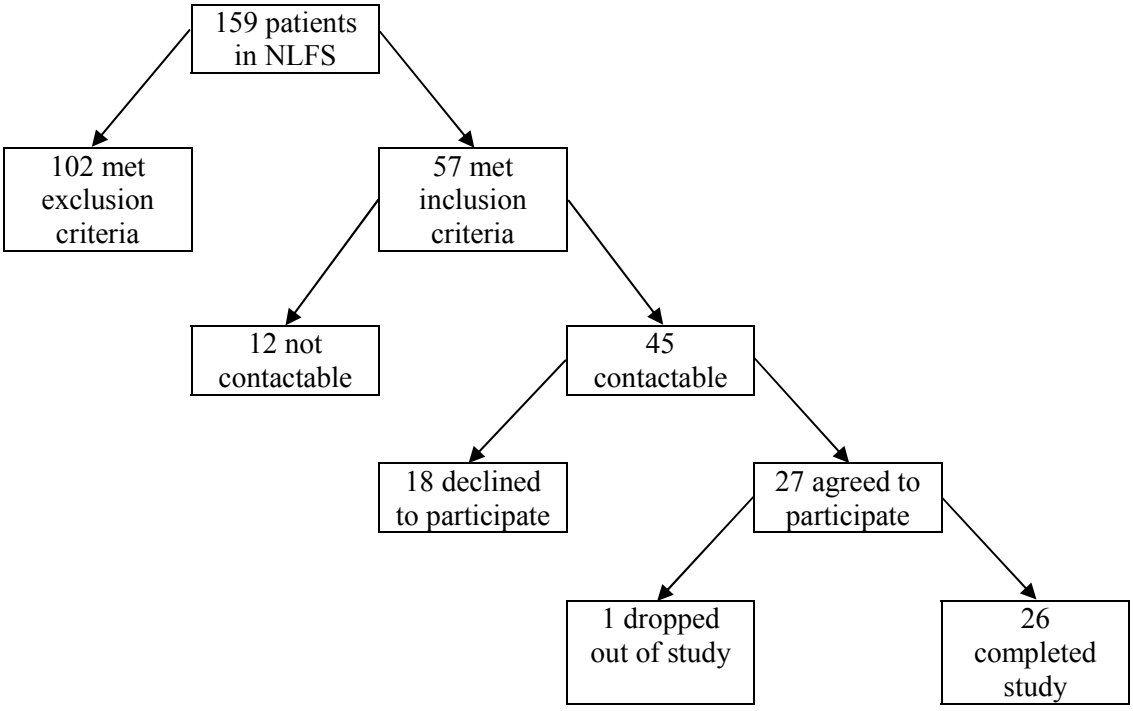

Figure 1. Flow diagram of the selection process for the clinical group

Non-clinical group

Participants in the non-clinical group were selected from Blackwood et al.'s (2012) healthy control database (n = 115). This sample was recruited by a researcher from the Institute of Psychiatry who was part of Blackwood et al.'s (2012) research

team. Following self-selection via advertisement, the researcher telephoned the potential participant to discuss the study. If the participant agreed to take part, a date and time for the testing session was arranged. A different information sheet (Appendix 5) and consent form (Appendix 6) were given to participants in this group. Participants were paid £7.50 an hour and reimbursed for travel.

Of the 51 male participants in the database, 38 participants had complete data sets (Figure 2). Twenty-six participants were selected from the 38 participants by removing the 12 participants with the highest education level. This was because participants in the non-clinical group had significantly higher education levels than the clinical group.

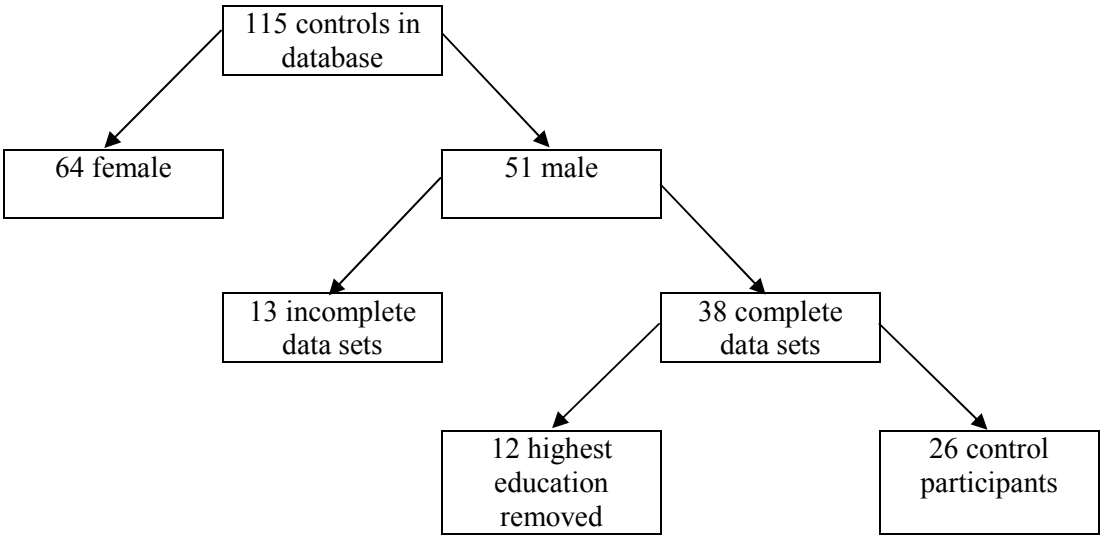

Figure 2. Flow diagram of the selection process for the non-clinical group

Measures

Demographic data and information about previous attendance at court

Demographic data (i.e. age, ethnicity and education level) was collected via self-report. In the clinical group, a participant's previous court attendance was established by viewing court reports following informed consent. In the non-clinical

group, a participant's previous court attendance was collected via self-report and confirmed via the Police National Computer following informed consent.

Fitness to plead measure

Fitness to plead was assessed using Blackwood et al.'s (2012) novel measure. The fitness to plead (FTP) test is an ecologically valid fifteen minute scripted film depicting a Crown Court proceeding typical of those in England and Wales. The film is recorded from the perspective of the defendant using actors in a hired courtroom. The excerpt is based on realistic criminal trial material scripted through consultations with various experts including solicitors, criminal barristers and Queen's Counsel. The dialogue involves typical exchanges between a defendant and their defence counsel, followed by a witness examination from a prosecution barrister and then a cross-examination from a defence barrister. The dialogue was designed to be sufficiently detailed in order to minimise ceiling and floor effects.

Prior to beginning the test, participants were instructed to imagine that they were a defendant on trial charged with unlawful wounding and given other basic information about the test. They were then asked a series of questions to check their understanding of the instructions, failing which, testing would be terminated. During the film participants viewed a series of excerpts relating to the charge 'against them,' key prosecution evidence, a brief cross-examination and legal advice from their defence barrister. At designated intervals, the film was stopped and participants were asked questions from a standardised interview schedule relating to what they had seen and understood. Responses were written down verbatim during testing and scored immediately afterwards using a standardised scoring guide which allowed for a total score (0-79) and malingering score (0-4) to be generated. A high

total score was indicative of better performance and a high malingering score was indicative of no evidence of malingering.

Intellectual ability

Intellectual ability was assessed using the Wechsler Adult Intelligence Scale – Fourth Edition (WAIS-IV: Wechsler, 2008). The WAIS-IV is an internationally recognised assessment of general intellectual functioning for adults aged 16-90 years. The test comprises 12 subtests which are used to calculate a Full Scale Intelligence Quotient (FSIQ), as well as four indices: the Verbal Comprehension Index (VCI); the Perceptual Reasoning Index (PRI); the Working Memory Index (WMI); and the Processing Speed Index (PSI).

Memory

Memory was assessed using the Wechsler Memory Scale – Fourth Edition (WMS-IV: Wechsler, 2009). The WMS-IV is an internationally recognised test of memory for adults aged 16-69 years. Immediate and delayed auditory memory was assessed using the Logical Memory and Verbal Paired Associates sub-tests of the WAIS-IV which were used to generate the Auditory Memory Index (AMI).

Executive functioning

Executive function was assessed using the Hayling and Brixton tests (Burgess & Shallice, 1997). The Hayling and Brixton tests assess executive function in adults aged 18-80 years. The Hayling Sentence Completion Test (i.e. the Hayling) is divided into two sections that measure: 1) ability to initiate simple verbal responses quickly; and 2) ability to inhibit more obvious answers. A total scaled score is

derived from the two sections by calculating speed of response and category errors. The Brixton Spatial Anticipation Test (i.e. the Brixton) is a visuospatial sequencing task with rule changes that measures mental flexibility, including the ability to follow and detect rules and shift responses accordingly. A scaled score for the Brixton is derived from the total number of errors made. Both the Hayling and Brixton tests scaled scores range from 1-10, where a score of 1 is considered impaired and a score of 10 is very superior. A score of 6 would be considered in the average range.

Psychiatric symptoms

Psychiatric symptoms were assessed using the British Psychiatric Rating Scale (BPRS: Lukoff et al., 1986) which was completed by the participant's consultant psychiatrist or clinical psychologist. The BPRS is a 24-item instrument designed to assess a variety of psychiatric symptoms (e.g. anxiety, depression, grandiosity, hallucinations, unusual thought content and blunted affect) through observation and interview and has been shown to be a reliable tool for assessing a broad range of symptoms (Hedlund & Viewig, 1980). Each item is rated on a seven-point likert scale that ranges from 'not present' to 'extremely severe.' Ratings of two to three indicate a non-pathological intensity of a symptom, whereas ratings of four to seven indicate a pathological intensity of a symptom. Total score ranges from 24 to 168.

Results

Participants

Twenty-six male participants, recruited from a medium secure unit for mentally disordered offenders, were included in the clinical group (Table 1). Twenty-four of the participants had a diagnosis of paranoid schizophrenia and two had a diagnosis of schizoaffective disorder. Age ranged between 22 and 58 years (M = 37.88, SD = 10.07). Age of illness onset ranged between 16 to 36 years (M = 22.38, SD = 5.97). Illness duration ranged between 2 to 33 years (M = 15.50, SD = 9.37). Score on the British Psychiatric Rating Scale (BPRS: Lukoff, Liberman & Nuechterlein, 1986) ranged between 29 and 87 (M = 49.38, SD = 15.79) which indicated that participants were experiencing non-pathological to mild pathological intensity of symptoms. All the participants were taking anti-psychotic medication.

The non-clinical group included 26 male participants that were selected from Blackwood et al.'s (2012) participant database (n = 115) and matched in age to participants in the clinical group (Table 1). Age ranged between 22 and 59 years (M = 37.77, SD = 12.69).

There was no difference between the clinical group and non-clinical group in regards to age, $t(50) = -.036$, $p = .971$, $d = .20$. There was a difference between the diagnostics group in regards to ethnicity (Fisher's exact test = 11.91, $p = .002$), education level (Fisher's exact test = 28.05, $p < .001$) and previous attendance at court (Fisher's exact test = 19.17, $p < .001$).

Table 1

Demographic information for the clinical (n = 26) and non-clinical group (n = 26)

Measures	Clinical group		Non-clinical group	
Age *mean* (SD)	37.88	(10.07)	37.77	(12.69)
Ethnicity *n* (%):				
White	9	(34.6)	18	(69.2)
Black	16	(61.5)	4	(15.4)
Asian	1	(3.8)	4	(15.4)
Education level *n* (%):				
No qualifications	12	(46.2)	2	(7.7)
GCSE	9	(34.6)	2	(7.7)
A-Level	1	(3.8)	2	(7.7)
Certificates	2	(7.7)	1	(3.8)
Diploma	1	(3.8)	3	(11.5)
Degree	1	(3.8)	16	(61.5)
Previous attendance at court *n* (%):				
Never	0	(0.0)	11	(42.3)
1-3 times	18	(69.2)	10	(38.5)
4-6 times	7	(26.9)	2	(7.7)
7+ times	1	(3.8)	1	(3.8)

Data preparation

The data were examined for normal distribution using the IBM Statistical Package for the Social Sciences – Version 19 (IBM SPSS Inc, 2010). This consisted of visually inspecting histograms and testing for outliers, skewness and kurtosis by converting scores to *z*-scores. No outliers were found and tests of kurtosis were not significant. However, some of the variables were skewed. In the clinical group, the non-normally distributed variables were: the WMS-IV Auditory Memory Index,

$D(26) = .172$, $p = .047$; the Hayling, $D(26) = .203$, $p = .007$; and the Brixton, $D(26) = .258$, $p < .001$). In the non-clinical group, the non-normally distributed variables were: the Hayling, $D(26) = .239$, $p = .001$; and the Brixton, $D(26) = .244$, $p < .001$. Non-normally distributed variables were not transformed because no single transformation was able to consistently transform all the non-normal variables into normally distributed variables. Variables that did not meet the assumptions of normality were analysed using non-parametric tests.

Following tests for normal distribution, the Levene's test for equality of variances was performed on the normally distributed variables. All the Levene's tests were not significant, which indicated that the spread of scores was roughly equal in the two groups. The FTP test malingering score was not included in this study's data analysis because ceiling effects were observed. In addition, the utility of the score is yet to be determined.

Comparison of intellectual ability, memory and executive function between the clinical and non-clinical group

Independent samples t-test or Mann-Whitney tests were administered to compare performance on the WAIS-IV, WMS-IV, Hayling and Brixton between the diagnostic groups (Table 2). The non-clinical group performed better than the clinical group on: the WAIS-IV Verbal Comprehension Index, $t(51) = 3.84$, $p < .001$, $d = 1.06$; the WAIS-IV Working Memory Index, $t(51) = 4.836$, $p < .001$, $d = 1.34$; the WAIS-IV Processing Speed Index, $t(51) = 4.854$, $p < .001$, $d = 1.35$; the WAIS-IV Full Scale IQ, $t(51) = 4.673$, $p < .001$, $d = 1.30$; and the WMS-IV Auditory Memory Index, $U = 229.00$, $p = .046$, $r = .28$. No difference in performance was observed between the diagnostic groups on: the WAIS-IV Perceptual Reasoning

Index, $t(51) = .557$, $p = .580$, $d = .15$; the Hayling, $U = 346.00$, $p = .880$, $r = .02$; and the Brixton, $U = 268.00$, $p = .328$, $r = –.14$.

Table 2

Comparative scores on the WAIS, WMS, Hayling and Brixton for the clinical (n = 26) and non-clinical group (n = 26)

	Clinical group		Non-clinical group			
Measures	Mean	(SD)	Mean	(SD)	Statistic	*p*
WAIS:						
VCI	90.46	(14.05)	104.96	(13.17)	$t(51) = 3.84$	>.001
PRI	91.54	(11.78)	94.42	(23.63)	$t(51) = .557$	.580
WMI	86.00	(13.25)	106.19	(16.67)	$t(51) = 4.836$	>.001
PSI	79.88	(11.06)	94.35	(10.42)	$t(51) = 4.854$	>.001
FSIQ	85.46	(12.09)	101.58	(12.77)	$t(51) = 4.673$	>.001
WMS AMI	84.50	(19.14)	95.08	(12.71)	$U = 229.00$	.046
Hayling	5.12	(1.66)	5.08	(1.44)	$U = 346.00$	.880
Brixton	5.69	(1.87)	6.31	(1.95)	$U = 268.00$	.328

Note. AMI, Auditory Memory Index; FSIQ, Full Scale Intelligence Quotient; PRI, Perceptual Reasoning Index; PSI, Processing Speed Index; VCI, Verbal Comprehension Index; WAIS, Wechsler Adult Intelligence Scale – Fourth Edition; WMI, Working Memory Index; WMS, Wechsler Memory Scale – Fourth Edition

Factor analysis of the fitness to plead test

Factor analysis was conducted on Blackwood et al.'s (2012) FTP test, in order to ascertain whether the FTP test had a uni-dimensional scale in which all the questions were measuring the same underlying trait, or a multi-dimensional scale in which the questions were measuring related, but distinct underlying traits. The healthy control sample ($n = 115$) was large enough (Kaiser-Meyer-Olkin = .677) and

there were sufficiently large enough correlations between questions for factor analysis (Bartlett's test of sphericity, $X^2(406) = 982.75$, $p < .001$).

Factor analysis was performed using oblique rotation (direct oblimin), as there were strong grounds to expect that the factors might be related as all the items aimed to assess the construct of fitness to plead. However, factor analysis using orthogonal rotation (varimax), where is it assumed that the factors are independent, was also conducted to investigate any potential differences between the analyses. There was no difference in the factors obtained from either analysis and therefore the results from the original oblique rotation were used.

An initial analysis was run to obtain eigenvalues for each component in the data. Ten components had eigenvalues over Kaiser's criterion of 1.00 and in combination explained 65.40% of the variance. The scree plot was slightly ambiguous and showed inflexions that would justify retaining three, four or five components from the 10, as components six to 10 did not explain a great deal of the variance. Consequently, factor analyses with three, four and five components were run and compared. Questions were assigned to a component if the factor loading was above .35. If the question loaded onto more than one component, then the question was assigned to the component with the larger factor loading.

Four components were retained in the analysis, based upon examination of the questions and discussion with the research team in regards to how the questions clustered onto the components in a conceptually meaningful way (Table 3).

Table 3

Factor analysis results for the FTP test (n = 115)

	Factor 1: Understanding plea options and court processes	Factor 2: Ability to follow proceedings and predict potential outcomes	Factor 3: Understanding the consequences of being found guilty	Factor 4: Understanding the consequences of being found not guilty
Question 1	.673*	–.002	–.063	–.215
Question 2	.659*	–.120	–.025	–.044
Question 3	.525*	.241	.000	.171
Question 4	.500*	.062	.185	–.078
Question 5	.453*	–.070	.097	.021
Question 6	.390*	–.266	.285	–.183
Question 7	.668*	.188	.036	.224
Question 8	.187	.534*	–.225	.176
Question 9	–.162	–.017	–.110	.522*
Question 10	.629*	.425*	–.042	.121
Question 11	.442*	.261	.114	.243
Question 12	.368*	.004	.066	.182
Question 13	.287	.015	.230	.016
Question 14	.259	–.051	.234	–.049
Question 15	.530*	–.190	–.021	–.181
Question 16	.453*	.000	–.062	.193
Question 17	.544*	.032	.104	–.199
Question 18	–.334	.551*	.169	–.098
Question 19	.487*	.379*	–.033	–.360*
Question 20	–.366*	.260	.626*	–.084
Question 21	.000	.056	.640*	.024
Question 22	–.067	.786*	.091	–-.087
Question 23	.149	.528*	.174	–.134
Question 24	–.043	–.011	.511*	.289
Question 25	.340	.014	.413*	.032
Question 26	.051	–.042	.006	.683*
Question 27	.303	–.054	.397*	.666*
Question 28	.210	.006	.593*	–.085
Question 29	.297	–.041	.540*	–.188

Note. * = Factor loadings over .35

Factor 1 included 14 questions and appeared to represent an understanding of plea options and court processes, such as: understanding the charges; understanding the meaning of entering a plea; understanding the meaning and consequences of giving evidence; and understanding the roles of court personnel (i.e. judge, jury, defence barrister, prosecuting barrister and defendant).

Factor 2 included four questions and appeared to represent an ability to follow proceedings and predict potential outcomes, such as: predicting how well a case is progressing; and the likelihood of being found guilty.

Factor 3 included six questions and appeared to represent an understanding of the consequences of being found guilty, such as: the impact upon daily life; potential sentencing; and whether you are being treated fairly.

Factor 4 included three questions and appeared to represent an understanding of the consequences of being found not guilty, such as: the impact upon daily life.

In the clinical group, Factor 2 ($D(26) = .208$, $p = .005$) and Factor 4 ($D(26) = .196$, $p = .012$) were non-normally distributed. In the non-clinical group, Factor 2 ($D(26) = .244$, $p < .001$) and Factor 3 ($D(26) = .179$, $p = .032$) were non-normally distributed.

Comparison of fitness to plead between the clinical and non-clinical group

As predicted, total scores on the FTP test were higher for the non-clinical group ($M = 52.38$, $SD = 4.96$) than for the clinical group ($M = 42.85$, $SD = 6.99$), $t(50) = 5.67$, $p < .001$, $d = 1.57$ (Table 4).

Table 4

FTP test scores in the clinical (n = 26) and non-clinical group (n = 26)

Measures	Clinical group		Non-clinical group		Statistic	*p*
	Mean	(SD)	Mean	(SD)		
Total score:	42.85	(6.99)	52.38	(4.96)	$t(50) = 5.67$	<.001
Factor 1	1.10	(0.34)	1.59	(0.24)	$t(50) = 5.86$	<.001
Factor 2	2.69	(0.42)	2.79	(0.39)	$U = 292.50$	.393
Factor 3	1.67	(0.49)	1.96	(0.28)	$U = 189.50$	.006
Factor 4	1.64	(0.48)	1.68	(0.68)	$U = 332.50$	.919

In regards to the FTP test sub-scales obtained from factor analysis, the non-clinical group scored higher than the clinical group on: Factor 1 (understanding plea options and court processes), $t(50) = 5.86$, $p < .001$, $d = 1.63$; and Factor 3 (understanding the consequences of being found guilty), $U = 189.50$, $p = .006$, $r = -0.38$.

Regression analysis was also carried out to see if diagnostic group was predictive of total score on the FTP test. Diagnostic group explained a significant proportion of variance in the total score when entered into the regression model alone, $R^2 = .392$, $F(1, 50) = 32.184$, $p < .001$. However, the two diagnostic groups differed significantly in regards to several demographic variables (i.e. ethnicity, education level and previous attendance at court) and cognitive variables (i.e. intellectual ability and memory). Therefore, ethnicity, education level, previous attendance at court, full scale IQ (as a representative of intellectual ability) and memory were entered into the regression analysis to see whether these variables were confounding variables. The three demographic variables needed to be collapsed into two categories per group in order to be entered into the regression analysis: white vs.

non-white; low vs. high education level; and attended court vs. never attended court. When all the possible confounding variables were entered into the regression analysis, the new model predicted a greater proportion of the total score, R^2 = .585, $F(5, 46) = 10.371$, $p < .001$. Diagnostic group continued to explain a significant proportion of the total score, but less so than before, $t(50) = –2.446$, $p = .018$. Education level was also predictive of total score, $t(50) = 2.083$, $p = .043$. Ethnicity ($t(50) = –1.420$, $p = .163$), previous court attendance ($t(50) = 1.607$, $p = .115$), full scale IQ ($t(50) = .656$, $p = .515$) and memory ($t(50) = 1.907$, $p = .055$) were not predictive of the total score on the FTP test.

The relationship between fitness to plead and intellectual ability, memory, executive function and psychiatric symptoms in the clinical and non-clinical group

Pearson correlation coefficients and Spearman's correlation coefficients were conducted to examine whether the FTP test scores were associated with various variables in the clinical and non-clinical group. Bonferroni correction (i.e. alpha divided by number of tests) was used to reduce the risk of type I errors and a more stringent alpha level was used to interpret results ($p = .005$).

In the clinical group, associations were observed between: the FTP test total score and WMS-IV Auditory Memory Index, $r_s(26) = .552$, $p = .003$; Factor 1 and WAIS Verbal Comprehension Index, $r(26) = .598$, $p = .001$; Factor 1 and WAIS Full Scale IQ, $r(26) = .597$, $p = .001$; Factor 1 and WMS-IV Auditory Memory Index, $r_s(26) = .665$, $p < .001$; and Factor 1 and the Brixton, $r_s(26) = .561$, $p = .003$ (Table 5). In the non-clinical group, no associations were observed between the FTP test scores and intellectual ability, memory or executive function (Table 6).

Table 5

Correlations between FTP and the WAIS, WMS, Hayling, Brixton and BPRS for the clinical group (n = 26)

	FTP test total score	Factor 1: Understanding plea options and court processes	Factor 2: Ability to follow proceedings and predict potential outcomes	Factor 3: Understanding the consequences of being found guilty	Factor 4: Understanding the consequences of being found not guilty
WAIS:					
VCI	$r = .490, p = .011$	$r = .598, p = .001$*	$r_s = .335, p = .094$	$r = .149, p = .467$	$r_s = –.325, p = .105$
PRI	$r = .326, p = .104$	$r = .506, p = .008$	$r_s = .045, p = .828$	$r = –.088, p = .670$	$r_s = .017, p = .936$
WMI	$r = .381, p = .055$	$r = .423, p = .028$	$r_s = .276, p = .172$	$r = .125, p = .542$	$r_s = –.194, p = .342$
PSI	$r = .233, p = .253$	$r = .430, p = .028$	$r_s = .208, p = .308$	$r = –.153, p = .457$	$r_s = –.099, p = .631$
FSIQ	$r = .471, p = .015$	$r = .597, p = .001$*	$r_s = .310, p = .123$	$r = .071, p = .731$	$r_s = –.253, p = .213$
WMS AMI	$r_s = .552, p = .003$*	$r_s = .665, p < .001$*	$r_s = .348, p = .082$	$r_s = .063, p = .759$	$r_s = –.221, p = .277$
Hayling	$r_s = –.218, p = .285$	$r_s = .085, p = .679$	$r_s = –.061, p = .767$	$r_s = –.379, p = .056$	$r_s = –.173, p = .399$
Brixton	$r_s = .302, p = .133$	$r_s = .561, p = .003$*	$r_s = .104, p = .614$	$r_s = –.263, p = .194$	$r_s = –.177, p = .288$
BPRS	$r = –.161, p = .433$	$r = –.084, p = .682$	$r_s = –.074, p = .718$	$r = –.023, p = .910$	$r_s = –.087, p = .672$

Note. AMI, Auditory Memory Index; BPRS, British Psychiatric Rating Scale; FSIQ, Full Scale Intelligence Quotient; PRI, Perceptual Reasoning Index; PSI, Processing Speed Index; VCI, Verbal Comprehension Index; WAIS, Wechsler Adult Intelligence Scale – Fourth Edition; WMI, Working Memory Index; WMS, Wechsler Memory Scale – Fourth Edition
* = still significant following Bonferroni correction

Table 6

Correlations between FTP and the WAIS, WMS, Hayling and Brixton for the non-clinical group (n = 26)

	FTP test total score	Factor 1: Understanding plea options and court processes	Factor 2: Ability to follow proceedings and predict potential outcomes	Factor 3: Understanding the consequences of being found guilty	Factor 4: Understanding the consequences of being found not guilty
WAIS:					
VCI	$r = .385, p = .052$	$r = .504, p = .009$	$r_s = –.040, p = .845$	$r_s = .285, p = .158$	$r = –.217, p = .287$
PRI	$r = .300, p = .137$	$r = .466, p = .017$	$r_s = –.032, p = .876$	$r_s = .073, p = .725$	$r = –.115, p = .577$
WMI	$r = .516, p = .007$	$r = .503, p = .009$	$r_s = .173, p = .399$	$r_s = .164, p = .424$	$r = .115, p = .451$
PSI	$r = .177, p = .388$	$r = .203, p = .320$	$r_s = .106, p = .606$	$r_s = .077, p = .709$	$r = –.237, p = .243$
FSIQ	$r = .346, p = .068$	$r = .502, p = .009$	$r_s = .044, p = .832$	$r_s = .172, p = .402$	$r = –.223, p = .273$
WMS AMI	$r = .086, p = .675$	$r = .208, p = .307$	$r_s = –.387, p = .051$	$r_s = .202, p = .323$	$r = –.130 , p = .525$
Hayling	$r_s = .406, p = .040$	$r_s = .434, p = .027$	$r_s = .209, p = .305$	$r_s = .318, p = .113$	$r_s = –.255, p = .217$
Brixton	$r_s = .075, p = .716$	$r_s = .098, p = .634$	$r_s = –.048, p = .814$	$r_s = .154, p = .452$	$r_s = –.164, p = .424$

Note. AMI, Auditory Memory Index; FSIQ, Full Scale Intelligence Quotient; PRI, Perceptual Reasoning Index; PSI, Processing Speed Index; VCI, Verbal Comprehension Index; WAIS, Wechsler Adult Intelligence Scale – Fourth Edition; WMI, Working Memory Index; WMS, Wechsler Memory Scale – Fourth Edition
***** = still significant following Bonferroni correction

Discussion

Summary of findings

Is the FTP test a uni-dimensional or multi-dimensional test?

Four factors emerged from the factor analysis on the healthy control group (*n* = 115). This suggests that the FTP test is a multi-dimensional test that assesses distinct abilities, rather than a uni-dimensional test that assesses a unitary ability. Factor 1 appeared to represent an understanding of plea options and court processes. Factor 2 seemed to represent an ability to follow proceedings and predict potential outcomes. Factor 3 reflected an understanding of the consequences of being found guilty. Factor 4 appeared to represent an understanding of the consequences of being found not guilty. Participants with a diagnosis of schizophrenia performed less well on Factor 1 and Factor 3 compared to the healthy control group, but performed equally well on Factor 2 and Factor 4. This finding lends further support to the assertion that the FTP test is a multi-dimensional test that measures distinct abilities and suggests that participants with a diagnosis of schizophrenia might be impaired in some domains of fitness to plead, but not others.

Do participants with a diagnosis of schizophrenia perform less well on the FTP test than healthy controls?

Participants with a diagnosis of schizophrenia performed less well on the FTP test overall compared to the healthy controls. This finding supports the hypothesis that having a diagnosis of schizophrenia can impair fitness to plead. Regression analysis further supported this finding, as diagnostic group was found to be predictive of total score on the FTP test before and after controlling for ethnicity, education level, previous court attendance, intellectual ability and memory.

However, it is important to note that when incorporating these variables into the regression model, education level was also predictive of performance on the total score of the FTP test. This suggests that education level accounts for a proportion of the variance in the total score and is a possible confounding variable.

Does performance on the FTP test correlate with intellectual ability, memory, executive function and psychiatric symptoms?

When examining the relationship between performance on the FTP test and intellectual ability, there was an association between Factor 1 (understanding plea options and court processes) and the WAIS-IV Verbal Comprehension Index in the clinical group. This would suggest that understanding plea options and court processes is related to acquired knowledge, memory for semantic information, general factual knowledge and abstract reasoning as measured by the Verbal Comprehension Index. An association was also found between Factor 1 (understanding plea options and court processes) and the WAIS-IV Full Scale IQ in the clinical group. Factor 1 was also associated with the WAIS-IV Perceptual Reasoning Index, WAIS-IV Working Memory Index and WAIS-IV Processing Speed Index prior to Bonferroni corrections for multiple statistical comparisons.

Regarding the relationship between performance on the FTP test and memory, it was found that the FTP test total score and Factor 1 (understanding plea options and court processes) were associated with auditory memory (immediate and delayed) in the clinical group. These associations might reflect the need for an individual to have the capacity to recall acquired knowledge, such as knowledge of court processes, in order to demonstrate an understanding of court proceedings.

Considering the relationship between performance on the FTP test and executive function, it was found that performance on Factor 1 (understanding plea options and court processes) was associated with performance on the Brixton test in the clinical group. It is not clear why the Brixton test, which measures mental flexibility, would be associated with Factor 1 in particular. Therefore, further investigation into the relationship between fitness to plead and alternative measures of executive function would be warranted in order to draw inferences from this association.

In regards to the relationship between performance on the FTP test and psychiatric symptoms, no correlations were found between the FTP test total score and level of psychiatric symptoms in the clinical group, as measured by the BPRS.

Comparison with past research

The findings in this study are largely consistent with findings from past research. This study suggests that the construct of fitness to plead is a multi-dimensional construct, as four conceptually meaningful factors emerged from the factor analysis. This finding is in accordance with past research that also suggests that fitness to plead is a multi-dimensional construct, whereby an individual might possess ability in one area, but not another (Whittemore, Ogloff & Roesch, 1997).

The finding that participants with a diagnosis of schizophrenia performed less well on the total score of the FTP test compared to the healthy controls is also consistent with previous studies which found that having a psychotic diagnosis can impact upon fitness to plead (Cooper & Zapf, 2003; James et al., 2001; Rutledge et al., 2008; Viljoen et al., 2004). The regression analysis also showed that previous

attendance at court does not predict fitness to plead, which has been found in past studies (McLeod et al., 2010).

Considering the relationship between fitness to plead and cognitive function, similarly to Viljoen et al. (2002), this study found that there was a relationship between some factors of the FTP test and some sub-scales of intelligence. In addition, this study found that total score on the FTP test was associated with auditory memory in the clinical group, which is in line with Nestor et al. (1999) who also found that fitness to plead related to verbal memory.

It was surprising that no association was found between psychiatric symptoms and performance on the FTP test, as previous studies suggest that symptoms are some of the strongest predictors of fitness to plead (Nicholson & Kugler, 1991; Pirelli et al., 2011). However, this study's clinical sample consisted of participants that were experiencing non-pathological to mild pathological intensity of symptoms on the British Psychiatric Rating Scales (BPRS), whereas Nicholson and Kugler (1991) noted that severe symptomatology is associated with impaired fitness to plead. Therefore, an association between psychiatric symptoms and performance on the FTP test might have occurred if participants with more acute symptoms had been recruited.

Limitations

This study had various limitations which affect the ability to draw firm conclusions and generalise the study's findings.

Limitations with the clinical group

The ability to generalise this study's findings, beyond the homogenous clinical

group that was recruited, is limited in that: the majority of participants had a diagnosis of paranoid schizophrenia; most had mild psychiatric symptoms; the majority had chronic schizophrenia; all participants had previously attended court; and all the participants were male. Consequently, it is not known how: participants with different sub-types of schizophrenia (e.g. disorganised sub-type or residual sub-type); participants with acute symptoms; participants with recent-onset schizophrenia; participants who have not attended court; or female participants with schizophrenia would have performed on the FTP test compared to the present clinical sample.

Selection biases were likely to have occurred due to the where the participants were recruited from and the recruitment procedure. In terms of the recruitment location, all the participants were recruited from a medium secure forensic unit in which many of the patients had long histories of mental illness, but whose acute symptoms were largely in remission due to assertive pharmacological intervention. In addition, there was only one female ward out of eight and, therefore, sufficient numbers of female participants, who met the inclusion criteria, could not be recruited. In terms of the recruitment procedure, a selection bias towards recruiting participants with mild symptoms might have occurred because: it was only deemed appropriate to approach a patient if his mental state was stable enough to engage with the testing procedure; and patients with more severe symptoms, particularly negative symptoms of schizophrenia, appeared poorly motivated and were more likely to decline to participate.

Limitations with the comparability of the clinical and non-clinical group

There were significant differences between the clinical group and non-clinical group in this study in terms of ethnicity, education level, previous court attendance,

intellectual ability and memory. This impacts the ability to draw firm conclusions about whether having a diagnosis of schizophrenia alone impacts fitness to plead, as although diagnostic group was found to be predictive of fitness to plead after attempts to control for these variables, it was clear that education level was also a significant predictor of performance on the FTP test.

The discrepancy between the two groups ethnicity might have occurred due to inherent biases within the forensic system, where a disproportionate number of inpatients come from Black ethnic origins. Regarding intellectual ability, the discrepancy between the groups might have occurred due to the participants in the clinical group having significantly fewer years in education than the non-clinical group, as poor engagement with the educational system can impact aspects of intelligence, such as acquired knowledge and crystallised knowledge.

Limitations with the testing procedure

Limitations of the study were also associated with the administration of the various measures. Firstly, some of the participants were observed to become uninterested or fatigued during the testing session despite taking breaks throughout. Secondly, order effects might have affected performance on the measures, as the measures were not administered in a standardised order due to participant's taking breaks at differing times during the testing session and because of ward procedures such as smoking break taking place during the testing session. Thirdly, although the BPRS has been shown to be a reliable tool for assessing symptoms (Hedlund & Viewig, 1980) the inter-rater reliability in this study is not known.

Limitations associated with the FTP test

There were several limitations associated with the FTP test used in this study. In terms of reliability, the FTP test had high internal consistency, but the inter-rater and test-retest reliability were not known as they were still in the process of being established by the research group. In relation to validity, the FTP test had face and content validity, but the construct validity was yet to be determined. This was largely due to the continuing debate over the construct of fitness to plead making it difficult to operationalise the construct into observable and measurable behaviours (Law Commission, 2010). It was also not known whether the FTP test has concurrent validity and if it correlates with psychiatric opinion on fitness to plead or other standardised measures.

Factor analysis on the FTP test was carried out in this study to determine if the test was uni-dimensional or multi-dimensional. Even though four factors emerged, which suggested that the FTP test was multi-dimensional, differences in the number of items that clustered onto each factor might have limited the results of this study's findings. This was because Factor 2, 3 and 4 contained fewer items than Factor 1 and these factors had larger standard deviations. This might have reduced the chances of detecting small differences in performance on these factors, as the sample size in this study was relatively small.

Another limitation of the FTP test used in this study was that cut-off scores, in which a participant would be declared unfit to plead, were yet to be established. Therefore, even though the participants with a diagnosis of schizophrenia performed statistically less well on the FTP test than the healthy control group, it is not known whether this difference is clinically significant or meaningful.

Future directions

In order to reduce some of the limitations of the present study, several recommendations can be made. A larger participant sample should be recruited to increase the chances of detecting effects, as some of the significant findings became non-significant when controlling for multiple comparisons. It would also be beneficial to recruit participants with other sub-types of schizophrenia, more acute symptoms and different illness durations in order to investigate how these variations in presentations might impact performance on the FTP test. This is because studies have shown that unfitness to plead is associated with acute symptoms (Nicholson and Kugler, 1991) and also particular symptoms of schizophrenia, such as disorganised and delusional thinking (James et al., 2001). However, it is worth noting that recruiting acutely psychotic or severely disturbed patients is difficult and careful consideration would need to be taken to devise a strategy to engage severely unwell participants. Recruiting participants with a diagnosis of schizophrenia who have not attended court in the past would also be important. Greater care should also be taken to match comparison groups, as it would be important for future studies to minimise the effects of potential confounding variables. It would also be interesting for future studies to gain psychiatric opinion as to whether the participant is fit to plead or to administer another standardised measure to assess whether the FTP test has concurrent validity.

Clinical implications

Despite this study's limitations, clinical implications can be drawn. Firstly, this is the first study to have administered the FTP test on participants with a diagnosis of schizophrenia. Therefore, its findings provide valuable information on

how this group of participants responds to the measure and provides a baseline level of performance on the FTP test. Moreover, the results contribute to the evaluation of the psychometric properties of the FTP test, in that the results suggest the FTP test has discriminant validity, as the measure was capable of distinguishing performance between participants with a diagnosis of schizophrenia compared to healthy controls.

Secondly, similarly to other studies, this study highlights the importance of increasing legal professionals' awareness of the potential impact of mental disorders on fitness to plead. This is because participants with schizophrenia performed less well on the FTP test than healthy controls. Furthermore, this study emphasises that even mild symptoms of schizophrenia can impair fitness to plead. This finding is particularly important as, at present, the threshold for unfitness is extremely high and concerns regarding fitness to plead are only raised in cases where a defendant is extremely unwell. Therefore, these findings suggest that the judgment process should be more systematic and that legal professionals should raise concerns to the court regarding fitness to plead if a defendant has any history of a mental disorder, rather than only raising concerns when a defendant is severely unwell.

Thirdly, the results suggest that clinicians should conduct a proper evaluation of a defendant's cognitive functioning, particularly verbal comprehension and auditory memory, as part of a thorough assessment of fitness to plead. This is because these particular cognitive deficits were associated with impaired fitness to plead. Information on a defendant's cognitive function could also inform decision making in regards to whether the trial should: continue as normal; continue as long as special measures or modifications to the trial process are put in place to support the defendant; or be delayed until the defendant is more fully treated. Special measures could include taking greater time in explaining court procedures,

simplifying language, having a shortened hearing, having regular breaks, providing memory aids, or seating defendants next to an advocate.

Fourthly, the results indicate that legal professionals need to ascertain a defendant's fitness to plead on a case by case basis, and not assume a defendant is fit to plead based upon previous attendance at court. This is because, despite all the participants with a diagnosis of schizophrenia having attended court in the past, they still performed less well on the FTP test than the healthy control group (42% of whom had never been to court).

Overall, the results would suggest that careful consideration needs to go into the assessment of fitness to plead, and that the identification and screening of defendants with a diagnosis of schizophrenia is imperative. This is to ensure the administration of justice, whereby these vulnerable individuals receive a fair trial in which they are supported and able to meaningfully participate in their defence.

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Legal Reports

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Part 3: Critical Appraisal

This critical appraisal considers two main areas of concern that arose during the course of this study which merit further reflection. The first section discusses the fact that fitness to plead is a poorly defined and controversial construct and that this in turn impacts upon its assessment and the development of standardised measures. The section concludes with a discussion on the development of the fitness to plead (FTP) test used in this study and the problems associated with administering a test that is yet to undergo rigorous tests of reliability and validity. The second section considers the heterogeneous nature of schizophrenia and the challenges associated with conducting and generalising research in this clinical population. The section goes on to discuss how sub-types of schizophrenia and different levels of symptom severity and illness duration might impair fitness to plead more or less. The section concludes with a discussion on whether the FTP test is appropriate for assessing fitness to plead across the spectrum of schizophrenia or if it needs to be adapted in view of the heterogeneous nature of the disorder.

The construct of fitness to plead and the implications upon its assessment

The construct of fitness to plead and its limitations

In England and Wales, fitness to plead is viewed as unitary construct that is assessed using the Pritchard criteria (Regina v. Pritchard, 1836). The criteria state that a defendant must be able to: plead to the indictment; understand the evidence; understand the court proceedings; instruct a lawyer; and challenge a juror. If the defendant does not have capacity in relation to any one of these five areas, then the defendant should be considered unfit to plead.

However, evidence would suggest that fitness to plead might not be a unitary construct as a defendant might be able to enter a plea, but not have sufficient

capacity to participate in the trial due to its demanding nature (Whittemore, Ogloff & Roesch, 1997). In addition, a review by the Law Commission (2010) argues that the Pritchard criteria are not adequate in assessing fitness to plead. Other abilities that are deemed important, but that are not incorporated in the criteria include whether a defendant understands: the role of court personnel; the nature of the charges; the meaning and consequences of entering a plea; the implications of evidence and cross-examination; and the implications of the court's sentence (Mackay, Mitchell & Howe, 2007).

The assessment of fitness to plead and its limitations

Psychiatric opinion is considered gold standard if a mental disorder is suspected of impairing a defendant's ability to plead and stand trial (Akinkunmi, 2002). For example, an acutely psychotic defendant with thought disorder might lack the ability to understand the evidence or follow court proceedings due to symptoms interfering with reasoning and comprehension.

Nevertheless, there are concerns regarding the reliability of clinical judgment. Mackay et al. (2007) found that only 58 out of 641 pre-trial psychiatric reports addressed all five Pritchard criteria when commenting on fitness to plead and that 89 of such reports determined fitness to plead based simply on mental health diagnosis. In addition, the frequency of which the criteria are applied varies (Mackay, 2007). It is not known why some criteria, in particular, are given more weight than others, but this raises questions as to what abilities are considered essential to be fit to plead and at what point does an individual become unfit. The current threshold at which a defendant is declared unfit is considered too high as the formal findings of unfitness

are extremely rare, despite few defendants being able to understand all five criteria (Rogers, Blackwood, Farnham, Pickup & Watts, 2008).

The standardised measurement of fitness to plead and its limitations

Due to concerns regarding the Pritchard criteria, the Law Commission (2010) recommended that standardised measures should be used in conjunction with psychiatric opinion. Attempts have been made to standardise the assessment of fitness to plead and 19 measures are currently available (Rogers et al., 2008). Standardised methods include the use of checklists, sentence-completion tasks, self-report questionnaires and structured interview.

Notwithstanding the potential value of standardised measures, there are limitations that need to be considered. Firstly, the majority of measures are based on case law in the United States and Canada. Therefore, the utility of using such measures in England and Wales is questionable as differences in the construct of fitness to plead causes concerns regarding the construct validity of measures. Secondly, the availability of scoring criteria varies and can lead to ambiguity and subjective analysis of the results. Moreover, developing a standardised measure is a complex process. Grisso and Borum (2003) advised that a measure should: 1) be guided by legal theory; 2) capture all relevant legal constructs; 3) have quantitative measures that reflect performance; and 4) have standardised administration to promote reliability. However, as discussed earlier, the construct of fitness to plead is controversial and therefore impacts the ability to capture relevant constructs and operationalise fitness to plead in terms of observable and measurable behaviours.

The novel measure of fitness to plead used in the present study and its limitations

Blackwood, Peay and Watts (2012) developed a novel standardised measure of fitness to plead due to the problems associated with its current assessment. The fitness to plead (FTP) test was not designed to rigidly adhere to the Pritchard criteria in view of likely modifications to the test. Rather, it was based upon a qualitative study on the opinions of senior criminal barristers on the construct of fitness to plead and the procedural difficulties associated with its assessment (Rogers, Blackwood, Farnham, Pickup & Watts, 2009). Therefore, the FTP test aimed to assess: 1) the ability to plead (e.g. the ability to understand the allegation and the meaning and consequences of entering a plea); 2) and the ability to participate in a trial (e.g. the ability to provide coherent instructions to counsel, follow the details of evidence and have the belief that the Court will seek to fairly establish facts).

A limitation of the FTP test used in this study was that it had not yet undergone tests of reliability and validity as earlier versions had. Nevertheless, inferences about reliability and validity can be drawn from this study. Firstly, the FTP test appeared to have face validity as the four factors derived from factor analysis did correspond broadly to Rogers et al.'s (2009) reformulation, whereby: Factor 1 (understanding plea options and court processes), Factor 3 (understanding the consequences of being found guilty) and Factor 4 (understanding the consequences of being found not guilty) appeared to correspond with Rogers et al.'s (2009) ability to plead; and Factor 2 (ability to follow proceedings and predict potential outcomes) appeared to correspond with Roger et al.'s (2009) ability to participate in a trial. Secondly, the FTP test appeared to have internal consistency, a type of reliability, as the questions clustered onto four factors in a conceptually meaningful way. Thirdly, the FTP test appeared to have convergent validity as

performance on some sub-scales of the FTP test were associated to verbal comprehension and auditory memory, which have been found in previous studies (Ryba & Zapf, 2011; Viljoen, Roesch & Zapf, 2002). However, further research needs to be conducted in order to confidently assert that the FTP test has convergent validity. In addition, other tests of reliability (e.g. inter-rater and test-retest reliability) and validity (e.g. content and concurrent validity) need to be investigated to fully establish the psychometric properties of the FTP test.

The challenges of assessing fitness to plead in individuals with schizophrenia

The nature of schizophrenia and its implications on research

Schizophrenia is characterised by positive and negative symptoms (National Institute for Health and Clinical Excellence: NICE, 2009). Positive symptoms include hallucinations, delusions and behavioural disturbances. Negative symptoms include social withdrawal, apathy, memory problems, concentration problems and disturbed communication and affect. In order to be diagnosed with schizophrenia, the Diagnostic and Statistical Manual for Mental Disorder – Fourth Edition (DSM-IV: American Psychiatric Association, 1994) states that an individual must experience a certain number of these symptoms for at least six-months and where such symptoms cause deterioration in social or occupational function.

However, the prevalence of these symptoms and the severity in which they are experienced varies considerably, whereby each individual will have a unique combination of symptoms and experiences (NICE, 2009). This disparity in presentation is further highlighted by the fact that the DSM-IV contains five sub-classifications of schizophrenia that are characterised by different symptomatology including: 1) the paranoid sub-type (i.e. delusions or auditory hallucinations are

present, but thought disorder, flat affect and disorganised behaviour are not); 2) the disorganised sub-type (i.e. thought disorder and flat affect are present together); 3) the catatonic sub-type (i.e. the patient might be almost immobile or exhibit agitated purposeless movement); 4) the undifferentiated sub-type (i.e. psychotic symptoms are present but the criteria for the paranoid, disorganised and catatonic types are not met); and 5) the residual sub-type (i.e. positive symptoms are present at a low intensity).

The underlying variation in the nature of schizophrenia has important implications on conducting research on this clinical population. This is because the variations in presentation might impact fitness to plead more or less. Therefore, recruiting sufficiently large enough and diverse enough samples would be imperative to ensure that results can be generalised and that the sample accurately reflects the target population.

The impact of sub-types of schizophrenia on fitness to plead

The majority of participants included in this study were diagnosed with the paranoid sub-type of schizophrenia which is characterised by delusions and auditory hallucinations. This might have reduced the ability to generalise this study's findings and understand how other sub-types might have a more or less detrimental effect on the capabilities that underpin fitness to plead. For example, it would be interesting to investigate whether having the disorganised sub-type of schizophrenia, which is characterised by thought disorder, would impact fitness to plead more than having the paranoid sub-type. This is because James, Duffield, Blizard and Hamilton (2001) found that a substantial proportion of defendants who are declared unfit to plead are reported to be experiencing disorganised and delusional thinking. In addition, it

would be interesting to investigate how particular symptoms of schizophrenia impact fitness to plead. For example, paranoid symptoms might prevent a defendant from instructing counsel because of his or her inability to form a trusting relationship with counsel, whereas hallucinations might prevent a defendant from following the evidence due to increased distractibility and interference.

The impact of symptom severity in schizophrenia on fitness to plead

This study predominantly recruited participants with mild symptoms of schizophrenia, as measured by the British Psychiatric Rating Scale (BPRS: Lukoff, Liberman & Nuechterlein, 1986). Selection bias towards recruiting participants with mild symptoms might have occurred for several reasons. One reason might be due to how participants were identified by the psychiatrist and/or clinical psychologist, in that it was deemed appropriate to approach a patient only if his mental state was stable enough to be able to sit through the testing session. Another reason relates to the participants being recruited from a medium secure forensic unit, in that the majority of patients in the unit had long histories of mental illness, but whose acute symptoms were largely in remission due to assertive pharmacological intervention. Another plausible reason, which was based on observation, was that patients with more severe symptoms, particularly negative symptoms of schizophrenia, were poorly motivated and more likely to decline to participate.

Setting aside the practical challenges, it would be interesting to recruit participants with more severe symptoms as unfitness is typically associated with severe symptomatology (Nicholson and Kuglar, 1991). Indeed, several of the participants commented that their mental state during their actual trial was more disturbed than their mental state during the administration of the FTP test.

Consequently, the participants reflected that they might not have been able to maintain focus throughout the test and answer the questions as well at the time of their trial. It is important to note though, that careful consideration on how to include participants with severe symptoms would need to be carried out as this population is particularly difficult to recruit and test.

The impact of illness duration in schizophrenia on fitness to plead

There was a wide range in length of illness duration between the participants included in this study. However, due to the relatively small sample size and the majority of participants having chronic schizophrenia, investigations as to whether illness duration impacts performance on the FTP test could not be examined. Consequently, it is not known how illness duration is associated with fitness to plead.

Fitness to plead might vary depending on illness duration, as evidence suggests that the deficits associated with schizophrenia change over the course of the disorder. Weickert and Goldberg (2000) suggest that the cognitive deficits associated with schizophrenia emerge along different trajectories where: widespread cognitive deficits occur prior to psychotic symptoms; or cognitive deficits in attention, executive function and long-term memory coincide with psychotic symptoms and decline over time. Sponheim et al. (2010) found several comparable cognitive deficits between recent-onset and chronic schizophrenia, but that other deficits (i.e. problem solving and episodic memory) were associated with a longer duration of illness. Therefore, it would be interesting to investigate whether an individual with chronic schizophrenia is more likely to be considered unfit to plead than an individual with recent-onset schizophrenia, due to a greater number of deficits occurring over time.

Is the FTP test appropriate for use across the spectrum of schizophrenia?

The FTP test took approximately 45 minutes to administer, despite the actual film footage lasting for approximately 15 minutes. During the administration of the test, some of the participants were observed to lose concentration, particularly during the longest section of the film which lasted six minutes. Bearing in mind that the participants included in this study had mild symptoms of schizophrenia, but still found it difficult to maintain attention, it is reasonable to assume that participants with acute symptoms would have certainly found it difficult to maintain attention. This problem is evident in the study by Pinals, Tillbrook and Mumley (2006) who found that only 60% of consecutively admitted patients completed the MacArthur Competence Assessment Tool – Criminal Adjudication (MacCAT-CA: Hoge et al., 1999) as psychotic symptoms, mood symptoms, cognitive limitations, poor motivation and attempts to malinger resulted in the failure to complete the measure. In addition, it was found that severe thought disorganisation, irritability and pressured speech of the patient interfered with the examiner's ability to present items without repeated interruption and to elicit coherent responses from the patient.

Uncertainty in relation to how acutely psychotic participants would perform on the FTP test compared to mentally stable participants raised questions as to whether the FTP test is capable of assessing fitness to plead across the spectrum of schizophrenia. This dilemma links back to the first section of this critical appraisal which reviewed some of the challenges associated with developing a standardised measure of fitness to plead. Inspection of standardised measures that are currently available would suggest that some have been designed as a screening device, whereas others have been designed to provide a comprehensive evaluation. For example, the Competency Screening Test (CST: Lipsitt, Lelos & McGarry, 1971) is

a 22-item sentence-completion task designed to screen defendants, whilst the Interdisciplinary Fitness Interview (IFI: Golding, Roesch & Schreiber, 1984) is a comprehensive assessment that assesses both legal issues and mental state in relation to fitness to plead. With this in mind, the FTP test could be utilised as a comprehensive measure for individuals who have mild or stable symptoms of schizophrenia and who are capable of engaging with and enduring the assessment. However, this would mean that it is not suitable for acutely psychotic patients or screening patients. Therefore, it might be appropriate to design a shorter measure which can be used to screen or measure fitness to plead in patients with acute symptoms of mental illness and who are less capable of tolerating long testing sessions. A screening measure could also speed up assessment and be beneficial for criminal proceedings, as given that 20% of criminal proceedings in England and Wales call upon mental health expertise (Gudjonsson, 1996), this process can delay legal proceedings and consume resources in both criminal justice and healthcare settings (Akinkunmi, 2002).

Summary

The purpose of this critical appraisal was to further reflect upon areas of concern that emerged whilst conducting the study. The first concern related to the debate over the construct of fitness to plead and its impact upon the development of the novel standardised measure used in this study. This section demonstrated the importance of having a concise definition of fitness to plead to ensure that a standardised measure is reliable, valid and appropriate for use in research and clinical practice. The second concern regarded the challenges associated with measuring fitness to plead among individuals with a diagnosis of schizophrenia. It emphasised

the need for further exploration into how fitness to plead is impacted by symptom prevalence, symptom severity and illness duration. It also raised questions as to whether the FTP test has practical utility in measuring fitness to plead across the spectrum of schizophrenia and whether it needs to be adapted to assess fitness to plead in acutely psychotic patients.

Overall, these discussion points highlight the need for further clinically-informed, theory-driven research into the construct of fitness to plead, how it can be assessed using standardised measures and how it is impacted upon by having a diagnosis of schizophrenia. This is to ensure that potentially vulnerable individuals are protected and that the criminal justice system operates fairly during trial proceedings.

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Legal Reports

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Appendices

Appendix 1: Ethics committee letter of approval for clinical group

NHS

National Research Ethics Service

NRES Committee London - Camberwell St Giles

(Formerly known as The Joint South London and Maudsley and Institute of Psychiatry Research Ethics Committee)

Administrative address: Victoria House
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03 June 2011

Dr Nigel Blackwood
Senior Lecturer in Forensic Mental Health Science;
Consultant Forensic Psychiatrist, North London Forensic Hospital
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De Crespigny Park
London
SE5 8AF

Dear Dr Blackwood

Study title:	**Fitness to Plead: The impact of mild learning disability**
REC reference:	**10/H0807/53**
Protocol number:	**AJU/35238**
Amendment number:	**Substantial Amendment 1**
Amendment date:	**05 May 2011**

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
CV: Ms. Eleanor Swain	1	31 March 2011
Participant Consent Form: Fitness to Plead Study - Consent Form	3	31 March 2011
Participant Information Sheet: Fitness to Plead Study Information About the Study	2	31 March 2011
Protocol	2	31 March 2011
Notice of Substantial Amendment (non-CTIMPs)	1	05 May 2011
Covering Letter		05 May 2011

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

Statement of compliance

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

10/H0807/53:	**Please quote this number on all correspondence**

Yours sincerely

Mr John Richardson
Chair

E-mail: audrey.adams@nhs.net

Enclosures: *List of names and professions of members who took part in the review*

Copy to: *Ms Jennifer Liebscher, Institute of Psychiatry, Kings College London*

NRES Committee London - Camberwell St Giles

Attendance at Sub-Committee of the REC meeting on 20 May 2011

Name	*Profession*	*Capacity*
Dr Veena Kumari	Senior Research Fellow in Basic Biomedical Science & Senior Lecturer	Expert
Mr John Richardson (Chair)	Ecumenical Officer for Churches Together in South London	Lay

Also in attendance:

Name	*Position (or reason for attending)*
Audrey Adams	Co-ordinator

Appendix 2: Ethics committee letter of approval for non-clinical group

KING'S College LONDON
University of London

Psychiatry, Nursing & Midwifery Research Ethics Sub-Committee

Dr Nigel Blackwood
Department of Forensic Mental Health Science
Institute of Psychiatry
King's College London
PO Box 23
De Crespigny Park
London SE5 8AF

13th May 2009

Dear Nigel

PNM/08/09-77 Fitness to plead: the impact of cognitive abilities and psychopathology

Thank you for sending in the amendments requested to the above project. I am pleased to inform you that these meet the requirements of the PNM RESC and therefore that full approval is now granted on the following conditions:

1. The data collected from those who are screened but do not qualify for the study is securely destroyed immediately.
2. The amended consent form with the point about accessing Police National Computer is submitted for our records.
3. Participants are compensated for their time by a single payment rather than by the hour, please submit amended copies of the recruitment materials for our records.

Please ensure that you follow all relevant guidance as laid out in the King's College London *Guidelines on Good Practice in Academic Research* (http://www.kcl.ac.uk/college/policyzone/attachments/good_practice_May_08_FINAL.pdf).

For your information ethical approval is granted until **13th May 2012**. If you need approval beyond this point you will need to apply for an extension to approval at least two weeks prior to this explaining why the extension is needed, (please note however that a full re-application will not be necessary unless the protocol has changed). You should also note that if your approval is for one year, you will not be sent a reminder when it is due to lapse.

If you do not start the project within three months of this letter please contact the Research Ethics Office. Should you need to modify the project or request an extension to approval you will need approval for this and should follow the guidance relating to modifying approved applications: http://www.kcl.ac.uk/research/ethics/applicants/modifications.html

Any unforeseen ethical problems arising during the course of the project should be reported to the approving committee/panel. In the event of an untoward event or an adverse reaction a full report must be made to the Chairman of the approving committee/review panel within one week of the incident.

Please would you also note that we may, for the purposes of audit, contact you from time to time to ascertain the status of your research.

If you have any query about any aspect of this ethical approval, please contact your panel/committee administrator in the first instance (http://www.kcl.ac.uk/research/ethics/contacts.html).

We wish you every success with this work.

With best wishes

Yours sincerely

Riina Heinonen – Research Ethics Officer
Psychiatry Nursing & Midwifery Research Ethics Subcommittee

Appendix 3: Information sheet for participants in the clinical group

Rec No. 10/H0807/53

Dr Nigel Blackwood
MA(Psychology)
MD RCPsych

Tel: 020 8375 2713
Fax: 020 8367 9339

North London Forensic Service
Barnet, Enfield and Haringey Mental Health Trust
Camlet One
Chase Farm Hospital
The Ridgeway
Enfield EN2 8JL

Barnet, Enfield and Haringey NHS
Mental Health NHS Trust

FITNESS TO PLEAD STUDY
INFORMATION ABOUT THE RESEARCH

My name is Eleanor Swain

I am doing some research looking at how we understand things that happen in a courtroom.

NHS

I am doing this research with *Dr Nigel Blackwood* at the *North London Forensic Service*. I would like you to take part in this research.

It is important that you understand why this research is being done and what you will have to do.

Talk about what you read in this leaflet with other people like family, friends or your support worker if you like.

03:00hrs

We will then meet to do the study. It will take about 3 hours. You will be able to take a break at any time.

Why is the study important?

Our study aims to provide information to help lawyers and healthcare workers decide if a person is able to follow and understand what is happening and why in the courtroom.

Do I have to take part?

No. It is up to you if you want to take part.

Even after you start you are free to stop taking part at any time and you don't have to tell me why.

What will I have to do?

First, you will need to sign a form to say you understand what you have to do and that you would like to take part.

You will also need to sign a form to allow us to ask the police to see personal information about your criminal record (if any) that is held on the Police National Computer (PNC). Unfortunately, if you do not wish for us to see this information then you cannot take part in the study.

The study will then begin.
Firstly, we will ask you some general questions.
You will then watch a 15min video of a criminal trial set in a courtroom.

You will then be asked to complete some questionnaires. Some are about the video you have just watched. Others will measure things like your memory.

Who will know what is said at our meeting?

The things you tell me will be kept private within our research team.

I will not tell anyone what you say unless I am worried that you or someone else might get hurt. Then I might have to tell someone.

How and where will all my details and answers to the questions be kept?

Your name and details will not be on any of the information you provide – a code will be used instead.

All information about you will be kept in locked cabinets at the Institute of Psychiatry.

Where will the study take place?

Either:

a.) At your home, or

b.) At your local healthcare centre

What might be good things about taking part?

- What you tell me may make assessments of people who have to go to court better in the future.
- The study may make the treatment of people in court fairer.
- We will pay you £25 and for any travel on public transport needed to take part in the study.
- If you do not complete the whole study you will still be paid for the time you have spent with us.

What might not be so good about taking part?

- The study takes 3 hours.
- Some questions may be quite hard for you to answer.

BUT! We don't expect you to answer all the questions.
And remember, you can stop taking part at any time.

What if there is a problem?

If there is a problem you can speak to me first and I will try to help.

If you are still unhappy and want to make a formal complaint you can write to: Dr. Nigel Blackwood, North London Forensic Service, Barnet, Enfield and Haringey Mental Health Trust, Camlet One, Chase Farm Hospital, The Ridgeway, Enfield EN2 8JL

Appendix 4: Consent form for participants in the clinical group

Rec No. 10/H0807/53

Dr Nigel Blackwood
MA(Psychology)MD
RCPsych

Tel: 020 8375 2713
Fax: 020 8367 9339

North London Forensic Service
Barnet, Enfield and Haringey Mental Health Trust
Camlet One
Chase Farm Hospital
The Ridgeway
Enfield EN2 8JL

Barnet, Enfield and Haringey NHS
Mental Health NHS Trust

FITNESS TO PLEAD STUDY

CONSENT FORM

Part 1: Please tick the appropriate box:

☐ Yes, I would like to take part in this study.

☐ No, I would not like to take part in this study.

Part 2: Please circle you answers:

1. Have you read the Information Sheet or has someone read it to you?

   Yes / No

2. Have you had a chance to think about the study?

   Yes / No

3. Do you understand what the study is about?

   Yes / No

4. Do you agree to allow us to ask the police to see personal information about your criminal record (if any) that is held on the Police National Computer?

   Yes / No

5. Do you understand the good things and not so good things about taking part?

   Yes / No

6. Do you know that it is okay to stop at any time?

   Yes / No

7. Have you been allowed to ask questions?

   Yes / No

Part 3: If you want to take part you can sign below:

Participant's Name (print): _____

Signature: _____ Date: _____

Researcher's Name (print): _____

I have explained the study to the participant and answered all questions honestly and fully.

Signature: _____ Date: _____

Thank you.

Appendix 5: Information sheet for participants in the non-clinical group

Institute of Psychiatry
at The Maudsley

Rebecca Brewer
Research Worker
Department of Forensic Mental Health Science
Box PO23
De Crespigny Park
Denmark Hill
London SE5 8AF
Tel +44 (0)20 7848 5852
Fax +44 (0)20 7848 0754

KING'S College LONDON
University of London

INFORMATION SHEET FOR PARTICIPANTS -

FITNESS TO PLEAD STUDY

(Ethics Approval Number: PNM/08/09-77)

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Talk to others about the study if you wish.

Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

You have been asked to take part in a study investigating the cognitive abilities which are related to understanding courtroom processes. Our study aims to contribute information that may be useful to the decision making of lawyers and clinicians in their assessments of an individual's 'fitness to plead' in court proceedings.

Do I have to take part?

No. It is up to you to decide whether or not to take part. If you do, you will be given this information to keep and be asked to sign a consent form. You are still free to withdraw at any time and without giving a reason.

What will happen to me if I take part?

We will ask you to complete some questions before watching a 15 minute video set in a courtroom. You will then be asked to complete more questionnaires. The questionnaires will focus on your understanding of the trial and measure your cognitive abilities, such as your memory. We estimate that this will take around 3 hours. You will be able to take breaks during the testing.

Expenses and payments.
You will be compensated for your time at £7.50 per hour and compensated for travel expenses on public transportation.

What do I have to do?

After providing informed consent, you will need to answer the questions during the interview and complete the questionnaires. You will also complete a letter of authorisation allowing the researchers to apply to the police to access any personal data held on the Police National Computer (PNC) concerning your criminal record (if any). We need this information because

your ability to follow courtroom proceedings may be influenced by any past experiences you have had of court cases. If you do not wish us to access your personal data from the PNC then unfortunately you will be unable to participate in this study.

The questions will be related to courtroom processes and are linked to a video of a trial which you will be presented with during the course of the study. We will also ask you to undertake several psychometric assessments, designed to measure various cognitive abilities.

You will be fully debriefed at the end of the study as to the full aims and reasons for the research.

What are the possible benefits of taking part?

There are no immediate benefits for you, but in the longer term, the study may provide important information for improving assessments of 'fitness to plead'.

What if there is a problem?

If you have a concern about any aspect of this study you should ask to speak with the researchers who will do their best to answer your questions (Dr. Nigel Blackwood, 020 7848 0123).

If this study has harmed you in any way you can contact King's College London using the details below for further advice and information: Dr. Nigel Blackwood, Department of Forensic Mental Health Science, De Crespigny Park, London, SE5 8AF.

Will my taking part in the study be kept confidential?

Yes, all information you give us is kept strictly confidential, except in the event of imminent risk. It will not be shared with anyone outside of the research team. We will handle, process, store and destroy your data in compliance with the Data Protection Act 1998. All information which is collected about you during the course of the research will be kept strictly confidential and identified by code rather than your name. The data will be used only for the research questions raised in the present study.

We will collect your data onto paper files. Data analyses will be undertaken within our department at the Institute of Psychiatry using password protected network drives for storage. Identifiable data will not be held on laptops or PC hard drives. Your participation will be audio recorded. All recordings will be transcribed and the original audio will be destroyed.

You have the right to check the accuracy of data held about you and to correct any errors.

All data collected as part of this study will be maintained securely within our department for a period of 10 years.

Contact details.

If you would like further information about the study, please contact the study co-ordinator, Miss Rebecca Brewer, (020 7848 5852). If she cannot answer your questions, she will refer you to the most appropriate person on the research team or obtain further information and contact you in due course.

Where will the study take place?

The session will take place at the Institute of Psychiatry, King's College London, South-East London.

What if relevant new information becomes available?

We do not anticipate that new information will become available during the course of the study that will be relevant to your participation, but if it does we shall tell you about it.

What will happen if I don't want to carry on with this study?

If you withdraw from the study we will withdraw your data from the study and pay you for the time you have spent with us.

What will happen to the results of the research study?

The results of the study will be published in scientific journals and presented at scientific conferences. You will not be identified in any report or publication.

Who is organising and funding the research?

The study is organised by Dr. Nigel Blackwood at the Institute of Psychiatry, King's College London. The study is funded by the Nuffield Research Trust.

Who has reviewed the study?

The Psychiatry, Nursing & Midwifery Research Ethics Subcommittee has reviewed the ethical aspects of this study. The Nuffield Trust has reviewed the scientific aspects of the study.

Appendix 6: Consent form for participants in the non-clinical group

Institute of Psychiatry
at The Maudsley

Dr Nigel Blackwood
MA(Psychology)MD
MRCPsych

Department of
Forensic Mental
Health Science

Box PO23
De Crespigny Park
Denmark Hill
London SE5 8AF
Tel +44(0)2078480122
Fax +44 (0)20 7848 0754

KING'S College LONDON
University of London

FITNESS TO PLEAD STUDY CONSENT FORM

FITNESS TO PLEAD STUDY
(Ethics Approval Number: PNM/08/09-77)

Part 1: Please tick the appropriate box:

☐ Yes, I would like to participate in this study.

☐ No, I do not want to participate in this study.

If Yes, please tick each of the following to show your agreement:

☐ I have read the Information Sheet about the study.

☐ I understand that I may withdraw from the study at any time without giving a reason.

☐ I have had the opportunity to ask any questions I wish to ask.

☐ Yes, I agree to complete some neuropsychological tests.

☐ I have kept a record of the names and contact telephone number of the research team in case I have any queries in the future.

Participant's Name (print): _____

Signature: _____

Date: _____

Researcher's Name (print): _____

Signature: _____

Date: _____

Thank you.