The Recovery Assessment Scale – Domains and Stages (RAS-DS): Sensitivity to change over time and convergent validity with level of unmet need

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\textbf{ABSTRACT}

There is a need for robust outcome measures for use in psychiatric services. Particularly lacking are self-rated recovery measures with evidence of sensitivity to change. This study was established to examine the convergent validity and sensitivity to change over time (responsiveness) of the Recovery Assessment Scale – Domains and Stages (RAS-DS), in comparison to level of unmet need as measured by the Camberwell Assessment of Need – Short Appraisal Scale (CANSAS). Convergent validity was examined through cross-sectional correlations between 540 CANSAS and RAS-DS scores collected on the same day for the same individuals. Sensitivity to change was examined using correlations between change scores in CANSAS and RAS-DS where both were collected on the same day and the two time points were separated by 90 days or more (n = 498). Results demonstrated moderate, significant cross-sectional correlations between CANSAS scores and RAS-DS total and domain scores and between change scores of both instruments. Results suggest that the RAS-DS is sensitive enough to detect change over time. Only moderate correlation between the RAS-DS and CANSAS suggests that, in the context of recovery-oriented service provision, it is important to measure self-reported recovery in addition to level of unmet needs.

\textbf{1. Introduction}

With the drive towards more recovery-oriented service provision in mental health services, there have been repeated calls for the use of outcomes measures that evaluate self-rated recovery (Galletly et al., 2016; Thornicroft and Slade, 2014). However, while there are a large number of self-report measures of recovery available, most are at early stages of psychometric testing and few have been tested in terms of responsiveness or sensitivity to change over time (Burgess et al., 2011; Scheyett et al., 2013; Shanks et al., 2013). Key challenges in the process of assessing sensitivity to change over time are the absence of a “gold standard” measure of recovery, as recovery in the context of mental illness is a complex and diverse experience, and debate surrounding what should be used as an objective measure of change over time (Burgess et al., 2011). For an instrument to be useful to the individual tracking their own recovery over time and to services evaluating recovery-focused outcomes, it must have the capacity to capture change over time.

The Recovery Assessment Scale – Domains and Stages (RAS-DS) is an Australian-developed measure of self-reported mental health recovery (Hancock et al., 2015b). Developed from the original Recovery Assessment Scale (Gifford et al., 1995), the RAS-DS was designed to capture a broader range of domains of recovery and also to reflect achievements associated with the later stages of recovery. Original testing of the RAS-DS demonstrated strong internal and construct validity and acceptability to consumers and mental health workers (Hancock et al., 2015b). Initial testing and other published studies have demonstrated that the RAS-DS scores improve over time when individuals are receiving services that are expected to improve their recovery (Hancock et al., 2017, 2015b). These results suggest that the RAS-DS is a useful instrument to measure recovery and may be sensitive to change over time, but further testing is needed.

A number of Australian services simultaneously use the RAS-DS and the Camberwell Assessment of Need – Short Appraisal Scale (CANSAS) (Slade et al., 1999) as key outcome measures. This presented a useful opportunity to examine relationships between CANSAS and RAS-DS to further explore the construct validity of the RAS-DS and its ability to detect change over time. Given the absence of a “gold standard” measure of recovery or an agreed objective measure of change, the CANSAS was considered a potentially suitable tool to be used for this purpose.

CANSAS is a measure of met and unmet need across 22 health and social areas considered important for individuals living with mental health issues. It provides a comprehensive overview of an individual’s current need, and is the gold standard for unmet need assessments in mental health services in Australia (Hancock et al., 2015a). The CANSAS has demonstrated strong psychometric properties, including strong internal consistency and construct validity (Slade et al., 1999).

The CANSAS is widely used in Australia, particularly in community mental health services, and is the standard measure for assessing unmet need. It is an important outcome measure to use alongside a recovery-focused assessment to provide a more complete picture of an individual’s mental health status.

In this study, we aimed to examine the convergent validity and sensitivity to change over time (responsiveness) of the RAS-DS, in comparison to level of unmet need as measured by the CANSAS. This would provide additional evidence of the RAS-DS’s usefulness as an outcome measure in mental health services, particularly in the context of recovery-oriented care.
illness: accommodation, food, looking after the home, self-care, day-
time activities, physical health, psychotic symptoms, information
(about condition and treatment), psychological distress, safety to self,
safety to others, alcohol, drugs, company, intimate relationships, sexual
expression, childcare, basic education, telephone, transport, money and
benefits (Slade et al., 1999). Developed in collaboration with con-
sumers, the CANSAS has been extensively tested (e., Andresen et al.,
2000; Macpherson et al., 2003; Slade et al., 2005) and is used in a large
number of mental health services across a broad range of contexts. It is
generally considered a useful tool to assist with individual service
planning and outcome measurement. It was adopted as the mandatory
outcome measure for the Australia-wide Partners in Recovery initiative
(Department of Health and Ageing, 2012). Although some debate
continues around the sensitivity of the CANSAS to detect change over
time, some research has identified that individual need areas are re-
fective of changes over time (Wiersma et al., 2008).

While CANSAS is not a direct measure of recovery, there appears to
be overlap between the concepts of recovery and unmet need. When
individuals face many unmet needs, these are likely to impede their
recovery, conversely when these needs are met, this is likely to support
recovery. Some authors have suggested that having few unmet needs
can be considered an “objective measure of recovery” (Lloyd et al.,
2010). Previous research has also identified relationships between
needs as measured by the CANSAS and quality of life (Slade et al.,
2005), subjective wellbeing (Werner, 2012) and other measures of re-
covery (Lloyd et al., 2010).

As both the RAS-DS and CANSAS are increasingly being used as
routine outcome measures in recovery-oriented mental health services,
it is important to further explore the measurement properties of these
instruments. Additionally, it is important to examine the overlap be-
tween the constructs of unmet need and recovery to determine if both
constructs need to be measured to most accurately capture improve-
ments over time. As service funding is increasingly being tied to out-
comes achieved, it is critically important to ensure that the right out-
comes are being measured and that the instruments used to measure
these outcomes have robust measurement properties. This study was
established to take advantage of a large dataset of routinely collected
RAS-DS and CANSAS scores to further explore the usefulness of these
instruments as outcome measures.

The primary aim of this study was to explore whether the RAS-DS
was sensitive enough to detect change over time (sensitivity to change
or “responsiveness”, Hypothesis 2). In this context, change in CANSAS
scores was considered the “objective” measure of change. However, for
change in CANSAS scores to be a useful indicator of change in recovery,
the association between CANSAS scores and RAS-DS scores firstly
needed to be confirmed (convergent validity: Hypothesis 1). Therefore,
the two hypotheses guiding this study were:

**Hypothesis 1.** That there will be a cross-sectional, inverse relationship
between level of unmet need as measured by the CANSAS and both
RAS-DS total and each of the RAS-DS domain scores.

**Hypothesis 2.** That there will be an inverse relationship between
change over time in unmet need as measured by CANSAS and change
over time in both RAS-DS total and each of the RAS-DS domain scores.

2. **Methods**

This study was approved by the researchers’ university’s Human
Research Ethics Committee.

2.1. **Data sets**

This study used de-identified, routinely-collected outcomes data
from two large community managed mental health organisations and
one Primary Health Network, all providing a lead-agency role for a
federally-funded mental health program (Partners in Recovery). Partners in Recovery was established to provide service linkage and
brokerage services for individuals with severe and persistent mental
illnesses with complex needs who required connection to and services
from multiple agencies (Hancock et al., 2016b; Isaacs et al., 2017). The
overall aim of the program was to enhance coordination and linkage
within the mental health service system and, by doing so, support im-
proved consumer outcomes (Isaacs et al., 2017). Data sets contained
basic demographic information and outcome measures (RAS-DS and
CANSAS) collected between 2013 and 2016.

2.2. **Instruments**

2.2.1. **Recovery Assessment Scale – Domains and Stages (RAS-DS)**

The RAS-DS is a self-report measure of mental health recovery. It
includes 38 items clustered into four domains of recovery. These do-
 mains are: functional recovery (labelled “Doing things I value”); per-
sonal recovery (“Looking forward”); clinical recovery (“Mastering my
illness”); and social recovery (“Connecting and belonging”). Each item
is rated on a 4-point scale from 1 = “untrue” to 4 = “completely true”.
“Percentage scores” are calculated for each domain and an overall score
(Hancock et al., 2016a). Higher scores represent more advanced levels
of mental health recovery.

2.2.2. **Camberwell Assessment of Need – Short Appraisal Scale (CANSAS)**

The CANSAS includes a list of 22 areas considered as potentially
important needs for individuals living with mental illness. Each item is
rated as either an “unmet need”; “met need” or “no need”. While no
definitive method for calculating “total scores” for the CANSAS has
been described in the literature, one of the most common “total scores
used in research involving the CANSAS is number of unmet needs
(Slade et al., 2005, 1999; Werner, 2012).

For this study, an **a priori** decision was made to also use an alter-
native “total score” for the CANSAS. This alternative “total score” was
“percentage of unmet need” and was calculated based on number of
unmet needs divided by total number of needs identified (unmet needs
plus met needs). This decision was taken because percentage unmet
need seemed to more accurately reflect the level of unmet need, espe-
cially in the context of measuring change over time. For example,
having six unmet needs in the context of 18 needs identified overall
(33% unmet need) would seem to be qualitatively different to having
six unmet needs in the context of only eight needs identified overall
(75% unmet need). Additionally, a reduction of two unmet needs in the
same context would also represent qualitatively different change.
Reducing from six to four unmet needs in the context of 18 overall
needs represents a reduction of 11 percentage points in unmet need
(from 33% to 22%), however, a change from six to four unmet needs in
the context of eight overall needs represents a reduction of 25 per-
centage points in unmet need (from 75% to 50%).

With both scoring approaches, higher scores represent higher levels
of unmet need. The CANSAS can be completed by a staff member or via
an interview with the consumer. In this study, staff rated CANSAS
scores were more consistently available in the data set, so these were
used.

2.3. **Data analyses**

Analyses were conducted to examine each of the hypotheses guiding
this study. All analyses were completed using IBM SPSS Statistics,
Version 22. Significance level was set at $\alpha = .05$.

2.3.1. **Hypothesis 1**

That there will be a cross-sectional, inverse relationship between
level of unmet need as measured by the CANSAS and both RAS-DS total
and RAS-DS domain scores.

To examine this hypothesis, the dataset was restricted to individuals
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