



Neuropsychological impairment corresponds with poor understanding of informed consent disclosures in persons diagnosed with major depression

Courtney Ghormley ^a, Michael Basso ^{b,*}, Philip Candlis ^c, Dennis Combs ^d

^a Arkansas Neuropsychology, 415 North McKinley Street, Little Rock, AR, United States

^b Department of Psychology, University of Tulsa, 800 South Tucker Drive, Tulsa, OK, United States

^c University of Massachusetts Medical School, Worcester, MA, United States

^d University of Texas-Tyler, Tyler, TX, United States

ARTICLE INFO

Article history:

Received 28 April 2010

Received in revised form 16 October 2010

Accepted 25 October 2010

Keywords:

Major depression

Neuropsychological function

Informed consent

Decision-making

ABSTRACT

Incapacity to make decisions about medical treatment is associated with neuropsychological impairment in a variety of illnesses. Although cognitive deficits occur often in people with major depressive illness, little research has studied its association with decisional capacity. The present investigation examined ability to understand treatment disclosures, which is a core component of decisional capacity, in 31 inpatients with depression and 16 normal controls. Depressed inpatients with diminished neuropsychological function showed poor understanding of treatment disclosures compared to the control group. Nonetheless, with sufficient cueing, depressed inpatients with diminished neuropsychological function were able to display understanding that was equivalent to the control group. Exploratory regression analyses revealed that diminished new-learning correlated with poorer understanding. Implications of these results for clinical practice and medical research involving people with major depressive illness are discussed.

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1. Introduction

As they make decisions regarding treatment options, patients are provided information concerning the risks and benefits of medical interventions. To make a competent decision, the patient must: 1) express a treatment choice; 2) appreciate the personal consequences of their choice; 3) make a rational decision concerning treatment; and 4) understand the treatment and its risks and benefits (Appelbaum and Roth, 1982; Appelbaum et al., 1987; Appelbaum and Grisso, 1995). These four capacities comprise a prominent model of decision-making regarding medical treatment (Grisso and Appelbaum, 1998), are widely applied, and are consistent with existing medical ethics and legal precepts.

Research concerning decisions about medical treatment (and its corollary, ability to make decisions regarding medical research participation) reveals that each of the four capacities may be diminished by disease-related cognitive impairment. Studies involving people with schizophrenia (Carpenter et al., 2000; Combs et al., 2005; Palmer et al., 2005; Candilis et al., 2006, 2008), HIV (Moser et al., 2002), mania (Howe et al., 2005), Alzheimer's disease (Marson and Harrell, 1999; Kim et al., 2001; Palmer et al., 2005; Gurrera et al., 2006), diabetes (Candilis et al.,

2008), and Parkinson's disease (Griffith et al., 2005) reveal that patients are often incapable of providing adequate informed consent.

Some studies have sought to delineate the domains of neuropsychological function that correspond with specific components of medical decision-making. Employing a variety of neuropsychological predictors and medical decision-making tools with several clinical populations, executive function, new-learning, and working memory emerge as correlates of understanding, reasoning, and appreciation of informed consent disclosures (e.g., Dymek et al., 2001; Moser et al., 2002; Kovnick et al., 2003; Palmer et al., 2004; Dunn et al., 2006a,b; Gurrera et al., 2006; Palmer and Jeste, 2006; Okonkwo et al., 2008). This implies that individuals with such deficits may be prone to misunderstand details of a treatment regimen, or they may have difficulty comprehending its risks and benefits.

Nonetheless, it is important to acknowledge that presence of neurological or psychiatric disorder is not tantamount to incompetent decisions; only some patients are entirely incapable of providing informed consent. For example, half of people with Alzheimer's disease demonstrate intact medical decision-making capability (e.g., Kim et al., 2001; Kim et al., 2002). Patients with schizophrenia or schizoaffective disorder score as well on standardized measures of decision-making capacity as do 69–89% of healthy control subjects (Candilis et al., 2008). Furthermore, neuropsychological impairment does not equate with decisional-incapacity, but places the person at-risk of making an incompetent decision. Although performance on neuropsychological tests may account for 40% to 60% of variance on measures of medical

* Corresponding author. Department of Psychology, University of Tulsa, 800 South Tucker Drive, Tulsa, OK 74104, United States.

E-mail address: Michael-basso@utulsa.edu (M. Basso).

decision-making, considerable variation in decisional-capacity remains unaccounted for (e.g., [Gurrera et al., 2006](#)). Consequently, it is important to recognize that much individual variation in decision-making capacity remains despite disease status or the presence of neuropsychological impairment.

Most of the research examining these issues has involved people with dementia or schizophrenia. Considerably less is known regarding a common psychiatric illness, major depression. Depression is one of the most common mental disorders ([Hasin et al., 2005](#)), with episodes accompanied by abnormal cerebral volumes involving frontal, temporal, and striatal structures ([Beyer and Krishnan, 2002](#); [Mayberg, 2003](#); [Drevets et al., 2008](#)). Functional imaging studies reveal anomalous activation in these same structures, which in turn correspond with depressive severity and impaired executive function, working memory, and new-learning performance ([Drevets, 2000](#); [Mayberg, 2003](#); [Marvel and Paradiso, 2004](#)).

Although specific prevalence estimates of cognitive impairment in people with depression are lacking, at least four meta-analyses have been conducted during the past 20 years ([Burt et al., 1995](#); [Christensen et al., 1997](#); [Veiel, 1997](#); [Henry and Crawford, 2005](#)). These reveal that cognitive impairment occurs commonly in depression. Furthermore, contrasts between patients and control subjects manifest large effect sizes. Deficits involving executive function, working memory, and new-learning are especially common ([Burt et al., 1995](#); [Veiel, 1997](#); [Elliott, 1998](#); [Austin et al., 2001](#); [Marvel and Paradiso, 2004](#)).

As a result of these deficits, patients with depression may be vulnerable to making poor decisions regarding medical issues. Indeed, they are prone to a diminished concern for well-being, they shoulder inappropriate risk, and they underestimate likelihood of potential benefit of treatments ([Ganzini et al., 1994](#); [Baker and Channon, 1995](#); [Elliott, 1997](#)). Consequently, they may fail to understand fully the relative risk-benefit ratio of treatments ([Cohen et al., 2004](#)), and they may refuse beneficial treatments ([Ganzini et al., 1994](#)). Because of these concerns, depressed patients may be vulnerable to poor medical choices or related exploitation. The importance of these issues is evident in the recently completed STAR*D trial that incorporated systematic efforts to protect vulnerable depressed patients from exploitation ([Alpert et al., 2006](#)).

Few studies have examined decisional capacity among patients with depression. [Grisso and Appelbaum \(1995\)](#) assessed decision-making capacity for treatment in a sample of 92 depressed inpatients, 75 schizophrenia patients, and a normal-control comparison group. They measured decisional capacity with a series of instruments that measured patients' ability to express a choice, reason through a choice, appreciate their disorder and treatment options, and understand their disorder and treatment choices. To assess these respective dimensions, they administered a series of measures that included the Expressing a Choice, Thinking Rationally about Treatment Decisions, Perceptions of Disorders and the Understanding Treatment Disclosures (UTD) instruments. The depressed inpatients displayed better reasoning and understanding than those with schizophrenia, but both patient groups performed worse than the comparison group. The depressed and schizophrenic inpatients showed worse appreciation of treatment benefits than the control group. Moreover, 24% of the depressed patients were judged incompetent. The authors also found that verbal reasoning, as indexed by Vocabulary, Similarities, and Digit-Span subtests from the Wechsler Adult Intelligence Scale-Revised, corresponded with worse reasoning and understanding.

Later, [Appelbaum et al. \(1999\)](#) conducted a descriptive study of decision-making regarding treatment in 24 depressed outpatient women. Although understanding was deemed normal, 15% of the patients displayed poor capacity to appreciate and reason through medical decisions. In a more recent study, [Vollmann and colleagues \(2003\)](#) compared the capacity to make treatment decisions among groups of depressed, demented, and schizophrenic outpatients. Proportions of patients classified as incompetent by clinician judgment was contrasted. The demented patients were most likely

to be impaired, and the depressed patients were least likely. Among the depressed patients, 17% showed poor understanding.

Overall, these scant findings imply that as many as 25% of depressed inpatients display poor understanding of treatment choices ([Grisso and Appelbaum, 1995](#)), but they have not been systematically replicated. Furthermore, factors that contribute to decisional-incapacity remain uncertain. In particular, none of the aforementioned studies evaluated whether factors such as executive function, working memory, or new-learning predict decisional incapacity, because they largely utilized measures of intelligence only. This is in stark contrast to studies involving schizophrenia or neurological disease which revealed that deficits involving new-learning, executive function and working memory are correlates of decisional incapacity in treatment or medical research contexts (e.g., [Gurrera et al., 2006](#); [Moye et al., 2006](#); [Dunn et al., 2007](#)). Possibly, similar deficits may emerge as reliable predictors of decisional incapacity in depression, thereby permitting researchers and clinicians to identify risk factors for incompetent decision making. Finally, none of these studies examined remediation of poor decision-making. A growing body of research suggests that cueing and repetition of information can facilitate the ability of cognitively impaired patients to understand, appreciate, and reason through informed consent disclosures ([Flory and Emanuel, 2004](#); [Jeste et al., 2008](#)). Inasmuch as depressed people have compromised capacity, their ability to make autonomous decisions regarding medical treatment may be enhanced.

In the present investigation, we attempted to explore these issues. In particular, we focused on understanding elements of an informed consent disclosure. Understanding is only one of the four capacities presumed to underlie decision-making capacity. Prior research concerning decisional capacity in people with major depressive illness ([Appelbaum et al., 1999](#)) found that some patients manifested poor appreciation and reasoning, but their understanding was generally intact. Nonetheless patients in that study were uniformly female outpatients, and it is uncertain how well such data may generalize to a more diverse sample of inpatient depressives. Furthermore, understanding is among the most extensively described and most commonly studied ([Dunn et al., 2006a,b](#)). Towards this end, we used the UTD instrument, which was developed as part of the MacArthur Treatment Competence Study. It is considered a reliable and valid method of measuring understanding of medical disclosures ([Dunn et al., 2006a, b](#); [Moye et al., 2006](#)). Additionally, the UTD provides the basis for the largest scoreable domain of decision-making capacity identified by Appelbaum and Grisso (understanding relevant information, including risks/benefits and alternatives), while allowing the part-by-part disclosures favored by the MacArthur studies and other investigations.

Based on earlier research concerning depression ([Appelbaum and Grisso, 1995](#); [Lapid et al., 2003](#)) and studies involving other patient populations (e.g., [Dymek et al., 2001](#); [Kim et al., 2001](#); [Combs et al., 2005](#); [Howe et al., 2005](#)), we hypothesized that cognitively impaired depressed patients would display poorer understanding of treatment options than either an unimpaired group of depressed patients or a control group.

We also sought to determine whether understanding of treatments may be enhanced. Recent efforts have modified informed consent procedures to facilitate understanding of treatment ([Dunn et al., 2002](#)). In this vein, researchers have tested the effects of simplified explanations, repetition, and recognition cueing to increase patient understanding of treatment regimens in patients with schizophrenia ([Appelbaum and Grisso, 1995](#); [Carpenter et al., 2000](#); [Dunn and Jeste, 2001](#); [Combs et al., 2005](#)). By providing recognition cueing, people with depression may likewise realize an enhanced understanding of potential medical treatments.

Furthermore, the current study evaluated the aspects of neuropsychological function that contribute to patient understanding of treatment disclosures. Investigations of people diagnosed with

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