

Review Article

Cite this article: Marcó-García S, Ariyo K, Owen GS, David AS (2024). Decision making capacity for treatment in psychiatric inpatients: a systematic review and meta-analysis. *Psychological Medicine* **54**, 1074–1083. <https://doi.org/10.1017/S0033291724000242>

Received: 25 April 2023
Revised: 22 December 2023
Accepted: 22 January 2024
First published online: 4 March 2024


Keywords:

assessment; mental capacity; metaanalysis; psychiatric inpatients; severe mental disorder; treatment

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Decision making capacity for treatment in psychiatric inpatients: a systematic review and meta-analysis

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Abstract

Decision-making capacity (DMC) among psychiatric inpatients is a pivotal clinical concern. A review by Okai et al. (2007) suggested that most psychiatric inpatients have DMC for treatment, and its assessment is reliable. Nevertheless, the high heterogeneity and mixed results from other studies mean there is considerable uncertainty around this topic. This study aimed to update Okai's research by conducting a systematic review with meta-analysis to address heterogeneity. We performed a systematic search across four databases, yielding 5351 results. We extracted data from 20 eligible studies on adult psychiatric inpatients, covering DMC assessments from 2006 to May 2022. A meta-analysis was conducted on 11 papers, and a quality assessment was performed. The study protocol was registered on PROSPERO (ID: CRD42022330074). The proportion of patients with DMC for treatment varied widely based on treatment setting, the specific decision and assessment methods. Reliable capacity assessment was feasible. The Mini-Mental State Examination (MMSE), Global Assessment of Function (GAF), and Brief Psychiatric Rating Scale (BPRS) predicted clinical judgments of capacity. Schizophrenia and bipolar mania were linked to the highest incapacity rates, while depression and anxiety symptoms were associated with better capacity and insight. Unemployment was the only sociodemographic factor correlated with incapacity. Assessing mental capacity is replicable, with most psychiatric inpatients able to make treatment decisions. However, this capacity varies with admission stage, formal status (involuntary or voluntary), and information provided. The severity of psychopathology is linked to mental capacity, though detailed psychopathological data are limited.

Introduction

All mental health professionals involved in the treatment of people with serious mental illness (SMI) must consider their capacity to make decisions about their treatment, among other issues. People with SMI, are defined by the National Institute of Mental Health of the United States as 'a heterogeneous group of persons that suffer from severe psychiatric disorders with mental disturbances of prolonged duration, entailing a variable degree of disability and social dysfunction' (Parabiaghi, Bonetto, Ruggeri, Lasalvia, & Leese, 2006). Decision-making capacity (DMC) is a core concept underlying SMI and can be difficult to determine, but its importance is clear, especially in legal settings. Some countries regulate capacity at judicial level (e.g. Spain), while others determine this through a clinical team (e.g. England and Wales). In 2007, a review concluded that the majority of psychiatric patients have capacity, that clinical variables have an influence on the capacity for treatment decisions, and that its evaluation can be easily replicated (Okai et al., 2007).

Since the work covered by that review, the United Nations established the International Convention on the Rights of Persons with Disabilities in 2006. It proclaimed that the rights and freedoms of persons with disabilities must be respected as those of any other person and their full integration into society must be guaranteed, understanding 'disabilities' as 'the results from the interaction between persons with impairments and attitudinal and environmental barriers that hinders their full and effective participation in society on an equal basis with others' (United Nations, 2006). This influenced new legislation in many countries, especially in mental health. In England and Wales, the Convention has played a significant role in debates concerning the Mental Capacity Act (2005) (Series, 2020) with the concept of a functional test of capacity remaining in law (Ruck Keene, Kane, Kim, & Owen, 2023). On the other hand, in Spain, for example, legislation relating to legal capacity was reformed,

with important changes such as the annulment of incapacity verdicts in favor of support provision verdicts or incorporating reference persons who would assist the person with SMI in their decisions, but without replacing their will (Barrios Flores, 2020).

Recent studies have analyzed capacity in psychiatric patients, with mixed results. Some found that most patients lack capacity for assessment or treatment decisions (Lepping, Stanly, & Turner, 2015), some found variations between different decisions (Maxmin, Cooper, Potter, & Livingston, 2009) and others that most patients had capacity (Calcedo-Barba et al., 2020). There is also no clear consensus regarding patients admitted involuntarily or voluntarily to hospital (Pons et al., 2020), (Curley, Watson, & Kelly, 2021; Pons et al., 2020). The different cognitive and clinical variables influencing this construct (Cáceda, Nemeroff, & Harvey, 2014; Larkin & Hutton, 2017), and the diversity of capacity measurement instruments (John, Rowley, & Bartlett, 2020), hamper our ability to draw clear conclusions from this work. A recent meta-analysis of four studies (Spencer, Shields, Gergel, Hotopf, & Owen, 2017) focused on patients with schizophrenia, and only reported on the proportions of people with capacity for treatment decisions. More recently, the review by (Curley et al., 2021) included psychiatric patients but did not conduct a meta-analysis.

The primary aim of this study was to update (Okai et al., 2007) using a rigorous systematic review and meta-analysis. Okai and colleagues did not include a meta-analysis, because the studies were heterogeneous. We will address concerns about heterogeneity by:

- (a) conducting a random effects meta-analysis, which incorporates heterogeneity between studies into the model;
- (b) updating the review, which increases the sample size, and therefore the ability to explore heterogeneity using sensitivity analysis.

Finally, we will attempt to answer definitively three questions from the previous review:

- (1) Is the assessment of capacity for treatment decisions easily replicable?
- (2) What is the proportion of psychiatric inpatients considered unable to make treatment decisions?
- (3) What are the factors associated with lack of capacity for treatment decisions in psychiatric patients?

Methods

We used the same inclusion criteria as in (Okai et al., 2007). We included quantitative studies, in English or Spanish, with an adult psychiatric inpatient sample, and data on the evaluation of capacity for treatment.

We were particularly interested in studies that reported, in detail, data of patients who lack treatment capacity, and the inter-rater reliability of capacity assessments. Studies were excluded if they were: conducted in people under 18 years of age; exclusively about organic psychiatric disorders (dementia or delirium) or intellectual disability; case reports, commentaries or review articles; or reviews of case notes.

The literature review was conducted according to the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. We performed a systematic search using the most relevant online databases: Scopus, Ovid MEDLINE,

EMBASE, and PsycINFO. For our search strategy, we used the keywords 'mental capacity' or 'competence' or 'decision-making' AND 'severe mental illness' or 'psychiatric' or 'schizop*' or 'bipolar' or 'schizoaffective' or 'obsessive-compulsive' AND 'treatment'. We selected articles from 2006 to May 2022, to capture studies published since (Okai et al., 2007).

Before conducting the search, the study protocol was registered in PROSPERO (an international prospective register of systematic reviews [ID CRD42022330074]). The 'Rayyan' program, which is a digital platform used to carry out systematic reviews (Ouzzani, Hammady, Fedorowicz, & Elmagarmid, 2016) was initially used by S.M and access was granted to a second reviewer (K.A) to independently review a representative group of articles (19) and to assess the reliability of the study selection procedure. The senior researchers (A.D and G.O) supervised the protocol development and selection process.

We screened every article by their title and abstract, excluding studies that did not meet our inclusion criteria. Following this, we reviewed the full text of each potentially eligible article to decide whether or not to include them (see Fig. 1). Inter-rater reliability was almost perfect (kappa index: 0.94) (McHugh, 2012). There were only two discrepancies, which were resolved by consensus.

Data extraction

Data extraction was carried out independently by the first reviewer (S.M), using Microsoft Excel. The second reviewer (K.A) independently extracted from 19 studies that were eligible at full text level on a separate Excel sheet, to ensure consistency.

First, we extracted data and categorized it following the three main research questions from the original study. Next, 11 studies which included sufficient data for meta-analysis (six from (Okai et al., 2007) and five from our search) were included in the review. Once included, correlations between capacity and clinical or cognitive measures were extracted. Finally, a quality assessment of included papers was conducted following an established checklist (Kmet, Lee, & Cook, 2004). Articles from Okai's review have been also included in the qualitative review and they can be consulted in Supplementary Material.

Quantitative analysis

We explored the effect of psychopathology on binary capacity judgments (either clinical judgments or cut off scores) using random-effects meta-analyses using R Statistics.

For the meta-analysis, we used the restricted maximum likelihood method to calculate effect sizes (Cohen's *d*), which were weighted by the inverse of the sampling variance: meaning that studies with higher variance contributed less to the composite effect size. We used conventional criteria to interpret these effect sizes (0.2 = small; 0.5 = medium; 0.8 = large) (Cohen, 1988). Measures with a negative scoring system were transformed, therefore all positive effects indicate a better psychiatric outcome. We then conducted sensitivity analyses for each meta-analysis to assess risk of bias at the study level, including heterogeneity (e.g. I^2 statistic), influential cases (e.g. Cook's distance) and publication bias (funnel plots and Egger's test).

We also used strategies to handle missing data. When studies reported a median and interquartile range, we estimated the mean and standard deviation (s.d.) using conventional formulae (Luo, Wan, Liu, & Tong, 2018; Wan, Wang, Liu, & Tong, 2014). When both of these were absent, we estimated the standard

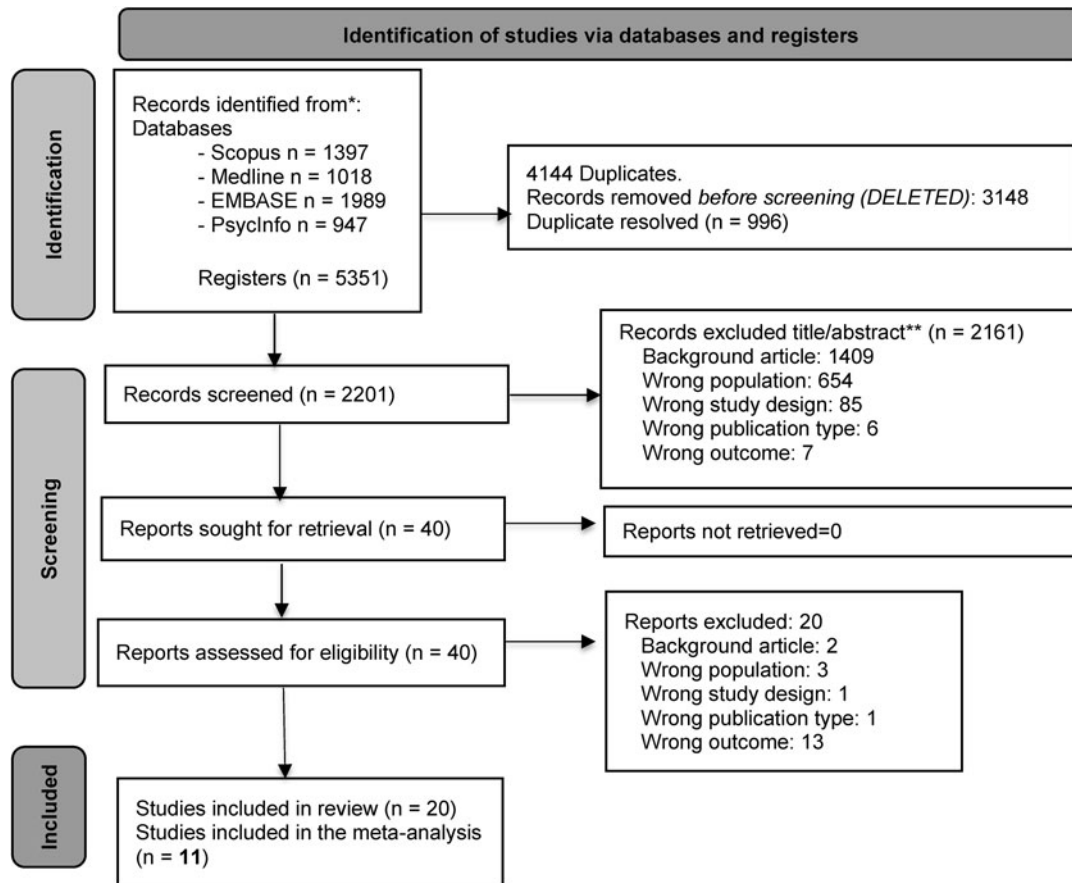


Figure 1. A preferred reporting items for systematic reviews and meta-analyses flow diagram that outlines the study selection process.

deviation using prognostic imputation (Ma *et al.*, 2008). This method calculates the average of observed variances in similar studies to estimate the missing s.d. value. Studies that did not report sufficient data to use any of these methods were excluded.

Finally, we calculated confidence intervals and effect sizes (unadjusted unless stated otherwise) in the qualitative analysis section, to support with the interpretation.

Results

A total of 5351 references were initially identified. 3148 duplicates were resolved, leaving 2201 records to screen. 2161 records were excluded after consulting title and abstract, due to background/context wrong population, study design, publication type, outcome, or foreign language. 40 records were assessed for full eligibility and retrieved for closer examination. We excluded 20 and extracted data from the 20 remaining studies (see Fig. 1).

Capacity assessments

From the 20 included studies (see Appendix 1), 11 (54.55%) used the MacCAT-T (MacArthur Competence Assessment Tool for Treatment) to assess capacity for treatment. This tool consists of four subscales: understanding, appreciation, reasoning, and expressing a choice. Since the MacCAT-T does not have a cut-off score, some studies combined the test with the clinical interview

to decide on the patient's capacity (Bilanakis, Vratisista, Kalampokis, Papamichael, & Peritogiannis, 2013; Dornan, Kennedy, Garland, Rutledge, & Kennedy, 2015; Owen *et al.*, 2008, 2009, 2011; Skipworth, Dawson, & Ellis, 2013). Other studies used the ability or inability to 'express a choice' as a validating criterion to decide who was incapable (Kennedy, Dornan, Rutledge, O'Neill, & Kennedy, 2009; Rutledge, Kennedy, O'Neill, & Kennedy, 2008). Only one study specified a cut-off point (Mandarelli *et al.*, 2014), in which patients lacking capacity scored below 50% on two or more of the four subscales.

Several other methods of assessing capacity were reported. These included semi-structured interviews with different cut-off points (Di & Cheng, 2013; Fraguas *et al.*, 2007; Moye *et al.*, 2007; Seo *et al.*, 2011), vignettes (Moye *et al.*, 2007) or clinical interviews conducted by specialized teams (Chiu, Lee, & Lee, 2014; Kahn, Bourgeois, Klein, & Ana-maria Losif, 2009). In some cases, the interviews were guided by legal criteria according to the Mental Capacity Act or equivalent of each country (Curley, Murphy, Plunkett, & Kelly, 2019c; Tor, Tan, Martin, & Loo, 2020).

Capacity was assessed as present or absent (capable/incapable) in all but two studies. In one study, the sample was divided between high (patients who scored more than 75% in the subscales and maximum score in express a choice) and low capacity (Mandarelli *et al.*, 2018). The other study (Curley, Murphy, Plunkett, & Kelly 2019b) graded capacity as either total, partial or lacking (no score above one in any area).

Table 1. The inter-rater reliability of capacity assessments in psychiatric inpatients

Author	Method	Inter-rater reliability	Agreement
Seo et al. (2011)	KATOC	ICC = 0.94	Excellent
Kennedy et al. (2009)	MacCAT-T	Cohen's $\kappa > 0.95$	Almost perfect
Dornan et al. (2015)	MacCAT-T	Cohen's $\kappa > 0.95$	Almost perfect
Bilanakis et al. (2013)	MacCAT-T	ICC > 0.95	Excellent
Skipworth et al. (2013)	MacCAT-T	Cohen's $\kappa = 0.95$	Almost perfect
Mandarelli et al. (2014)	MacCAT-T	Cohen's $\kappa = 0.85$	Almost perfect
Mandarelli et al. (2018)	MacCAT-T	Mean IRR = 0.80 (0.71–0.85)*	Substantial
Rutledge et al. (2008)	MacCAT-T	Cohen's $\kappa > 0.95$	Almost perfect
Fraguas et al. (2007)	15-item CQ ^a	ICC > 0.75	Good
Moye et al. (2007)	ACCT interview ^b	$r = 0.90$	Almost perfect

*95% Confidence interval. The type of inter-rater reliability statistic was not specified.

^aScore for the Competency Questionnaire (CQ) was reported to be at least 0.75 but final score not reported.

^bAssessment of Capacity to Consent to Treatment (ACCT).

Reliability of the assessment

10 studies reported on the inter-rater reliability of capacity assessments for treatment decisions (see Table 1). These studies assessed reliability using at least one of two methods: by administering a scale which is then verified by an independent expert evaluator(s) (Moye et al., 2007; Seo et al., 2011), or by conducting a joint interview using a single method of evaluating the patient (Bilanakis et al., 2013; Dornan et al., 2015; Fraguas et al., 2007; Kahn et al., 2009; Kennedy et al., 2009; Mandarelli et al., 2014; Rutledge et al., 2008; Skipworth et al., 2013). The number of evaluators and interviews varied.

Prevalence of mental capacity in psychiatric inpatients

Deciding hospitalization

Three studies evaluated the capacity of psychiatric patients to decide on hospital admission. In each one they used a different scale, so the results must be interpreted carefully. Tentatively, it could be said that at least 48% of psychiatric patients do have the capacity to decide on hospitalization at the time of admission (Di & Cheng, 2013; Fraguas et al., 2007; Seo et al., 2011), but this number might reduce between 5% and 27% if decision-making about treatment is part of the same assessment (Spencer, Gergel, Hotopf, & Owen, 2018).

Deciding treatment

11 studies measured the proportion of patients able to decide various treatments. Regarding ECT, the two studies that evaluated this (Chiu et al., 2014; Tor et al., 2020) used the clinical criteria of a psychiatrist. They found that more than half of patients lacked capacity (between 51.7% and 75.1%). Both capacitous and incapacitous patients generally improved in their psychiatric symptoms following treatment.

Regarding the ability to decide between two medications or no treatment, around 25% of patients were unable to express a choice (Dornan et al., 2015; Kennedy et al., 2009; Rutledge et al., 2008), increasing to 37.5% (95% CI [27–48%]) if more information was given (Kennedy et al., 2009). In one study, the proportion of 160 patients who lacked capacity decreased from 24.3% (95% CI [12–

41%]) at admission to just 5.4% (95% CI [0–2%]) at follow up (Fraguas et al., 2007).

Based on MacCAT scores, around 76% of patients subjected to involuntary hospital admission had low capacity to decide whether to continue receiving their current treatment (Mandarelli et al., 2014, 2018), compared to just 30% of voluntary inpatients (Mandarelli et al., 2014). In another sample, only 1.86% (95% CI [0–5%]) of 215 inpatients were considered to be totally incapable of consenting to treatment (Curley et al., 2019b). Nevertheless, the results may also depend on the cut-off criteria of the assessment method, because the latter study applied a more conservative cut-off point with the MacCAT (deeming incapable those whose total score was <2 *v.* the more used criterion of scoring below 50% in 2 or more subscales or based on clinician rating). On the other hand, when the Irish legal criteria was used for this sample, instead of questionnaires or scales, then this figure increased to 34.9% (95% CI [29–42%]) of inpatients being considered to lack capacity (Curley et al., 2019c).

Variations in assessment methods should also be considered. (Moye et al., 2007) used three hypothetical vignettes to elicit treatment choices for an imaginary medical condition, which varied in length and complexity. Clinicians rated capacity using an interview, based on the MacCAT subscales. They concluded that 80% of psychiatric patients lacked the ability to decide between two hypothetical treatment options. However, the hypothetical treatment options were relatively uncommon for psychiatric inpatients. The article also does not report capacity ratings for the simpler vignettes.

The remaining studies show high heterogeneity in the decision to be evaluated, without specifying the treatment (Kahn et al., 2009; Okai et al., 2007; Owen et al., 2008, 2011) as well as in the rate of incapacity, which ranges from 10% to 87% in the samples.

Factors related to mental incapacity

Sociodemographic factors

Nine studies focused on the sociodemographic factors associated with incapacity (Chiu et al., 2014; Curley et al., 2019b, 2019c; Di & Cheng, 2013; Fraguas et al., 2007; Okai et al., 2007; Skipworth

et al., 2013; Spencer et al., 2018). No studies found a robust association between capacity and sex. One study (Curley et al., 2019b) found a weak effect of females having better MacCAT scores in a multivariate analysis, but the bivariate analysis was non-significant. Another study found that being female predicted incapacity in a bivariate analysis (OR 0.19, 95% CI [1.07–3.56]), which became non-significant when adjusting for alcohol or substance dependence (Owen et al., 2009). Another study found a borderline significant effect in the other direction, with females being more likely to be judged as lacking capacity (OR 1.96, 95% CI [1.07–3.56]) but the effect became non-significant when this was controlled (Owen et al., 2009). Only one study found a significant association with older age (Curley, Murphy, Fleming, & Kelly, 2019a).

Regarding ethnicity, two studies found that Black ethnicity was associated with poorer capacity, compared to White European ethnicity (Owen et al., 2008, 2011). Black patients were significantly less likely to regain capacity for treatment decisions, compared to White patients (OR 0.29, 95% CI [0.11–0.74]). More specifically, Black African (OR 0.14, 95% CI [0.05–0.37]) and Black Caribbean (OR 0.32, 95% CI [0.13–0.78]) patients were significantly less likely to have capacity to make treatment decisions. These effect sizes became non-significant after controlling for differences in substance misuse, self-harm and diagnosis together, suggesting a potential confounding effect.

The patient's level of education was positively associated with capacity in one report (Di & Cheng, 2013). Unemployment was associated with incapacity in three studies (Curley et al., 2019c; Di & Cheng, 2013; Skipworth et al., 2013). Finally, patients who had longer hospital admissions were more likely to lack capacity (Chiu et al., 2014; Fraguas et al., 2007).

Psychopathological variables

Schizophrenia was the psychiatric diagnosis associated with the highest rate of incapacity in six studies (Curley et al., 2019c; Fraguas et al., 2007; Mandarelli et al., 2018; Owen et al., 2009, 2011, Tor et al., 2020), followed by bipolar affective disorder (BPAD) of the manic type (Chiu et al., 2014; Mandarelli et al., 2018; Owen et al., 2009, 2011; Skipworth et al., 2013; Tor et al., 2020), and depression (Owen et al., 2008, 2011, 2009; Tor et al., 2020). In only one paper, there were higher rates of incapacity for manic BPAD patients (97%; 95% CI [86–100%]) compared to schizophrenia (81%; 95% CI [71–89%]) (Owen et al., 2008) although this difference was non-significant. Other diagnoses associated with incapacity were personality disorders (Owen et al., 2008, 2009), affective disorders (Curley et al., 2019c; Fraguas et al., 2007; Kahn et al., 2009) and substance use disorders (Curley et al., 2019b; Fraguas et al., 2007; Kahn et al., 2009), but to a lesser degree (from 0.9% to 34%) and with a greater likelihood of regaining capacity (Fraguas et al., 2007; Owen et al., 2011).

In general, the included studies suggest that psychiatric symptoms are also associated with incapacity (Owen et al., 2011). Positive symptoms were found to be associated with incapacity in eight studies (Dornan et al., 2015; Fraguas et al., 2007; Kennedy et al., 2009; Mandarelli et al., 2018; Owen et al., 2009; Skipworth et al., 2013; Spencer et al., 2018), especially conceptual disorganization (Owen et al., 2009; Skipworth et al., 2013), manic symptoms (Mandarelli et al., 2014, 2018; Spencer et al., 2018), delusions (Skipworth et al., 2013; Spencer et al., 2018) and unusual thought content (Owen et al., 2009). Hallucinations were correlated with capacity in non-psychotic disorders (Owen

et al., 2009), but not in psychotic disorders (Skipworth et al., 2013; Spencer et al., 2018). Across inpatients, poor insight was also a consistent and strong predictor of incapacity (Owen et al., 2009, 2011; Seo et al., 2011; Skipworth et al., 2013; Spencer et al., 2018) although in patients with a diagnosis of depression poor insight was a poor predictor of incapacity (Owen et al., 2008) and regaining capacity was less associated with change in insight (Owen et al., 2009). Finally, low global functioning predicted incapacity in four studies (Dornan et al., 2015; Kennedy et al., 2009; Rutledge et al., 2008; Tor et al., 2020).

Other studies also found that cognitive performance is relevant to capacity, although they used the Mini Mental State Examination (MMSE) (Kahn et al., 2009) or Montreal Cognitive Assessment (Tor et al., 2020) as measures, which are both screening tests, so their conclusions must be considered with caution. Impairments in short-term memory were also associated with poorer capacity (Spencer et al., 2018). Only one study analyzed psychiatric medication use in relation to incapacity. The authors concluded that patients taking clozapine showed greater improvement in capacity, especially appreciation; that is, they had better ability to decide than those treated with other psychotropics (Dornan et al., 2015).

MacCAT

Six studies analyzed the relationship between psychopathological and cognitive variables with the different subscales of the MacCAT (Bilanakis et al., 2013; Kennedy et al., 2009; Mandarelli et al., 2014, 2018; Rutledge et al., 2008; Seo et al., 2011). Four of these studies reported significant associations, which are summarized as effect sizes in Table 2. Through non-parametric analysis, being able to express a choice was also significantly associated with better global functioning (Kennedy et al., 2009; Rutledge et al., 2008), as well as lower positive symptoms and overall psychopathology (Kennedy et al., 2009; Rutledge et al., 2008).

Meta analysis

When combining our sample with studies from (Okai et al., 2007), 10 studies reported sufficient data on the association between psychopathological measures and capacity for treatment decisions, for inclusion into the meta-analysis (see Fig. 2). Six studies reported on the Brief Psychiatric Rating Scale (BPRS), five used the MMSE and three used the Global Assessment of Functioning (GAF) scale (see Appendix 2).

Patients with capacity had significantly higher MMSE scores than patients without capacity, indicating greater cognitive functioning, with a large effect size ($d = 0.93$, CI [0.47–1.40]). Patients with capacity had significantly higher GAF scores than patients without capacity, indicating greater overall functioning, with a large effect size ($d = 0.90$, CI [0.22–1.58]). Finally, patients with capacity had significantly lower BPRS scores than patients without capacity, indicating lower total symptomatology, with a large effect size ($d = 0.84$, CI [0.45–1.23]). Overall, these results suggest that capacity to make a treatment decision is strongly associated with psychiatric morbidity.

Sensitivity tests show that there was moderate-to-large heterogeneity which was significant for all three analyses ($I^2 = 73.55\text{--}80.40\%$, $p < 0.005$). The results above should therefore be interpreted with caution. Based on Cook's distance, there was only one potentially influential case, in the MMSE analysis (Jacob et al., 2005). This

Table 2. A table outlining significant relationships between the MacCAT sub-scales and psychopathological or cognitive variables (higher scores indicate less severe psychopathology or cognitive impairment)

Scale	Understanding	Appreciation	Reasoning	Expressing a choice
BPRS				
• Disorientation	$r = 0.51$ (Bilanakis et al., 2013) ($d = 1.19$)			
• Withdrawal		$r = 0.42$ (Bilanakis et al., 2013) ($d = 0.93$)	$r = 0.51$ (Bilanakis et al., 2013) ($d = 1.19$)	$r = 0.36$ (Bilanakis et al., 2013) ($d = 0.77$)
• Hostility and suspiciousness		$r = 0.51$ (Bilanakis et al., 2013) ($d = 1.19$)	$r = 0.57$ (Bilanakis et al., 2013) ($d = 0.90$)	$r = 0.33$ (Bilanakis et al., 2013) ($d = 0.77$)
• Energy		$r = 0.46$ (Bilanakis et al., 2013) ($d = 1.04$)	$r = 0.45$ (Bilanakis et al., 2013) ($d = 1.01$)	
• Conceptual disorganization			0.72 (Bilanakis et al., 2013) ($d = 0.93$)	0.70 (Bilanakis et al., 2013) ($d = 0.93$)
• Anxiety and depression		$r = 0.22$ (Mandarelli et al., 2018) ($d = -0.45$)	$r = 0.20$ (Mandarelli et al., 2018) ($d = -0.41$)	
• Total severity		$r = 0.53$ (Mandarelli et al., 2018) ($d = 1.28$)	$r = 0.36$ (Bilanakis et al., 2013) ($d = 0.77$)	
Symptoms				
• Negative	$r = -0.23$ (Mandarelli et al., 2018) ($d = 0.47$)			
• Positive		$r = -0.24$ (Mandarelli et al., 2018) ($d = 0.49$)	$r = -0.27$ (Mandarelli et al., 2018) ($d = 0.56$)	
Premorbid IQ	$r = 0.27$ (Seo et al., 2011) ($d = 0.68$)			
MMSE	$r = 0.42$ (Seo et al., 2011) ($d = 0.76$) $r = 0.37$ (Mandarelli et al., 2018) ^a ($d = 0.80$)			
Insight	$r = 0.21$ (Seo et al., 2011) ^b ($d = 0.43$)	$r = 0.43$ (Seo et al., 2011) ^b ($d = 0.96$)	$r = 0.40$ (Seo et al., 2011) ^b ($d = 0.90$)	
Voluntary admission (v. involuntary)	$d = 0.56$ (Mandarelli et al., 2014)	$d = 1.20$ (Mandarelli et al., 2014)	$d = 0.60$ (Mandarelli et al., 2014)	$d = 0.82$ (Mandarelli et al., 2014)

^aAssociation found in Schizophrenia sample but not Bipolar.

^bUsing the KATOC scale, which is based on the MacCAT.

study effect was in the expected direction, but excluding it would have made the pooled effect non-significant. There was no suggestion of publication bias (Egger's test $p > 0.05$).

Quality study of the articles included

Following our quality assessment (see Supplementary Material), most of the included studies were rated as high or medium quality. The main strengths were the explicit objectives, study design, sample size, and conclusions. The description of the sample was often incomplete (e.g. limited sociodemographic data) and several studies only analyzed the full dataset, rather than patient subgroups. Furthermore, only three studies included blind evaluators.

Discussion

This study provides an updated systematic review and meta-analysis focusing on decision making for treatment in all psychiatric inpatients. The main objective was to update the

results of a previous review (Okai et al., 2007) focusing on three key questions. Our results also update and provide greater detail to some of the results provided in a more recent meta-analysis (Spencer et al., 2017).

Reliability of capacity assessments

The first question was whether capacity assessments for treatment decision-making could be easily replicated. As in (Okai et al., 2007), we found that capacity assessments for treatment decisions have strong inter-rater reliability, either when professionals evaluate this jointly or on separate occasions. As noted by Cairns et al., 2005 and Raymont et al., 2007, the latter also suggests strong test-retest reliability. By replicating this finding, our results suggest that changes in policy and practice over the previous 15 years have not significantly changed the reliability of capacity assessments. We have also found this result across several countries, therefore differences in capacity legislation did not have a noteworthy effect on reliability in our sample. These studies

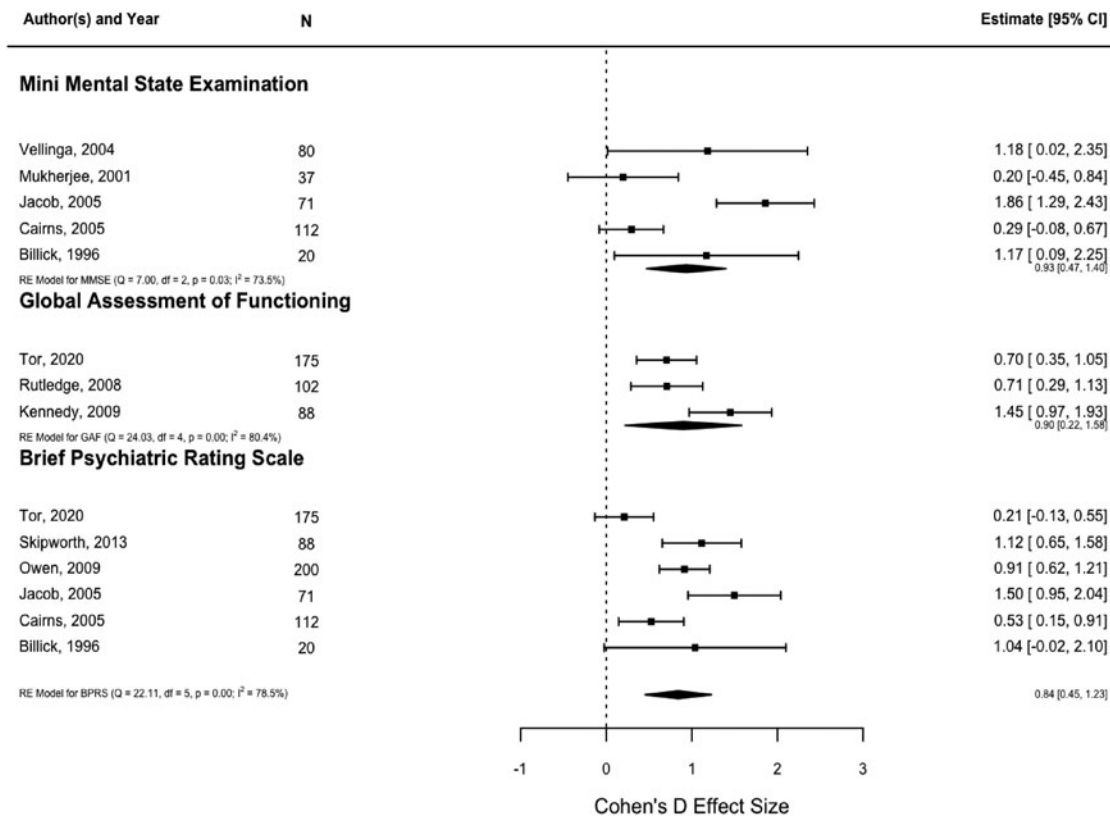


Figure 2. A forest plot showing the relationship between capacity for treatment and three psychopathology measures (higher scores indicate less severe psychopathology).

included a semi-structured scale as part of their evaluation, which may have improved reliability compared to standard clinical practice.

Proportion of psychiatric inpatients lacking capacity

The second question is difficult to answer due to the variety of instruments for assessment of capacity and the differences in legal criteria between jurisdictions. Psychiatric inpatients, though distinguishable from general medical inpatients or non-hospital samples, are found in a variety of settings. The MacCAT-T remains the most frequently used psychometric assessment (Wang *et al.*, 2017), but it lacks an established cut-off point to produce a binary measure of capacity. In our sample, the 18 studies that have used binary measures of capacity showed varying rates of incapacity. Invariably, studies that adopted more conservative cut-off points found higher rates of incapacity. This is consistent with other studies of the effect of arbitrary cut-off points using the MacCAT-CR which assesses capacity to decide upon participation in research (Dunn *et al.*, 2007). So it is ultimately left to researchers to decide on an appropriate cut-off point and this is a potential source of reporting bias (Banner, 2012).

Qualitative analysis suggested some explanations for variations in capacity rates. First, using standardized assessment instruments seemed to lead to higher rates of incapacity, compared to clinical judgment. It is true that some professionals consider incapacity to be synonymous with treatment refusal (Chiu *et al.*, 2014; Okai *et al.*, 2007) or the inability to provide informed consent (Lamont, Stewart, & Chiarella, 2016) but it is important to also mention that while informed consent and capacity are related

concepts, they are not interchangeable. Capacity is a prerequisite for providing valid informed consent, but having capacity doesn't necessarily mean someone has provided informed consent. Also, a clinical assessment can take into account other cognitive, emotional and phenomenological factors that are not covered by structured tests (Breden & Vollmann, 2004), enabling a more comprehensive capacity assessment. Studies which combine structured assessment with clinical judgment are likely to give better overall assessment.

Second, the presentation of the information may have affected capacity rates. For example, when treatment decisions were assessed individually, less than half of the patients lacked capacity (25% to 43%). However, we found a higher incapacity rate when two decisions were considered as part of the same assessment (69%). Reducing the amount of arbitrary information was also found to support decision-making. Both factors could be potentially explained by impairments in executive functioning, such as working memory or attention, that has been widely reported in psychiatric patients (Testa & Pantelis, 2009; Yaple, Tolomeo, & Yu, 2021). The MacCAT subscale of 'appreciation' is conceptually and empirically associated with both capacity and executive functioning (Mandarelli *et al.*, 2012). This may suggest that executive functioning is a potentially useful target for treatment planning for patients who lack capacity, although some authors have challenged this approach (Ryba & Zapf, 2011).

Finally, the assessment of capacity may also vary by the stage and type of the admission. Unsurprisingly, voluntary patients had lower incapacity rates compared to involuntary patients. Other authors (Curley *et al.*, 2019b) concluded that being involuntarily admitted was the strongest predictor of low MacCAT scores, *i.e.*,

low capacity. Patients were also more likely to lack capacity in the earlier stages of their admission compared to later, which is likely explained by improvement in their clinical symptoms following care and treatment.

Factors associated with the lack of capacity

This leads to the third question about psychiatric inpatients. Our meta-analysis found that incapacity was associated with worse psychiatric outcomes on all three measures, with large effect sizes. In order of strength, we found that the MMSE, GAF, and BPRS predicted binary clinical judgments of capacity. Given the variation in diagnoses and settings, this result is strong evidence of a link between psychiatric morbidity (including cognitive impairment) and capacity.

Our qualitative analysis provides additional context to these effects. Importantly, several diagnoses showed associations. Although diagnosis alone is therefore an insufficient guide to capacity, psychiatric symptoms have been associated with incapacity (Owen et al., 2011), especially positive symptoms. The only types of psychopathologies that predicted better capacity were depression and anxiety symptoms (see figure 1 of Appendix 2). Although insight into mental illness and capacity to decide treatment are strongly associated, both depression and anxiety are also associated with better insight (Murri et al., 2016; Stefanopoulou, Lafuente, Saez Fonseca, & Huxley, 2009), which has been referred to as the 'insight paradox'. In the subgroup of patients with a diagnosis of depression, insight is a poor guide to capacity. This suggests a need for more granular analysis of the relationship between self-awareness and capacity (van der Plas, David, & Fleming, 2019). On the other hand, it is important to point out that regular programmed activities and medication in hospital seems to improve patients' ability to make treatment decisions over time (Dornan et al., 2015), even if the intervention lasts only one month (Owen et al., 2009).

Conversely, most of the socio-demographic predictors were either weak or inconclusive. The only factor that was consistently related to incapacity was unemployment, which is perhaps unsurprising given the association with psychopathology. Black ethnicity was also associated with poorer odds of having capacity and regaining capacity in one study each. In one study, the effect became non-significant after controlling for three potential confounding variables, although this could also be explained by a reduction in statistical power (Aberson, Rodriguez, & Siegel, 2022). Further research is warranted to explore whether this ethnicity effect is consistent across samples, to better understand confounding and rater bias.

In light of these findings, we have provided some recommendations to be taken into account when assessing capacity in psychiatric patients:

- A good evaluation should include both quantitative and qualitative methods, considering aspects such as the person's personal values and cognitive factors. We do not recommend structured assessments alone. Interventions aimed at improving cognition, particularly executive function, could lead to improvements in capacity and should be researched.
- Providing briefer and more concise information relevant to the specific treatment may help patients to demonstrate capacity.
- It is possible to reliably evaluate capacity for treatment on admission to a psychiatric facility and to reassess capacity when the patient's symptomatology has stabilized.

Limitations

Heterogeneity is a clear limitation to our analyses. We found variation in the methods used to assess capacity, the type of treatment decision being assessed and the demographic, diagnostic and symptomatological profile of each sample. The latter two were especially problematic for our meta-analysis, because poor reporting of these variables reduced our ability to explain this heterogeneity using post-hoc analysis. These limitations are common in meta-analyses of cross-sectional studies (Ioannidis, 2008). Although moderate-to-large heterogeneity increases the likelihood of false negatives, all three analyses remained significant, which suggests a robust relationship between psychiatric morbidity and capacity. We were also unable to find enough comparable data on psychopathology subscales, therefore we only included generic psychopathology measures in our meta-analysis. Future studies could use an individual patient data meta-analysis (Cooper & Patall, 2009; Riley, Lambert, & Abo-Zaid, 2010) to explore how these effects vary between subgroups and subscales.

Finally, previous studies have also noted that inter-rater disagreements are more likely when the patient's capacity is fluctuating or borderline (Dunn et al., 2007) and that these cases are among the most challenging to assess (Ariyo, McWilliams, David, & Owen, 2021). The studies in our sample did not report sources of disagreements, therefore we are unable to determine to what extent fluctuating or borderline capacity had an impact on reliability. We recommend that future studies report more granular data on disagreement cases in order to facilitate more useful professional guidance. Nonetheless, as professionals generally agree on the capacity outcome in the majority of cases, this is unlikely to limit the wider generalizability of our findings, and our results ameliorate concerns that capacity assessment is subjective and unreliable.

Conclusions

We conclude that the assessment of mental capacity can be easily replicated, both through standardized methods and clinical interviews. Among the available samples, more than half of psychiatric inpatients were capable of making decisions regarding their treatment or hospitalization. However, this capability may vary based on the stage of admission, involuntary *v.* voluntary and the amount of information provided. The severity of psychopathology is strongly correlated with mental capacity but detailed psychopathological data remains limited. Data on sociodemographic associations with capacity are also limited, and potential associations with education and ethnicity warrant further investigation.

Supplementary material. The supplementary material for this article can be found at <https://doi.org/10.1017/S0033291724000242>.

Funding statement. This research is funded by the Wellcome Trust Collaborative Award in Humanities & Social Science [203376], made to G.O. as Principal Investigator in the Mental Health and Justice Project, and by the Instituto de Salud Carlos III (ISCIII) through project PI17/00113 and co-financed by the European Union. The funders had no role in study design, data collection, data analysis, or preparation of the manuscript.

Competing interests. None.

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