

# Utility of the Montreal Assessment of Need Questionnaire for Community Mental Health Planning

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**Abstract:** Needs assessment facilitates mental health services planning, provision, and evaluation. This study aimed to a) validate a new instrument, the Montreal Assessment of Needs Questionnaire (MANQ), and b) use this to assess variations and predictors of need (number and seriousness) in 297 individuals with severe mental disorders for 18 months, during implementation of the Quebec Mental Health Action Plan. MANQ internal and external validations were adequate. Variables significantly associated with need number and seriousness variations were used to build multiple linear regression models. Autonomous housing, not receiving welfare, not having consulted a health educator, higher level of help from services, Alcohol Use Disorders Identification Test total score, and social support were associated with decreasing need number and seriousness over time. Having a higher education was also associated with decreasing need number. In a reform context, the MANQ's unique ability to detect rapid improvement in patient needs has usefulness for Quebec mental health planning.

**Key Words:** Needs, severe mental disorders, assessment, reliability, validity

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Most individuals with severe mental disorders (ISMDs) receive treatment from community-based services (Lamb and Bachrach, 2001; Thornicroft and Tansella, 2002), using an approach based on patient biopsychosocial needs (Lasalvia et al., 2007). Within the recovery paradigm, providers must collaborate with ISMDs and take their needs into account (Piat et al., 2010). From an epidemiological perspective, needs assessment facilitates planning, provision, and evaluation of required mental health care services and determines the extent of specialized services for more serious problems (Lasalvia et al., 2000). For clinicians, needs assessment is useful in the development of adequate intervention plans, personalized to address specific patient needs (Schölzel-Dorenbos et al., 2010). Moreover, agreement between patient and professional perceptions concerning the scope and seriousness of needs facilitates therapeutic alliances (Macpherson et al., 2003) and can improve treatment outcomes (Lasalvia et al., 2007). According to the literature, meeting patient needs

significantly improves their perceived quality of life (Bengtsson-Tops and Hansson, 1999; Slade et al., 1999, 2005, 2004) and lessens the seriousness of symptoms (Lasalvia et al., 2008; McCrone et al., 2001; Meadows et al., 2002).

Several instruments have been developed to assess the needs of ISMDs (Joska and Flisher, 2005). The Camberwell Assessment of Need (CAN; Phelan et al., 1995) is most widely used. The CAN assesses patient needs in 22 domains, according to five categories: basic needs (accommodations, food, daytime activities), health (physical health, psychotic symptoms, psychological distress, safety for self, safety for others, alcohol use, drug use), functioning (self-care, looking after the home, child care, basic education, money), social (company, intimate relationships, sexual expression), and services (information about illness and treatment, transportation, telephone, benefits).

A key feature of the CAN is that it can record both patient and professional perceptions of patient needs. Another important advantage of this instrument is that it takes into account help provided by relatives as well as services, perceived needs for help from services, and satisfaction with the type and amount of help received (Fleury et al., 2008). The CAN reliability (Cronbach's  $\alpha$  [CA] = 0.64) for total needs has been shown to be acceptable (McCrone et al., 2000). Some studies have shown that the needs domains within the CAN may be structured into factors (Fleury et al., 2010; Korkeila et al., 2005; Slade et al., 1999; Wennström et al., 2004). The CAN has also been adapted to specific populations with mental disorders, including pregnant women and mothers, the elderly, or individuals with learning disabilities (Durbin et al., 2010; Howard et al., 2007; Reynolds et al., 2000; Xeniditis et al., 2000).

The CAN presents some limitations, however. Its priority is to identify the magnitude of patient needs rather than describe them (Jansson et al., 2005). Because the CAN uses a composite index, it is also difficult to use its summary scores (total number of needs, met needs, and unmet needs) as outcome measures (Wennström and Wiesel, 2006). Moreover, some domains pertinent to patient recovery (e.g., involvement in treatment decisions, job integration) are not assessed by this instrument. Nor is the CAN a self-administered questionnaire, as needs assessment is usually clinician driven. Given the divergence between the perceived needs of patients and clinicians (Middelboe et al., 1998), it may be pertinent to use a questionnaire that will prioritize patient need seriousness perception, to develop a more sensitive community mental health planning instrument. Because most studies use a short version of the CAN (Camberwell Assessment of Need Short Appraisal Schedule), which includes only the needs assessment section, researchers will often tend to equate moderate problems with met needs and serious problems with unmet needs (Hansson et al., 1995). By contrast, some studies using the regular CAN found that help provided could be adequate for some “unmet” needs and inadequate for some “met” needs (Fleury et al., 2010; Hansson et al., 1995; Middleboe et al., 2001). In social

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needs domains, for example, help is often not adequate for moderate problems such as lack of company, intimate relationships, or sexual expression (Fleury et al., 2013c). Finally, it is difficult to detect the transformation of needs during a relatively short period using the CAN 3-point ordinal scale (0, no need; 1, moderate problem or met need; 2, serious problem or unmet need). Longitudinal studies with follow-up for 4 years found few significant increases in needs, whether the CAN or the Needs for Care Assessment Schedule was used (Brewin et al., 1987) or both (Björkman and Hansson, 2002; Lasalvia et al., 2005, 2007; Wiersma et al., 1998). According to Andresen et al. (2000), insufficient scoring options may result in discrepancies in the need rating process. Increasing the number of need levels and allowing for greater discrimination can improve the sensitivity of the CAN and enhance its outcome measure potential (Andresen et al., 2000).

To address the aforementioned limitations of the CAN, there was a need to develop a new questionnaire for the short-term detection of variations in patient-perceived needs. Consequently, we developed the Montreal Assessment of Needs Questionnaire (MANQ) in the context of the present study, drawing upon the patient version of the CAN (Phelan et al., 1995). The MANQ replaces the CAN 3-point ordinal scale with an 11-point, end-defined, unidimensional scale (Cummings and Gullone, 2000) for measuring patient-perceived need seriousness, for the purpose of enhancing data variability (Finstad, 2010). The MANQ was also intended to be used within the context of a reform of the Quebec mental health care system, to assist health planners.

## STUDY CONTEXT: REFORM OF THE QUEBEC MENTAL HEALTH CARE SYSTEM

In Canada, the health care system is mostly public and managed by provincial governments. In Quebec, health care and social services are managed jointly by three levels of government (provincial, regional, and local). General regulation and control over provincial health care are the responsibility of the Quebec Ministry of Health and Social Services (MHSS). Regional health agencies organize services in their respective territories (e.g., planning, budgeting, and coordination). As part of a current reform (Ministère de la santé et des services sociaux (MSSS), 2005b), the MHSS constituted new governing bodies, referred to as *local service networks*. Within each local service network, health and social service centers (HSSCs), which resulted from the merger of acute care hospitals, nursing homes, and local health care community centers, were mandated to coordinate all services in their respective jurisdictions to respond to the needs of their population as well as improve provider integration and the quality of care.

Within this framework, the Quebec Mental Health Action Plan (QMHP) (MSSS, 2005a) aimed to improve access and continuity of health care services, mainly by increasing primary care and follow-up in the community. Psychiatric services would then focus their activity on complex or serious mental health disorders and better support first-line providers, notably by making psychiatric consultation more accessible. This reform also prioritized mental health patient recovery and undertook the fight against stigma. Under the QMHP, patient assessment was to be conducted within specialized psychiatric services, identifying patients who were stable enough to be transferred to the primary care sector, together with mental health professionals (nurses, psychologists, and social workers), to facilitate community integration and promote recovery.

The objectives of the present study were twofold: first, to validate the MANQ and compare its psychometric properties with the CAN, and second, to use the MANQ to assess variations in patient-perceived need seriousness for 18 months, which

corresponds to the time frame in which transfers were taking place from specialized psychiatric services to primary care, within the context of the QMHP reform.

## METHODS

### Study Design

In this cohort study, participants were first recruited and interviewed from December 2008 to September 2010 (T0) and reinterviewed approximately 18 months later (T1). Recruitment took place in a mental health university institute (MHUI) and two HSSCs located in the southwestern sector of Montreal, Quebec, Canada, and serving a population of 258,000. The MHUI offers specialized mental health services, whereas the two HSSCs provide primary mental health care services. Other services in the sector have been identified elsewhere (Fleury et al., 2013a).

### Selection Criteria, Sample Recruitment, and Interviews

For this study, participants had to be between 18 and 65 years of age, be diagnosed with a severe mental disorder (e.g., schizophrenia) according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* criteria (American Psychiatric Association, 1994), live within the two HSSC territories, and present a stable mental health condition. In addition, the participants consented to have the research team access their medical records and to contact their principal case manager to assess participants' level of community functioning. The sampling strategy and data collection have been described in detail elsewhere (Fleury et al., 2013a, 2013b). The study protocol was approved by the Ethics Review Boards of the MHUI and the two HSSCs.

### Instruments

Data were collected at baseline and 18-month follow-up using seven questionnaires, in English or French (patient choice), and from medical records at the MHUI. Another questionnaire, the CAN, was administered at T1 for validation purposes. Questionnaires were completed by the participants with the assistance of two specifically trained clinical professionals monitored by a research coordinator, with the exception of the Multnomah Community Ability Scale (MCAS), which was completed by the patient case manager.

The first questionnaire, the MANQ, covered the 22 CAN domains, to which 4 domains (stress adaptation, social exclusion, involvement in treatment decisions, and job integration) were added on the basis of their pertinence for patient recovery, as outlined below, for a total of 26 domains. Thus, vulnerability to stress is associated with more serious psychotic symptoms (Pruessner et al., 2011) and plays a role in transition to first psychotic episode (Alello et al., 2012). Social exclusion (stigma) is a frequent phenomenon among ISMDs (Schulze and Angermeyer, 2003). According to some authors, stigma would be more painful than the mental disorder itself (Schulze and Angermeyer, 2003; Stuart, 2006). Involvement in treatment decisions is an important element associated with recovery (Piat et al., 2010). Finally, job integration is a key issue for ISMDs because most have difficulties obtaining or maintaining paid employment (Corbière et al., 2011). As well, ISMDs are often victims of employment discrimination (Stuart, 2006).

For application of the MANQ, response scales were presented to the participants after each question was read by the interviewer, and the participants indicated a point on each scale

corresponding to their perception, which was recorded by the interviewer. Patient responses were closely monitored to detect misinterpretation or contradiction between responses. A seriousness score was computed for each need domain, and an overall mean need score was computed for all 26 need domains. As with the CAN (Phelan et al., 1995), the MANQ can be completed within 30 minutes.

Other standardized instruments used at T0 and T1 were the Social Provisions Scale (SPS), exploring social support (CA = 0.92; Caron, 1996); the Satisfaction with Life Domains Scale (SLDS), assessing quality of life (CA = 0.92; Caron et al., 1997); the MCAS, assessing patient community functioning (CA = 0.87; Hendryx et al., 2001); the Alcohol Use Disorders Identification Test (AUDIT), measuring alcohol consumption level and consequences (CA = 0.88; Accietto, 2003); the Drug Abuse Screening Test–20 (DAST-20), evaluating patient drug use and consequences (CA = 0.74; Carey et al., 2003); as well as the Alberta Continuity of Services Scale for Mental Health (ACSS-MH), measuring service continuity (CA = 0.78–0.92; Durbin et al., 2004).

Test-retest and interrater reliability testing were partially addressed in a subsample of 39 participants completing three weekly interviews for 2 weeks. An equal number of men and women living in supervised and autonomous housing, respectively, were included in this subsample. Test-retest reliability interviews were conducted by one interviewer for 2 weeks. Between test-retest interviews, the participants were interviewed by the second interviewer for interrater reliability assessment. For reliability testing, values in the MANQ were translated in the corresponding value of the CAN need variable. Test-retest and interrater reliability were assessed with Cohen's kappa.

## Analysis

Verification of normality assumptions for every continuous variable was performed, and transformations were computed as needed. Frequency distributions were calculated for categorical variables, and mean values were computed for continuous variables. Validation analyses on the MANQ were conducted in four steps: internal and external validations as well as test-retest and interrater reliability.

Concurrent validity of the MANQ was assessed by calculating paired Pearson's correlation coefficients between the MANQ and the CAN for each perceived problem. Convergent and divergent correlations were highlighted. Reliability statistics for the MANQ and the CAN were carried out, calculating a CA for each perceived problem, using each instrument in a split-half. Criterion validity used factor analyses conducted on data from the MANQ and the CAN, comparing factor loadings and overall factor structures as well as assessing latent variables behind patient-reported needs. A correlation matrix was computed and carefully examined, along with imperative tests, such as Determinant, Kaiser-Meyer-Olkin's (KMO) measure of sampling adequacy and Bartlett's test of sphericity. Factor extractions were made using the principal component method and oblimin rotation, and a three-factor solution was chosen for better model stability. An external validation was conducted looking at correlations between both the MANQ and the CAN and three other instruments (SPS, MCAS, and SLDS). With the use of the MANQ, intrasubject repeated-measures analysis of variance (ANOVA) of need seriousness was carried out, comparing patient need seriousness at T0 and T1 in each of 26 domains.

Two dependent variables were assessed: variation in need number and need seriousness from T0 to T1. These dependent variables were calculated by subtracting the scores of need number and seriousness at T0 from the scores at T1 (score at T1 – score

at T0). All independent variables used to explore associations with both dependent variables are listed in Figure 1.

Bivariate linear regression analyses were carried out to assess predictors of variation in need number and seriousness from T0 to T1, for an  $\alpha$  value set at 0.10. Variables yielding a statistically significant association with dependent variables were used to build to multiple linear regression analyses, with an  $\alpha$  value set at 0.05. Goodness-of-fit, total variance explained, and collinearity statistics were computed as well.

## RESULTS

At baseline (T0), 438 participants were approached. A total of 352 (80%) accepted to participate in the study, and 86 declined (20%). From the 352 participants at T0, 292 agreed to be reinterviewed at an 18-month follow-up (T1). Refusals were compared with participants as to age, sex, and type of housing at T0 and age, sex, and diagnosis at T1. No statistically significant difference was found at both T0 and T1 (Fleury et al., 2013c).

The mean age at T0 was 47 years. The men represented 53% of the sample. Only 37% had completed higher than secondary school. Sixty-four percent were on welfare, and 61% lived in autonomous apartments. The most prevalent severe mental health disorders were mood disorders (42%) and schizophrenia (38%). Most participants also had a second diagnosis, the most prevalent being nicotine dependence (*DSM-IV* 305.1; 59%) and personality disorders (27%).

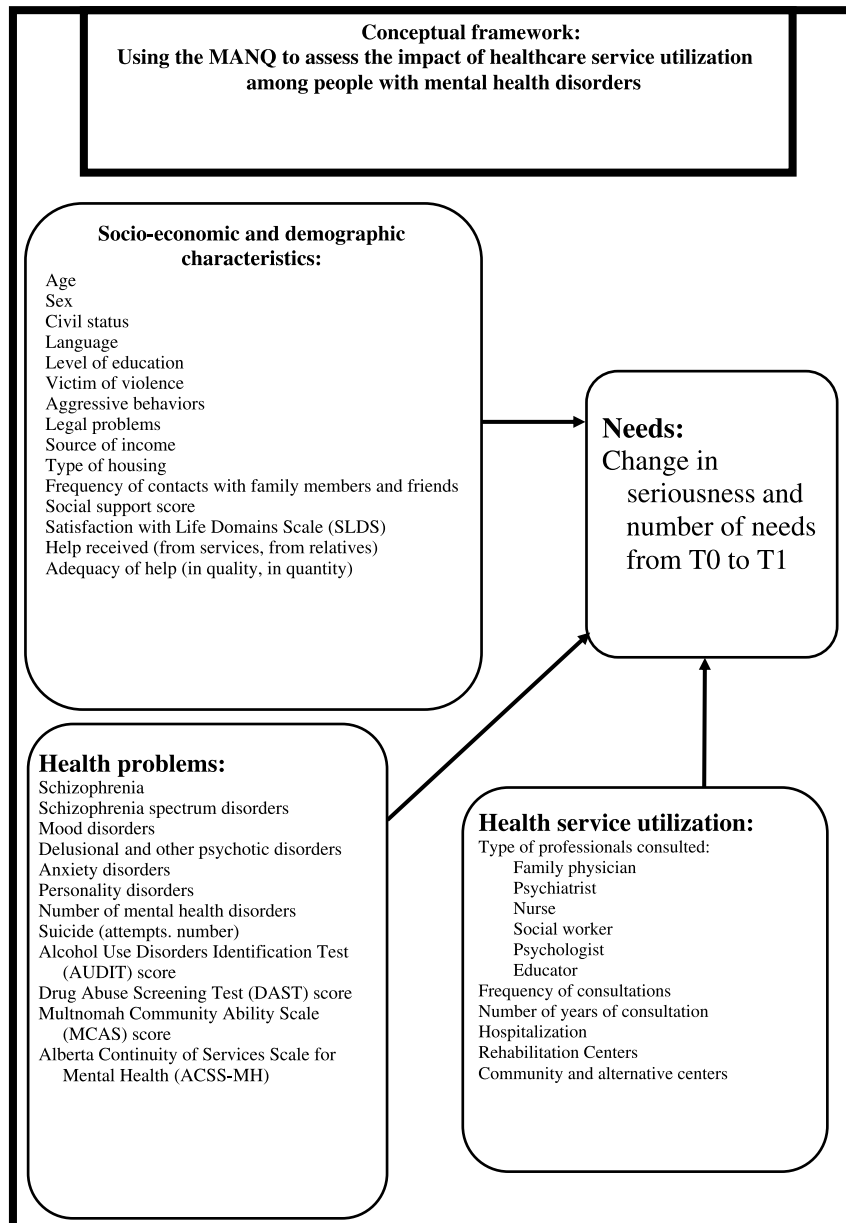
A three-factor extraction using principal component analysis with oblimin rotation was conducted on perceived problem seriousness data from the 26 need domains of the MANQ (Table 1), explaining 32% of the total variance. Those factors were labeled as follows: interpersonal relationships problems due to physical health, social integration, and recovery.

For comparison purposes, corresponding 22 need domains from the MANQ and from the CAN were also used to build two distinct factor analyses models (Table 2). Two variables were automatically eliminated: safety for others and child care. Table 2 shows how the three-factor structure was almost identical in the MANQ (22 need domains) and CAN models, with a quite similar total variance explained (32.6% vs. 31.4%). The three factors were labeled interpersonal relationships, social integration, and absence of functional skills problems.

For external validation, correlations of the MANQ and CAN need seriousness scores were each performed with total scores from the SPS, the MCAS, and the SLDS and showed that the MANQ and the CAN were significantly and consistently correlated with the SLDS (13 items;  $R = -0.225$  to  $-0.380$ ;  $p < 0.01$  to 0.001), whereas few significant correlations were found with the SPS (six items) and the MCAS (one item).

Test-retest and interrater reliabilities of the MANQ were reported elsewhere (Fleury et al., 2014). For test-retest reliability, the total percentage of rating agreement was 90%, and  $\kappa$  coefficients ranged from 0.74 to 1.00. For interrater reliability,  $\kappa$  coefficients ranged from 0.79 to 1.00, with a mean of 0.84.

Repeated-measures ANOVA for need seriousness with the AUDIT, MCAS, SLDS, SPS, ACSS, and DAST-20 total scores over time, as depicted in Table 3, showed that the AUDIT, MCAS, and DAST-20 total scores as well as seven need seriousness scores (psychotic symptoms, information about illness and treatment, psychological distress, company, sexual expression, intimate relationships, as well as stress adaptation) were significantly improved, at the price of a significant reduction in social support (SPS) and in continuity of services (ACSS). Patient transfer status did not enter the regression analysis for lack of correlation with number or seriousness of needs. Most patients, however, use both primary and specialized mental health services.



**FIGURE 1.** Conceptual framework: using the MANQ to assess the impact of health care service use among people with mental health disorders.

With its 11-point end-defined scale, the MANQ has found during 18 months a significant decrease in need seriousness in seven domains, particularly in health-related domains (psychotic symptoms, psychological distress, stress adaptation, as well as information about illness and treatment) and social need domains (sexual expression, intimate relationships, and company). No significant changes or increase in need seriousness was found for the 19 other need domains.

Potential predictors of need seriousness decrease are presented in Table 4 (bivariate and multivariate analyses). Five variables were independently and statistically associated with decrease in need seriousness. Three variables were positively associated: housing (autonomous), AUDIT score, and help from services. SPS score was marginally and negatively associated. Two predictors were negatively associated: sources of income (welfare)

and having consulted a health educator. This model explained 18.6% of the total variance, with an acceptable goodness of fit.

Potential predictors of decrease in need number are displayed in Table 5 (bivariate and multivariate analyses). Among the six predictors, two were negatively associated (sources of income [welfare] and having consulted a health educator) and four were positively associated (housing (autonomous), AUDIT score, SPS score, and help from services). Level of education was marginally and positively associated. This model explained 27.8% of the total variance, yielding an acceptable goodness of fit.

## DISCUSSION

Our findings show that the MANQ is adequately reliable and is able to reflect the measured variables construct. Convergence of the CAN and MANQ scales has been clearly shown, by

**TABLE 1.** Pattern Matrix of Patient-Reported Needs Measured With the MANQ (26 Need Domains) (N = 295)

|   | Component             |       |        |
|---|-----------------------|-------|--------|
|   | 1                     | 2     | 3      |
| Physical health                               | 0.626                 |       |        |
| Daytime activities                            | 0.617                 |       |        |
| Looking after the home                        | 0.603                 |       |        |
| Intimate relationships                        | 0.552                 |       |        |
| Company                                       | 0.522                 |       | -0.322 |
| Transport                                     | 0.503                 |       |        |
| Food  | 0.489                 |       |        |
| Psychological distress                        | 0.448                 |       | -0.335 |
| Sexual expression                             | 0.440                 |       |        |
| Adaptation to stress                          | 0.434                 |       | -0.306 |
| Self-care                                     | 0.390                 | 0.363 |        |
| Drugs   |                       | 0.687 |        |
| Money   |                       | 0.628 |        |
| Psychotic symptoms                            |                       | 0.522 |        |
| Basic education                               |                       | 0.506 |        |
| Safety for others                             |                       | 0.429 | -0.345 |
| Telephone                                     |                       | 0.319 |        |
| Job   |                       | 0.302 |        |
| Information                                   |                       |       | -0.650 |
| Involvement in decisions on drug prescription |                       |       | -0.587 |
| Safety for self                               |                       |       | -0.485 |
| Alcohol                                       |                       | 0.338 | -0.443 |
| Social exclusion                              |                       |       | -0.417 |
| Accommodation                                 |                       |       | -0.404 |
| Benefits                                      |                       |       |        |
| Child care                                    |                       |       |        |
| Total variance explained                      | 32.0%                 |       |        |
| Determinant                                   | 0.009                 |       |        |
| KMO test                                      | 0.792                 |       |        |
| Bartlett's sphericity test                    | 1599.391; $p < 0.001$ |       |        |

Extraction method: principal component analysis; rotation method: oblimin rotation with Kaiser's normalization.

response category and by domain cross-correlation. The three-factor structures of the CAN and the MANQ, with 22 needs domains, have been shown here to be almost identical. MANQ reliability is thus sufficient, while maintaining content validity, with factorial model stability. With the four added need domains of the MANQ, the resulting three factors are not strictly identical. Nevertheless, 15 of the 22 initial need domains of the CAN remain stable within similar factors. Company, daytime activities, sexual expression, intimate relationship, and psychological distress are always included in the first factor. Psychotic symptoms, drugs, basic education, money, and telephone are always included in the second factors. Information about illness and treatment as well as accommodation are always included in the third factor. Finally, physical health, food, and looking after the home are included in the first factor when the four added domains of the MANQ are included but in the third factor for the CAN and the MANQ when only the 22 initial needs domains are taken into count. Moreover, another need domain (child care) is always excluded from the factorial structure. Most of those associations have been identified in previous factor analysis studies of the CAN (Fleury et al., 2010; Korkeila et al., 2005; Slade et al., 1999; Wennström et al., 2004).

We assessed MANQ external validity with concurrent validity. Presumably, respondents with high scores on instruments

measuring functional status (MCAS) or quality of life (SLDS) should report lower perceived need seriousness on the MANQ. Significant associations are consistent in direction and magnitude, except for one, with a very small difference in favor of the MANQ. Moreover, this association pattern is also true for ancillary instruments, such as the AUDIT, the DAST-20, and the ACSS.

MANQ split-half reliability with CA is comparable with the CAN, and the percentage of agreement and the kappa coefficients for the test-retest reliability are lower than those found for the CAN by McCrone et al. (2000) or by Arvidsson (2003) (between 0.21 and 0.93 according to the need domains) but quite similar to Phelan et al. (1995). Moreover, several of the domains with lower kappa coefficients are the same in all studies: psychological distress, sexual expression, company, intimate relationships, information about illness and treatment, as well as benefits. For MANQ interrater reliability, the percentage of agreement and the kappa coefficients are a little lower than those found (between 0.20 and 1.00 according to the needs domains) in previous studies with the CAN (Andresen et al., 2000; Hansson et al., 1995; McCrone et al., 2000; Phelan et al., 1995).

With respect to predictors of decrease from T0 to T1 in need number and seriousness, variables associated with both were type of housing (autonomous), not receiving welfare as main income

**TABLE 2.** Comparison of the Factor Structure Between the MANQ (22 Need Domains) and the CAN (*N* = 295)

|   | MANQ (22 Need Domains)    |       |        |   | CAN                       |       |        |
|---|---------------------------|-------|--------|---|---------------------------|-------|--------|
|   | Component                 |       |        |   | Component                 |       |        |
|   | 1                         | 2     | 3      |   | 1                         | 2     | 3      |
| Company                                 | 0.660                     |       |        | Sexual expression                       | 0.657                     |       |        |
| Sexual expression                       | 0.650                     |       |        | Company                                 | 0.634                     |       |        |
| Daytime activities                      | 0.606                     |       |        | Daytime activities                      | 0.601                     |       |        |
| Intimate relationships                  | 0.536                     |       |        | Intimate relationships                  | 0.535                     |       |        |
| Safety for self                         | 0.535                     |       |        | Safety for self                         | 0.518                     |       |        |
| Psychological distress                  | 0.502                     |       | -0.308 | Psychological distress                  | 0.490                     |       | -0.307 |
| Alcohol                                 | 0.454                     |       |        | Alcohol                                 | 0.396                     |       |        |
| Basic education                         |                           | 0.670 |        | Basic education                         |                           | 0.701 |        |
| Money                                   |                           | 0.622 |        | Money                                   |                           | 0.590 |        |
| Psychotic symptoms                      | 0.390                     | 0.533 |        | Self-care                               |                           | 0.539 | -0.374 |
| Telephone                               |                           | 0.418 |        | Psychotic symptoms                      | 0.382                     | 0.469 | 0.362  |
| Drugs                                   |                           | 0.415 |        | Transportation                          |                           | 0.412 |        |
| Transportation                          |                           | 0.336 | -0.311 | Telephone                               |                           | 0.365 |        |
| Looking after the home                  |                           |       | -0.732 | Drugs                                   |                           | 0.350 |        |
| Physical health                         |                           |       | -0.513 | Looking after the home                  |                           |       | -0.687 |
| Food                                    |                           |       | -0.509 | Food                                    |                           |       | -0.499 |
| Accommodation                           |                           |       | -0.508 | Physical Health                         |                           |       | -0.474 |
| Self-care                               |                           | 0.426 | -0.497 | Benefits                                |                           |       | -0.439 |
| Benefits                                |                           |       | -0.375 | Accommodation                           | 0.348                     |       | -0.412 |
| Information about illness and treatment |                           |       | -0.303 | Information about illness and treatment | N/A                       | N/A   | N/A    |
| Total variance explained                | 32.6%                     |       |        |   | 31.4%                     |       |        |
| Determinant                             | 0.069                     |       |        |   | 0.083                     |       |        |
| KMO test                                | 0.707                     |       |        |   | 0.672                     |       |        |
| Bartlett's sphericity test              | 773.027; <i>p</i> < 0.001 |       |        |   | 717.412; <i>p</i> < 0.001 |       |        |

Extraction method: principal component analysis; rotation method: oblimin with Kaiser's normalization.

source, higher AUDIT total score, more social support, more help from services, and not having consulted a health educator. Those results are consistent with reality testing. The association between autonomous housing and decrease in seriousness and number of needs can be explained by less severe health and mental conditions of ISMDs living in this type of housing. Conversely, patients living in supervised housing have important functional disabilities and often serious needs in housing, food, self-care, looking after the home, and transportation (Wennström et al., 2004). In addition, according to the residential continuum, which is the most predominant housing model in mental health, ISMDs gradually transit to more autonomous housing when an improvement of their mental state is observed (Tsai et al., 2010). With respect to welfare, ISMDs with lower income have less access to services (Howard et al., 1996; Narrow et al., 2000). Their unemployment can also be the result of stigma in the work market (Schulze and Angermeyer, 2003).

The association of the AUDIT score with decrease in both seriousness and number of needs could be explained by various efforts in nonautonomous living environments to discourage, if not even repress, alcohol use by ISMDs (Fleury et al., 2010). Conversely, ISMDs living in autonomous housing are more likely in better mental and physical health, have fewer concurrent needs, and have more money. They can buy and drink more alcohol, until their situation becomes serious enough to get them to stop drinking and seek medical help (Rush et al., 2010). The association between help from services and decrease in seriousness and number of needs is in accordance with previously published studies

(Broadbent et al., 2008; Ochoa et al., 2003). Ultimately, several needs can be met because of help from services (Gallagher and Teesson, 2000; Lasalvia et al., 2000; Middleboe et al., 2001; Wiersma, 2006). The negative association with use of a health educator and decrease in need seriousness and number makes sense. This professional is mainly involved with individuals having serious functional problems that are barriers to social integration (Fleury and Grenier, 2007). The positive impact of social support on needs has also been previously reported (Lemming and Calsyn, 2004; Ochoa et al., 2003). Social support helps prevent hospitalization or reduce its length (Albert et al., 1998; Becker et al., 1997). Relatives and friends can also help individuals in problem recognition and decision to take action for resolution of their need (Howard et al., 1996). Moreover the family can often take care of their members with severe mental disorders by providing basic and functioning needs (e.g., food, self-care, child care) (Fleury et al., 2008). Finally, the association between level of education and decrease in number of needs could be explained with more educated individuals having a greater ability to acknowledge their needs and seek help when necessary (Wang et al., 2005). They would also have a more positive attitude toward health services (Parslow and Jorm, 2000).

The MANQ can detect perceived need changes during a relatively short period. The transformation from unmet need to met need is rarely perceptible during a short-term period with the CAN. Several longitudinal studies with a follow-up period from 18 months to 4 years did not find a significant increase in unmet needs (Björkman and Hansson, 2002; Lasalvia et al., 2005; 2007;

**TABLE 3.** Repeated-Measures ANOVA for Need Seriousness and AUDIT, MCAS, SLDS, SPS, ACSS, and DAST Total Scores ( $N = 295$ )

|   | Mean (SD)    |              | Intrasubject Effect Test |        |
|---|--------------|--------------|--------------------------|--------|
|   | T0           | T1           | F                        | p      |
| Measurement instrument scores           |              |              |                          |        |
| AUDIT total score                       | 6.0 (6.6)    | 5.3 (5.7)    | 5.000                    | 0.026  |
| MCAS total score                        | 64.8 (9.9)   | 66.2 (9.3)   | 4.950                    | 0.027  |
| SLDS total score                        | 103.3 (19.3) | 103.6 (19.6) | 0.120                    | 0.729  |
| SPS total score                         | 70.7 (7.3)   | 63.6 (3.2)   | 227.621                  | <0.001 |
| ACSS total score                        | 120.4 (16.3) | 116.4 (24.7) | 5.688                    | 0.018  |
| DAST total score                        | 2.6 (2.8)    | 1.4 (2.2)    | 61.769                   | <0.001 |
| Patient-perceived needs                 |              |              |                          |        |
| Accommodation                           | 2.0 (3.3)    | 2.2 (3.4)    | 0.420                    | 0.517  |
| Food                                    | 1.7 (2.8)    | 1.4 (2.6)    | 2.038                    | 0.154  |
| Looking after the home                  | 1.9 (3.0)    | 1.7 (2.8)    | 0.780                    | 0.378  |
| Self-care                               | 0.9 (2.4)    | 0.9 (2.1)    | 0.024                    | 0.876  |
| Daytime activities                      | 1.8 (3.0)    | 1.6 (2.8)    | 1.736                    | 0.189  |
| Physical health                         | 3.2 (3.5)    | 2.8 (3.5)    | 3.510                    | 0.062  |
| Psychotic symptoms                      | 2.7 (3.4)    | 2.1 (3.1)    | 8.602                    | 0.004  |
| Information about illness and treatment | 1.3 (2.8)    | 0.54 (1.9)   | 19.348                   | <0.001 |
| Psychological distress                  | 4.6 (3.8)    | 3.8 (3.7)    | 10.957                   | 0.001  |
| Safety for self                         | 1.2 (2.7)    | 1.0 (2.5)    | 1.624                    | 0.204  |
| Safety for others                       | 0.4 (1.7)    | 0.2 (1.2)    | 3.564                    | 0.060  |
| Alcohol                                 | 0.5 (1.7)    | 0.4 (1.7)    | 2.419                    | 0.121  |
| Drugs                                   | 2.5 (3.9)    | 3.0 (4.2)    | 2.195                    | 0.140  |
| Company                                 | 2.8 (3.6)    | 2.3 (3.2)    | 5.067                    | 0.025  |
| Sexual expression                       | 3.1 (4.1)    | 2.0 (3.5)    | 18.251                   | <0.001 |
| Intimate relationships                  | 2.4 (3.8)    | 1.7 (3.3)    | 7.445                    | 0.007  |
| Child care                              | 0.5 (2.1)    | 0.3 (1.7)    | 2.790                    | 0.096  |
| Basic education                         | 0.8 (2.3)    | 1.2 (2.7)    | 4.064                    | 0.045  |
| Telephone                               | 0.2 (1.1)    | 0.3 (1.4)    | 1.244                    | 0.266  |
| Transportation                          | 1.6 (3.3)    | 1.6 (3.2)    | 0.001                    | 0.972  |
| Money                                   | 3.3 (4.0)    | 3.3 (4.1)    | 0.025                    | 0.875  |
| Benefits                                | 0.7 (2.3)    | 0.7 (2.3)    | 0.002                    | 0.967  |
| Job                                     | 2.6 (3.8)    | 3.1 (4.1)    | 2.888                    | 0.090  |
| Stress adaptation                       | 3.9 (3.7)    | 3.1 (3.5)    | 10.738                   | 0.001  |
| Social exclusion                        | 2.0 (3.3)    | 1.8 (3.2)    | 1.132                    | 2.88   |
| Involvement in treatment decisions      | 1.2 (2.8)    | 0.9 (2.5)    | 2.423                    | 0.121  |

Wiersma et al., 1998). Only studies involving at least a 5-year follow-up period with the CAN have shown a decrease in unmet needs and an increase in met needs (Arvidsson, 2003, 2008; Drukker et al., 2008; Hansson and Björkman, 2007). This unique MANQ ability to detect need changes during a relatively short period has potential usefulness in mental health planning. After the implementation of the QMHAP, the detected changes thus reflect the improvement in need seriousness in seven domains at a certain cost in care continuity during this crucial 18-month period of mental health services transformation. There is thus guidance that may be provided for mental health planners through better assessment of the impact resulting from large-scale community mental health transformations. Because the patient transfer status did not qualify for regression, need number or seriousness was unrelated to whether the participants had been transferred under the QMHAP. The only common element, between those transferred and those who were not, was the initial assessment for transfer eligibility, and therefore, this suggests the utility of reassessment for the need for continued specialized outpatient psychiatric treatment, to determine transferability to primary care services, thus increasing access in

exchange to specialized outpatient services for new ISMDs. This may be of interest for further research. This reassessment may also have been the main active ingredient at the heart of the QMHAP.

### Limitations

Our study includes certain notable limitations. First, this was a study with a new assessment instrument, and our results would need to be replicated by future studies, especially with respect to the partial treatment of test-retest and interrater reliability. However, the need for certainty may be lower for purposes of mental health planning assessment. Second, the other sections of the MANQ (help from relatives and services, help needed from services, as well as adequacy of help) have not yet been analyzed, so our findings pertain to only need assessment. Third, the staff perception of patient needs was not addressed in this research. Most studies have revealed that professionals rate needs differently than do ISMDs (Joska and Flisher, 2005). Finally, generalization to other populations or clinical cohorts may not be appropriate.

**TABLE 4.** Predictors of Need Seriousness Decrease (N = 295)

|  | Descriptive Analyses |      |       | Bivariate Analyses |       | Multiple Linear Regression Analysis |        |                           |         |          |           |                         |  |
|--|----------------------|------|-------|--------------------|-------|-------------------------------------|--------|---------------------------|---------|----------|-----------|-------------------------|--|
|  | n                    | Mean | %/SD  |                    | P     | Nonstandardized Coefficients        |        | Standardized Coefficients |         | 95.0% CI |           | Collinearity Statistics |  |
|  |                      |      |       | A                  | SE    | β                                   | t      | p                         | LL      | UL       | Tolerance | VIF                     |  |
| Education                                | 185                  | 62.7 | 0.033 |                    |       |                                     |        |                           |         |          |           |                         |  |
| Primary/secondary                        | 110                  | 37.3 |       |                    |       |                                     |        |                           |         |          |           |                         |  |
| College/university                       | 189                  | 64.1 | 0.005 | -8.693             | 3.479 | 0.138                               | 2.498  | 0.013                     | 1.844   | 15.541   | 0.933     | 1.072                   |  |
| Sources of income (welfare)              | 106                  | 35.9 |       |                    |       |                                     |        |                           |         |          |           |                         |  |
| Other sources                            | 179                  | 60.7 | 0.018 | 8.229              | 3.464 | -0.133                              | -2.376 | 0.018                     | -1.5047 | -1.412   | 0.908     | 1.101                   |  |
| Housing (autonomous)                     | 116                  | 39.3 |       |                    |       |                                     |        |                           |         |          |           |                         |  |
| Supervised                               | 20                   | 6.8  | 0.000 | -20.778            | 6.512 | 0.172                               | 3.190  | 0.002                     | 7.960   | 33.595   | 0.970     | 1.031                   |  |
| Having consulted a health educator       | 6.0                  | 6.6  | 0.001 | 0.569              | 0.248 | -0.124                              | -2.295 | 0.022                     | -1.058  | -0.081   | 0.965     | 1.037                   |  |
| AUDIT total score                        | 2.3                  | 2.9  | 0.034 |                    |       |                                     |        |                           |         |          |           |                         |  |
| DAST total score                         | 70.8                 | 7.3  | 0.029 | 0.434              | 0.226 | -0.104                              | -1.921 | 0.056                     | -0.878  | 0.011    | 0.972     | 1.029                   |  |
| SPS total score                          | 103.6                | 19.6 | 0.022 |                    |       |                                     |        |                           |         |          |           |                         |  |
| SLDS total score                         | 28                   | 9.5  | 0.050 |                    |       |                                     |        |                           |         |          |           |                         |  |
| Delusional and other psychotic disorders | 8.0                  | 5.0  | 0.000 |                    |       |                                     |        |                           |         |          |           |                         |  |
| Adequacy of help in quantity and quality | 22.3                 | 23.3 | 0.000 |                    |       |                                     |        |                           |         |          |           |                         |  |
| Help from relatives                      | 33.6                 | 22.0 | 0.000 | 0.373              | 0.077 | -0.270                              | -4.836 | 0.000                     | -0.525  | -0.221   | 0.908     | 1.101                   |  |
| Help from services                       |                      |      |       |                    |       |                                     |        |                           |         |          |           |                         |  |

R<sup>2</sup> = 18.6%; goodness of fit: F = 10.971; p < 0.001.

CI indicates confidence interval; A, slope coefficient; VIF, variance inflation factor; UL, upper limit; LL, lower limit.



TABLE 5. Predictors of Need Number Decrease (N = 295)

|  | Descriptive Analyses |      |       | Bivariate Analyses           |       |    | Multiple Linear Regression Analysis |        |       |          |           |                         |       |
|--|----------------------|------|-------|------------------------------|-------|----|-------------------------------------|--------|-------|----------|-----------|-------------------------|-------|
|  | n/Mean               | %SD  | p     | Nonstandardized Coefficients |       |    | Standardized Coefficients $\beta$   | t      | p     | 95.0% CI |           | Collinearity Statistics |       |
|  |                      |      |       | A                            | SE    | LL |                                     |        |       | UL       | Tolerance | VIF                     |       |
| Age (mean [SD])                                      | 46.6                 | 10.6 | 0.082 |                              |       |    |                                     |        |       |          |           |                         |       |
| Education (n [%])                                    | 185                  | 62.7 | 0.025 | 0.893                        | 0.494 |    | -0.095                              | -1.809 | 0.071 | -1.865   | 0.078     | 0.905                   | 1.105 |
| College/university                                   | 110                  | 37.3 |       |                              |       |    |                                     |        |       |          |           |                         |       |
| Welfare  | 189                  | 64.1 | 0.000 | -1.606                       | 0.495 |    | 0.170                               | 3.246  | 0.001 | 0.632    | 2.580     | 0.916                   | 1.092 |
| Sources of income (welfare) (n [%])                  | 106                  | 35.9 |       |                              |       |    |                                     |        |       |          |           |                         |       |
| Autonomous   | 179                  | 60.7 | 0.006 | 1.371                        | 0.494 |    | -0.148                              | -2.774 | 0.006 | -2.344   | -0.398    | 0.885                   | 1.130 |
| Supervised   | 116                  | 39.3 |       |                              |       |    |                                     |        |       |          |           |                         |       |
| Frequency of contacts with social worker (mean [SD]) | 91                   | 30.8 | 0.087 |                              |       |    |                                     |        |       |          |           |                         |       |
| Having consulted a human resource manager (n [%])    | 17                   | 5.8  | 0.073 |                              |       |    |                                     |        |       |          |           |                         |       |
| Having consulted a health educator (n [%])           | 20                   | 6.8  | 0.000 | -2.803                       | 0.926 |    | 0.156                               | 3.025  | 0.003 | 0.979    | 4.626     | 0.951                   | 1.052 |
| AUDIT total score (mean [SD])                        | 6.0                  | 6.6  | 0.000 | 0.109                        | 0.035 |    | -0.160                              | -3.120 | 0.002 | -0.178   | -0.040    | 0.961                   | 1.040 |
| DAST total score (mean [SD])                         | 2.3                  | 2.9  | 0.013 |                              |       |    |                                     |        |       |          |           |                         |       |
| SPS total score (mean [SD])                          | 70.8                 | 7.3  | 0.025 | 0.063                        | 0.032 |    | -0.101                              | -1.980 | 0.049 | -0.126   | 0.000     | 0.972                   | 1.029 |
| SLDS total score (mean [SD])                         | 103.6                | 19.6 | 0.014 |                              |       |    |                                     |        |       |          |           |                         |       |
| Delusional and other psychotic disorders (n [%])     | 28                   | 9.5  | 0.056 |                              |       |    |                                     |        |       |          |           |                         |       |
| Adequacy of help in quantity and quality (mean [SD]) | 8.0                  | 5.0  | 0.000 |                              |       |    |                                     |        |       |          |           |                         |       |
| Help from relatives (mean [SD])                      | 22.3                 | 23.3 | 0.000 |                              |       |    |                                     |        |       |          |           |                         |       |
| Help from services (mean [SD])                       | 33.6                 | 22.0 | 0.000 | 0.074                        | 0.011 |    | -0.358                              | -6.782 | 0.000 | -0.095   | -0.053    | 0.902                   | 1.109 |

R<sup>2</sup> = 27.8%; goodness of fit: F = 15.215; p < 0.001.

CI indicates confidence interval; A, slope coefficient; VIF, variance inflation factor; UL, upper limit; LL, lower limit.

## CONCLUSIONS

The MANQ offers an effective way to assess needs among ISMDs, with the provision of more variability, especially during a short period. The impact of perceived needs on mental status and recovery has been extensively underscored by many authors. The MANQ allows researchers to use perceived needs reported by ISMDs as dependent or independent variables in various statistical models (factor analyses, linear regressions), exploring mental health care service use and adequacy of help received. Moreover, with the evaluation of need level by ISMDs, and the addition of four need domains, the MANQ is well tailored to the recovery paradigm. Finally, the ability of the MANQ to detect need changes during a relatively short period has potential usefulness in mental health planning in the context of reform such as the implementation of the QMHAP. The MANQ may thus be of value for mental health research and planning, as a precise and reliable instrument.

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## DISCLOSURES

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