The Motivation and Pleasure Scale – Self-Report (MAP-SR): Reliability and Validity of a Self-Report Measure of Negative Symptoms

Katiah Llerena[a], **Stephanie G. Park**[a], **Julie M. McCarthy**[a], **Shannon M. Couture**[b], **Melanie E. Bennett**[c], and **Jack J. Blanchard**[a,*]

[a]Department of Psychology, University of Maryland, College Park, MD 20742-4411, USA

[b]Department of Psychology, University of Southern California, 3620 South McClintock Ave., Los Angeles, CA 90089-1061, USA

[3]Department of Psychiatry, University of Maryland School of Medicine, 737 W Lombard ST, Baltimore, MD, 21201-1009, USA

Abstract

The Clinical Assessment Interview for Negative Symptoms (CAINS) is an empirically developed interview measure of negative symptoms. Building on prior work, this study examined the reliability and validity of a self-report measure based on the CAINS - the Motivation and Pleasure Scale - Self Report (MAP-SR) - that assesses the motivation and pleasure domain of negative symptoms. Thirty-seven participants with schizophrenia or schizoaffective disorder completed the 18-item MAP-SR, the CAINS, and other measures of functional outcome. Item analyses revealed three items that performed poorly. The revised 15-item MAP-SR demonstrated good internal consistency and convergent validity with the clinician-rated Motivation and Pleasure scale of the CAINS, as well as good discriminant validity, with little association with psychotic symptoms or depression/anxiety. MAP-SR scores were related to social anhedonia, social closeness, and clinician-rated social functioning. The MAP-SR is a promising self-report measure of severity of negative symptoms.

Keywords

schizophrenia; negative symptoms; assessment; psychometrics; reliability; validity

1. Introduction

Negative symptoms of schizophrenia are associated with poor functional outcome and are only minimally responsive to antipsychotic medication. Research has shown that

Address correspondence to: Jack J. Blanchard, Ph.D., Department of Psychology, University of Maryland, College Park, MD 20742-4411, USA, Phone: 301-405-8438, Fax: 301-314-9566, jblancha@umd.edu.

approximately 28–36% of individuals with schizophrenia show elevated negative symptoms (1), and they demonstrate worse social and community functioning compared to those with schizophrenia with lower levels of negative symptoms (1). Such findings illustrate the critical importance of sound assessment of negative symptoms. The Clinical Assessment Interview for Negative Symptoms (CAINS) (2–4) was developed to address the limitations of existing measures of negative symptoms (2, 4–7) by going beyond indicators of behavioral success (e.g., functional outcome). The CAINS offers unique contributions to assessment with its emphasis on individuals' internal experiences of motivation, drive, and interest; inclusion of clear descriptive anchor points; and provision of a comprehensive user's manual and training videos (2, 8) Additionally, the CAINS has good convergent and discriminant validity and inter-rater reliability (8, 9) across its two factor-derived scales measuring deficits in motivation and pleasure (MAP) and expression (EXP).

There are many cases in which time precludes the use of an extended interview for the assessment of negative symptoms. A self-report measure would provide a time efficient method for the initial identification of people with elevated negative symptoms (10). To this end, we sought to evaluate a self-report version of the CAINS. The two-factor structure of negative symptoms informed development, where one factor reflects deficits in motivation and pleasure (anhedonia, asociality, amotivation) and another reflects expressive deficits (blunted affect andalogia). This factor structure has been identified in various clinical interviews (11–13) and has been replicated in recent studies of the CAINS (8, 9). In a preliminary study, Park and colleagues (14) administered the CAINS-SR to 69 people with schizophrenia or schizoaffective disorder. The Experience Subscale (e.g., motivation, pleasure, asociality) showed good internal consistency, good convergent validity with the Experience domain of the CAINS, and good discriminant validity. The internal consistency and validity of the Expression subscale were less robust.

These findings led to further refinement of the self-report measure of negative symptoms. Due to poor reliability and validity, the Expression items were removed, yielding a revised measure that focuses exclusively on self-reported deficits in motivation and pleasure. Given this new focus, the measure was renamed the Motivation and Pleasure Scale - Self Report (MAPSR). Sharpening the focus of the measure should improve its utility as a self-report measure of negative symptoms since motivation and pleasure capture many of the core deficits of negative symptoms that are directly related to functional impairment (2).

The current study evaluated the psychometric properties of the MAP-SR in a sample of outpatients with schizophrenia and schizoaffective disorder. We examined internal consistency, convergent validity with the CAINS interview, and discriminant validity. We hypothesized that the MAP-SR would demonstrate 1) good internal consistency, 2) a significant positive correlation with the Motivation and Pleasure (MAP) scale of the clinician-rated CAINS, and 3) no significant correlations with clinician-rated depressive or psychotic symptoms. We also explored the relationship between the MAP-SR and other trait and functioning measures, including associations between the MAP-SR, self-reported traits of social anhedonia and social closeness, and clinician-rated functional capacity and community functioning. We also examined whether MAP-SR scores were related to gender and general cognitive ability.

2. Methods

2.1. Participants

Participants were individuals with schizophrenia (n=33) or schizoaffective disorder (n=4) who were recruited from outpatient clinics affiliated with the University of Maryland-Baltimore or the Baltimore Veterans Affairs Medical Center as part of a larger study investigating the psychometric properties of the CAINS. Individuals with schizoaffective disorder were included to ensure a full range of symptoms and to increase external validity by representing the population for which this instrument would be appropriate. Inclusion criteria were: 1) Diagnosis of schizophrenia or schizoaffective disorder, and 2) age between 34 and 60. Exclusion criteria were: 1) other DSM-IV Axis I diagnoses (except substance use disorders), 2) substance dependence within the past 6 months, 3) substance abuse within the past month, 4) history of significant head injury or mental retardation, 5) significant neurological disease, or 6) severe psychotic symptoms or intoxication at time of assessment. Demographic and clinical characteristics of the sample are listed in Table 1. Overall, the sample was 65% male and 84% African-American with a mean age of 50.16 years (*SD* = 5.12). Participants endorsed low to moderate depression and psychiatric symptoms. Mean estimated IQ for this sample was in the low average range.

2.2. Procedures

Local Institutional Review Boards approved study procedures. All participants provided informed consent. Participants attended a single session, approximately 3–4 hours in length, in which they completed all study measures. All interviewers completed extensive training for all measures (i.e., attended training workshops, rated video-taped interviews to achieve a required reliability standard with gold standard ratings, were observed administering interviews prior to performing study assessments) and received regular supervision to review videotaped assessments to discuss administration and scoring. All participants received study measures in the same order. The MAP-SR was completed after the clinician-rated CAINS.

2.3. Measures

2.3.1. Diagnosis and symptom assessments—Diagnosis was established with the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID; (15). Negative symptoms were assessed with the CAINS (2, 8), a 13-item semi-structured interview. The CAINS has two factors - Expression (EXP; 4 items) and Motivation and Pleasure (MAP; 9 items) - that have demonstrated good internal consistency (α=0.88 for EXP, 0.74 for MAP), test-retest reliability (*r*=0.69 for both scales), and inter-rater reliability (average ICC=0.77 for EXP, 0.93 for MAP) (9). The CAINS demonstrates good convergent and discriminant validity (9). The Brief Psychiatric Rating Scale (BPRS; (16, 17) is a 24-item clinician-rated measure that assesses clinical psychiatric symptoms (e.g., somatic concern, suicidality, unusual thought content, suspiciousness) experienced over the previous week. Items are rated on 7-point Likert scales ranging from 1 (*not present*) to 7 (*extremely severe*). Following the factor structure supported by Kopelowicz and colleagues (18), subscale scores (Positive Symptoms, Negative Symptoms, Agitation/Mania, Depression/Anxiety) were utilized to assess current level of psychopathology. The BPRS is used extensively in

psychiatric research and has well-established psychometric properties (16, 19, 20). The Calgary Depression Scale for Schizophrenia (CDSS) ((21) is a 9-item semi-structured interview that assesses depressive symptoms in schizophrenia. Items are rated on 4-point scales ranging from 0 (*absent*) to 3 (*severe*), providing a total score. The CDSS has been used extensively and has good reliability and validity (22–25).

2.3.2. Self-report measures—The Motivation and Pleasure Scale – Self-Report (MAP-SR) is an 18-item self-report version of the CAINS Motivation and Pleasure subscale (see Table 2 for items). Six items tap consummatory and anticipatory pleasure related to social and recreational or work domains (e.g., "In the past week, how often have you experienced pleasure from being with other people?" and "Looking ahead to being with other people in the next few weeks, how much pleasure do you expect you will experience from being with others?"). Six items tap feelings and motivations to be around family, romantic partners, and friends (e.g., "When it comes to relationships with your family members, how important have these relationships been to you over the past week?). The remaining six items tap motivation and effort to engage in activities (e.g., "In the past week how much *effort* have you made to do things at work or school? If you are not working or going to school, how much effort have you made to look for a job or go to school?"). All items are rated on a 5-point Likert scale; higher scores reflect greater pathology after reverse scoring for items 8, 10, and 12. The Revised Social Anhedonia Scale (RSAS) (26) is a 40-item true/false measure that assesses trait levels of decreased pleasure experienced from interpersonal sources. The RSAS has good validity and reliability, with coefficient alphas between 0.79 and 0.84 in both non-clinical and clinical populations (27, 28) and high test-retest reliability over both 90-day and one-year periods in schizophrenia samples (27, 29). The Social Closeness Scale of the Multidimensional Personality Questionnaire (MPQ) (30) is a 22-item, true/false, trait measure that reflects the following characteristics: sociable, values close relationships, warm/affectionate, welcomes support. It has been used extensively in studies of psychopathology (27, 31, 32) and has good internal consistency with alphas exceeding 0.80 and good convergent validity using both self-report and observer assessments (33).

2.3.3 Performance and functioning measures—The University of California, San Diego, Performance-Based Skills Assessment— Brief Version (UPSA-B) (34) is a brief assessment of real-world functioning with two subscales - Communication and Financial - and has demonstrated adequate psychometric properties (34). The Role Functioning Scale (RFS) (35, 36) assesses functioning in the domains of Working Productivity, Independent Living/Self Care, Family Relationships, and Social Network Relationships. Each domain is rated from 1 (very minimal functioning) to 7 (optimal functioning) ; the total score ranges from 4–28.The Wechsler Test of Adult Reading (WTAR) (37) asks respondents to read a list of 50 words. It is co-normed with the Wechsler Adult Intelligence Scale (WAIS-III) and provides a reliable estimate of the full-scale IQ score.

2.3.4. Data Analysis—Analyses were conducted to examine the reliability and validity of the MAP-SR. First, item-level statistics were examined to determine internal consistency. Second, correlational analyses were conducted to examine the convergent validity of the MAP-SR with the MAP scale of the CAINS and to examine the discriminant validity of the

MAP-SR with measures of psychotic (BPRS) and depressive symptoms (CDSS). Third, a one-way ANOVA was used to examine whether MAP-SR scores differed by gender, and correlations between MAP-SR scores and WTAR scores were examined to determine if cognitive ability was related to MAP-SR scores. Finally, correlational analyses were conducted between MAP-SR scores and social anhedonia (RSAS), social closeness (MPQ Social Closeness Scale), functional capacity (UPSAB), and role functioning (RFS).

3. Results

3.1. Internal Consistency

Cronbach'salpha for the 18-item version of the MAP-SR was $\alpha=0.87$. When item statistics were reviewed, items 8, 10, and 12 showed the lowest item-total correlations (-0.26, 0.34, and 0.20 respectively). As a result, these items were dropped from the scale; all remaining analyses were conducted using the remaining 15 items. The resulting 15-item version of the MAP-SR showed excellent internal consistency (Cronbach's $\alpha=. 90$).

3.2. Convergent and Discriminant Validity

Correlations between MAP-SR scores, CAINS ratings, and ratings of other symptoms (BPRS, CDSS) are presented in Table 3. MAP-SR scores were correlated with the corresponding Motivation and Pleasure (MAP) subscale of the CAINS ($r=0.65$, $p<0.001$) but were not correlated with the interview-rated Expression scale ($r=0.06$, $p=0.705$). MAP-SR scores were not correlated with positive symptoms ($r=0.11$, $p=0.505$) or with BPRS depression/anxiety ($r=0.06$, $p=0.712$). MAP-SR scores were moderately correlated with BPRS agitation/mania ($r=0.41$, $p=0.011$). MAP-SR scores were not correlated with CDSS depressive symptoms ($r = 0.13$, $p=0.435$).

To further examine the association between MAP-SR scores and BPRS agitation/mania, partial correlations were computed to examine the unique variance between the CAINS and MAP-SR subscales while eliminating the variance from BPRS agitation/mania. When controlling for BPRS agitation/mania, the relationship between self-report and clinician-rated negative symptoms remained largely unchanged ($pr=0.60$, $p<0.001$).

In addition to examining the association with symptoms, we sought to determine whether MAP-SR scores differed by gender and whether MAP-SR scores were related to cognitive ability. There were no gender differences on MAP-SR scores ($p= 0.12$) and no significant associations between MAP-SR scores and cognitive ability (WTAR) ($r=0.03$, $p=0.86$).

3.3. Correlations with Trait and Functioning Measures

Correlations between MAP-SR scores and social anhedonia (RSAS), social closeness (MPQ Social Closeness Scale), functional capacity (UPSA-B), and role functioning (RFS) are presented in Table 4. MAP-SR scores were correlated with RSAS social anhedonia ($r=0.48$, $p=0.003$) and MPQ social closeness ($r=0.57$, $p<0.001$). Partial correlations were computed to examine whether RSAS social anhedonia and MPQ social closeness impacted the relationship between the CAINS ratings and MAP-SR scores. When controlling for social

anhedonia and social closeness, the relationship between MAP-SR scores and CAINS ratings remained largely unchanged (pr=0.52, p=0.006).

MAP-SR scores were correlated with RFS social network relationships (r=−0.36, p= 0.03) but not with UPSA-B functional capacity (total financial skills, r=−0.01, p=0.94; total communication skills, r=−0.24, p=0.14).

4. Discussion

The current study examined the reliability and validity of the MAP-SR, a self-report measure of deficits in motivation and pleasure that are prominent features of negative symptoms and represent the experiential deficits of this symptom domain. Excluding the assessment of the expression domain and focusing on MA Pallows for the assessment of core deficits of negative symptoms that are most directly related to functional impairment (2). Although the 18-item version of the MAP-SR demonstrated adequate internal consistency, three items were excluded due to low item-total correlations. This may be attributable in part to the way in which these items were written –in the opposite direction of other items – which may have confused participants. The 15-item version showed excellent internal consistency.

The MAP-SR demonstrated good convergent validity with clinician ratings of motivation and pleasure (MAP) on the CAINS. As expected, the MAP-SR was not correlated with the clinician-rated CAINS Expression scale. The MAP-SR also showed good convergent validity with other relevant self-report measures tapping social anhedonia and social engagement. Our results using a self-report measure of MAP negative symptoms converge with findings showing that the clinician-administered CAINS MAP subscale is significantly related to social anhedonia and social engagement as measured by the RSAS and the Social Closeness Scale (9). Controlling for social anhedonia and social engagement in the current study had no impact on the strength of the association between self-reported and clinician-rated negative symptoms. This suggests that the MAP-SR is meaningfully related to other measures of engagement and pleasure derived from interpersonal sources yet has unique associations to negative symptoms not accounted for by other self-report measures.

With regard to discriminant validity, the MAP-SR was not significantly correlated with depressive symptoms or with the Positive Symptom or Depression/Anxiety subscales of the BPRS. These results mimic findings from studies investigating the clinician administered CAINS MAP subscale (9). However, the MAP-SR was moderately correlated with the Agitation/Mania subscale of the BPRS, suggesting that self-report ratings of negative symptoms may be influenced by agitation/mania. One possible explanation for this relationship is that symptoms associated with agitation/mania, such as distractibility, un-cooperativeness, and motor hyperactivity could undermine the experience of pleasure, motivation, and engagement in social, recreational, or work activities. The association between agitation/mania and the MAP-SR was not found in our previous study (14), although results with the CAINS showed that the clinician administered CAINS MAP subscale was modestly related to agitation as assessed by the BPRS (r=0.18) (9). In the current study, only 17% of the variance in the MAP-SR was accounted for by agitation/

mania, and controlling for agitation/mania had no impact on the strength of the association between self-reported and clinician-rated negative symptoms. Future studies should examine whether this unexpected association with agitation/mania is replicable.

In line with previous work (14), MAP-SR scores were not differentially related to gender or general cognitive ability. To expand on previous findings (14), we included assessments of clinician-rated functioning to determine whether self-reported negative symptoms are related to clinician ratings of functional impairment. The MAP-SR was related to social network relationships but was not related to other domains of community functioning. Functional capacity as assessed by the UPSA-B was not related to the MAP-SR. As expected, our results converge with findings that the clinician-administered CAINS subscales are not directly related to functional capacity, or what one *can* do, but instead are related to one's actual community functioning as measured by the RFS (9). Thus with respect to functioning, it appears that higher negative symptom scores as measured by the MAP-SR are related to poorer current social network relationships but not directly related to other aspects of functional impairment.

This study had several limitations including a small sample size that precludes evaluation of how the MAP-SR might function as a screening measure. Future research with larger samples is needed to address issues such as the sensitivity and specificity of the MAP-SR for identifying individuals with high levels of negative symptoms. Larger samples would also allow for examination of how the MAP-SR performs across diverse populations (e.g., younger populations, ethnically diverse groups) and for assessment of the possible effects of gender, age, and stage of the illness (e.g., first or early episode versus chronic). In addition, questions about the temporal stability of the MAP-SR were not addressed here and should be examined. Overall, the MAP-SR's convergent and discriminant validity indicates that the MAP-SR shows promise as a self-report measure of the severity of negative symptoms in schizophrenia.

Acknowledgment

References

1. Blanchard JJ, Horan WP, Collins LM. Examining the latent structure of negative symptoms: Is there a distinct subtype of negative symptom schizophrenia? Schizophrenia Research. 2005 Sep; 77(2–3): 151–165. PubMed PMID: WOS:000231749100004. [PubMed: 15916881]

2. Blanchard JJ, Kring AM, Horan WP, Gur R. Toward the Next Generation of Negative Symptom Assessments: The Collaboration to Advance Negative Symptom Assessment in Schizophrenia. Schizophrenia Bulletin. 2011 Mar; 37(2):291–299. PubMed PMID: WOS:000287745300012. [PubMed: 20861151]

3. Forbes C, Blanchard JJ, Bennett M, Horan WP, Kring A, Gur R. Initial development and preliminary validation of a new negative symptom measure The Clinical Assessment Interview for Negative Symptoms (CAINS). Schizophrenia Research. 2010 Dec; 124(1–3):36–42. PubMed PMID: WOS:000285323700005. [PubMed: 20869848]

4. Horan WP, Kring AM, Blanchard JJ. Anhedonia in schizophrenia: A review of assessment strategies. Schizophrenia Bulletin. 2006 Apr; 32(2):259–273. PubMed PMID: WOS: 000236106600015. [PubMed: 16221997]

5. Axelrod BN, Goldman RS, Woodard JL, Alphs LD. Factor structure of the negative symptom assessment. Psychiatry Research. 1994 May; 52(2):173–179. PubMed PMID: WOS:A1994NT91900007. [PubMed: 7972573]

6. Erhart SM, Marder SR, Carpenter WT. Treatment of schizophrenia negative symptoms: Future prospects. Schizophrenia Bulletin. 2006 Apr; 32(2):234–237. PubMed PMID: WOS: 000236106600011. [PubMed: 16492797]

7. Kirkpatrick B, Fenton WS, Carpenter WT, Marder SR. The NIMH-MATRICS consensus statement on negative symptoms. Schizophrenia Bulletin. 2006 Apr; 32(2):214–219. PubMed PMID: WOS: 000236106600006. [PubMed: 16481659]

8. Horan WP, Kring AM, Gur RE, Reise SP, Blanchard JJ. Development and psychometric validation of the Clinical Assessment Interview for Negative Symptoms (CAINS). Schizophrenia Research. 2011 Nov; 132(2–3):140–145. PubMed PMID: WOS:000297092500008. [PubMed: 21798716]

9. Kring A, Gur R, Blanchard JJ, Horan WP, Reise S. The Clinical Assessment Interview for Negative Symptoms (CAINS): Final development and validation. American Journal of Psychiatry. In Press.

10. Iancu I, Poreh A, Lehman B, Shamir E, Kotler M. The positive and negative symptoms questionnaire; A self-report scale in schizophrenia. Comprehensive Psychiatry. 2005 Jan-Feb; 46(1):61–66. PubMed PMID: WOS:000226269100011. [PubMed: 15714197]

11. Messinger JW, Tremeau F, Antonius D, Mendelsohn E, Prudent V, Stanford AD, et al. Avolition and expressive deficits capture negative symptom phenomenology: Implications for DSM-5 and schizophrenia research. Clinical Psychology Review. 2011 Feb; 31(1):161–168. PubMed PMID: WOS:000286351900013. English. [PubMed: 20889248]

12. Blanchard JJ, Cohen AS. The structure of negative symptoms within schizophrenia: Implications for assessment. Schizophrenia Bulletin. 2006 Apr; 32(2):238–245. PubMed PMID: WOS: 000236106600012. English. [PubMed: 16254064]

13. Kimhy D, Sloan R, Delespaul P, Malaspina D. Psychosis outside of the researcher's office: Association with "real time" stress and physiological arousal. Schizophrenia Research. 2006 Oct. 86:S32. S. PubMed PMID: WOS:000241325600093. English.

14. Park SG, Llerena K, McCarthy JM, Couture SM, Bennett ME, Blanchard JJ. Screening for negative symptoms: Preliminary results from the self-report version of the Clinical Assessment Interview for Negative Symptoms. Schizophrenia Research. 2012 Mar; 135(1–3):139–143. PubMed PMID: WOS:000300940000025. [PubMed: 22265640]

15. MB F, M G, RL S, JBW W. Structured Clinical Interview for DSM-IV Axis I Disorders. Patient Edition. Biometrics Research. 1996

16. Overall JE, Gorham DR. THE BRIEF PSYCHIATRIC RATING-SCALE. Psychological Reports. 1962; 10(3):799–812. PubMed PMID: WOS:A1962CBK8600036.

17. Ventura J, Lukoff D, Nuechterlein KH, Liberman RP, Green M, Shaner A. Appendix 1: Brief Psychiatric Rating Scale (BPRS) Expanded Version (4.0) scales, anchor points and administration manual. International journal of methods in psychiatric research. 1993:227–243.

18. Kopelowicz A, Ventura J, Liberman RP, Mintz J. Consistency of brief psychiatric rating scale factor structure across a broad spectrum of schizophrenia patients. Psychopathology. 2008; 41(2): 77–84. PubMed PMID: WOS:000251438700002. [PubMed: 18033976]

19. Andersen J, Larsen JK, Schultz V, Nielsen BM, Korner A, Behnke K, et al. The brief psychiatric rating-scale - dimension of schizophrenia - reliability and construct-validity. Psychopathology. 1989 Mar-Jun;22(2–3):168–176. PubMed PMID: WOS:A1989AG58800006. [PubMed: 2762476]

20. Morlan KK, Tan SY. Comparison of the Brief Psychiatric Rating Scale and the Brief Symptom Inventory. Journal of Clinical Psychology. 1998 Nov; 54(7):885–894. PubMed PMID: WOS: 000076634000003. [PubMed: 9811126]

21. Addington D, Addington J, Schissel B. A depression rating-scale for schizophrenics. Schizophrenia Research. 1990 Jul-Aug;3(4):247–251. PubMed PMID: WOS:A1990DT09100004. [PubMed: 2278986]

22. Addington D, Addington J, Matickatyndale E, Joyce J. Reliability and validity of a depression rating-scale for schizophrenics. Schizophrenia Research. 1992 Mar; 6(3):201–208. PubMed PMID: WOS:A1992HK32600003. [PubMed: 1571313]

23. Addington D, Addington J, Atkinson M. Psychometric comparison of the Calgary Depression Scale for Schizophrenia and the Hamilton Depression Rating Scale. Schizophrenia Research. 1996 May; 19(2–3):205–212. PubMed PMID: WOS:A1996UP87300014. [PubMed: 8789919]

24. Collins AA, Remington G, Coulter K, Birkett K. Depression in schizophrenia: A comparison of three measures. Schizophrenia Research. 1996 May; 20(1–2):205–209. PubMed PMID: WOS:A1996UR72100024. [PubMed: 8794511]

25. Kim SW, Kim SJ, Yoon BH, Kim JM, Shin IS, Hwang MY, et al. Diagnostic validity of assessment scales for depression in patients with schizophrenia. Psychiatry Research. 2006 Sep; 144(1):57–63. PubMed PMID: WOS:000241171500006. [PubMed: 16904189]

26. Eckblad ML, Chapman LJ, Chapman JP, Mishlove M. Revised Social Anhedonia Scale. 1982

27. Blanchard JJ, Mueser KT, Bellack AS. Anhedonia, positive and negative affect, acid social functioning in schizophrenia. Schizophrenia Bulletin. 1998; 24(3):413–424. PubMed PMID: WOS:000075433400009. [PubMed: 9718633]

28. Mishlove M, Chapman LJ. Social anhedonia in the prediction of psychosis proneness. Journal of Abnormal Psychology. 1985; 94(3):384–96. PubMed PMID: WOS:A1985ANY5600016. [PubMed: 4031235]

29. Blanchard JJ, Horan WP, Brown SA. Diagnostic differences in social anhedonia: A longitudinal study of schizophrenia and major depressive disorder. Journal of Abnormal Psychology. 2001 Aug; 110(3):363–371. PubMed PMID: WOS:000170880000001. [PubMed: 11502079]

30. Tellegen, A. Multidimensional Personality Questionnaire manual. University of Minnesota Press; 1982.

31. Dilalla DL, Gottesman II. Normal personality-characteristics in identical-twins discordant for schizophrenia. Journal of Abnormal Psychology. 1995 Aug; 104(3):490–499. PubMed PMID: WOS:A1995RL45900009. [PubMed: 7673572]

32. DiLalla DL, Gottesman II, Carey G. Assessment of normal personality traits in a psychiatric sample: dimensions and categories. Prog Exp Pers Psychopathol Res. 1993; 16:137–162. [PubMed: 8293079]

33. Aday, LA.; Cornelius, LJ. Designing and conducting health surveys : a comprehensive guide. 3rd ed.. San Francisco: Jossey-Bass; 2006. p. xxiip. 518

34. Mausbach BT, Harvey PD, Goldman SR, Jeste DV, Patterson TL. Development of a brief scale of everyday functioning in persons with serious mental illness. Schizophrenia Bulletin. 2007 Nov; 33(6):1364–1372. PubMed PMID: WOS:000250686400016. [PubMed: 17341468]

35. Goodman SH, Sewell DR, Cooley EL, Leavitt N. Assessing levels of adaptive functioning - the role functioning scale. Community Mental Health Journal. 1993 Apr; 29(2):119–131. PubMed PMID: WOS:A1993KZ12500004. [PubMed: 8500285]

36. McPheeters HL. Statewide mental health outcome evaluation: a perspective of two southern states. Community Ment Health J. 1984; 20(1):44–55. [PubMed: 6723258]

37. Wechsler, D. Wechsler Test of Adult Reading. London: Psychological Corporation; 2001.

Table 1

Demographic information and descriptive statistics for measures of symptoms and cognitive functioning ($N = 37$).

	Mean (SD) or Percent
Age	50.16 (5.12)
Gender	
Male	64.9%
Female	35.1%
Race	
White	10.8%
Black	83.8%
American Indian or Alaska native	2.7%
Multiracial	2.7%
Education	11.35 (1.74)
Marital Status	
Married	2.7%
Widowed	2.7%
Divorced/Separated	16.2%
Never married/Single	78.4%
Receives disability	
Yes	80.6%
No	19.4%
Has a paying job	
Yes	19.4%
No	80.6%
Living arrangement[a]	
Unsupervised, house	69.4%
Unsupervised, boarding house	2.8%
Supervised, halfway house	2.8%
Supervised, "Board and Care" or Community resident	25%
Diagnosis	
Schizophrenia	89.2%
Schizoaffective-bipolar type	2.7%
Schizoaffective-depressive type	8.1%
BPRS	
Positive symptoms	11.68 (5.70)
Agitation/mania	7.24 (1.89)
Negative symptoms	4.81 (2.45)
Depression/anxiety	6.51 (3.02)

	Mean (SD) or Percent
CDSS	1.11 (1.88)
WTAR	85.04 (7.30)

Note: BPRS = Brief Psychiatric Rating Scale, CDSS = Calgary Depression Scale for Schizophrenia, WTAR = Wechsler Test of Adult Reading.

[a]Due to missing data, $N = 36$.

Table 2

The Motivation and Pleasure Scale – Self-Report (MAP-SR) items.

Item	Anchors
Social pleasure	
1. In the past week, what is the *most* pleasure you experienced from being with other people?	0 (no pleasure) – 4 (extreme pleasure)
2. In the past week, *how often* have you experienced pleasure from being with other people?	0 (not at all) – 4 (very often)
3. Looking ahead to being with other people *in the next few weeks*, how much pleasure do you expect you will experience from being with others?	0 (no pleasure) – 4 (extreme pleasure)
Recreational or work pleasure	
4. In the past week, what is the *most* pleasure you experienced from hobbies, recreation, or from work?	0 (no pleasure) – 4 (extreme pleasure)
5. In the past week, *how often* have you experienced pleasure from hobbies, recreation, or from work?	0 (not at all) – 4 (very often)
6. Looking ahead to the *next few weeks*, how much pleasure do you expect you will experience from your hobbies, recreation, or work?	0 (no pleasure) – 4 (extreme pleasure)
Feelings and motivations about close, caring relationships	
7. When it comes to close relationships with your *family members*, how important have these relationships been to you over the past week?	0 (not at all important to me) – 4 (extremely important to me)
8. In the past week, I have chosen not to spend time with my *family* and would just as soon be alone.[*]	0 (not at all true of me) – 4 (very true of me)
9. When it comes to having a close relationship with a *romantic partner*, how important has this type of relationship been to you over the past week?	0 (not at all important to me) – 4 (extremely important to me)
10. In the past week, I have chosen not to spend time with a *romantic partner* (or find a partner) and would just as soon be alone.[*]	0 (not at all true of me) – 4 (very true of me)
11. When it comes to close relationships with your *friends*, how important have these relationships been to you over the past week?	0 (not at all important to me) – 4 (extremely important to me)
12. In the past week, I have chosen not to spend time with my *friends* (or make friends) and would just as soon be alone.[*]	0 (not at all true of me) – 4 (very true of me)
Motivation and effort to engage in activities	
13. In the past week how *motivated have you been to be* around other people and do things with them?	0 (not at all motivated) – 4 (very motivated)
14. In the past week how much *effort* have you made to actually do things with other people?	0 (no effort) – 4 (very much effort)
15. In the past week how *motivated* have you been to go to work or school or look for a job or class to take?	0 (not at all motivated) – 4 (very motivated)
16. In the past week how much *effort* have you made to do things at work or school? (If you are not working or going to school, how much effort have you made to look for a job or go to school.)	0 (no effort) – 4 (very much effort)
17. In the past week how *motivated* have you been to do hobbies or other recreational activities?	0 (not at all motivated) – 4 (very motivated)
18. In the past week how much *effort* have you made to actually do any hobbies or recreational activities?	0 (no effort) – 4 (very much effort)

Note:

[*] = these items were dropped from the scale due to low item-total correlations.

Table 3

Convergent and discriminant validity: correlations between MAP-SR and clinician-rated CAINS and non-negative symptoms.

	MAP-SR
CAINS	
MAP	.65[**]
Expression	.06
CDSS	.13
BPRS	
Positive	.11
Agitation/Mania	.41[*]
Depression/Anxiety	.06

Note. MAP-SR = Motivation and Pleasure —Self Report, CAINS = Clinical Assessment Interview for Negative Symptoms, MAP = Motivation and Pleasure Scale (in CAINS), CDSS = Calgary Depression Scale for Schizophrenia, BPRS = Brief Psychiatric Rating Scale.

[*] Correlation is significant at the 0.05 level.

[**] Correlation is significant at the 0.001 level.

Table 4

Correlations between MAP-SR and social anhedonia (RSAS), social closeness (MPQ Social Closeness Scale), real world functioning (UPSA-B), and role functioning (RFS).

	MAP-SR
RSAS	.48**
MPQ Social Closeness	.57**
UPSA-B	
Total financial skills	−.01
Total communication skills	−.24
RFS[a]	
Social Network Relationships	−.36*
Family Network Relationships	−.15
Independent Living/Self-Care	−.11
Working Productivity	−.16

Note: UPSA-B = University of California, San Diego, Performance-Based Skills Assessment—Brief Version (UPSA—B), RFS = Role Functioning Scale. Higher scores indicate greater functioning for RFS and UPSA-B scales.

*
Correlation is significant at the 0.05 level.

**
Correlation is significant at the 0.01 level.

[a]Due to missing data, $N = 36$.