Adapting, updating, and translating the Social Functioning Scale to assess social, recreational and independent functioning among youth with psychosis in diverse sociocultural contexts

Running title: Assessing activities of youth with psychosis

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***Pope and Loohuis were affiliated to PEPP when contributing to this study.**

Abstract

Aim: To compare social, recreational, and independent functioning among persons with psychosis across two geo-cultural contexts, we adapted the well-established Social Functioning Scale (SFS) and translated it into French and Tamil. We present the development and psychometric testing of this adaptation, the SFS-Early Intervention.

Methods: Sixteen items were added to reflect contemporary youth activities (e.g., online games) and 31 items adapted to enhance applicability and/or include context-specific examples (e.g., 'church activity' replaced with 'religious/spiritual activity'). Psychometric properties and participant feedback were evaluated.

Results: Test-retest reliability (ICCs) ranged from 0.813 to 0.964. Internal consistency (Cronbach's alpha) ranged from 0.749 to 0.936 across sites and languages. Correlations with original subscales were high. The scale was rated easy to complete and understand.

Conclusions: The SFS-Early Intervention is a promising patient-reported measure of social, recreational and independent functioning. Our approach shows that conceptually sound existing measures are adaptable to different times and contexts.

Key Words : culture; psychosis; scale adaptation; social, recreational and independent functioning; youth

Introduction

There is widespread consensus on the importance of social, recreational, and independent functioning for persons with psychosis (Fenton et al., 2017; Iwasaki, Coyle, & Shank, 2010). The need for patient-reported outcome measures in mental health is also generally agreed upon (Butt, Walls, & Bhattacharya, 2019). Since it was developed and its psychometric properties established (Birchwood, Smith, Cochrane, Wetton, & Copestake, 1990), the Social Functioning Scale (SFS) and some of its seven subscales have been used widely and translated into several languages (Chan et al., 2019; Grant, Addington, Addington, & Konnert, 2001; Schneider et al., 2017; Yasuyama, Ohi, Shimada, Uehara, & Kawasaki, 2017).

We therefore considered three subscales of the SFS when setting out to compare **social, recreational, and independent functioning** between persons receiving early psychosis intervention in a high-income (Montreal, Canada) and a low-middle income (Chennai, India) context, as part of a large comparative study (Malla et al., 2020). We needed measures that could be deployed in both contexts, in English and Canadian French in Montreal and in English and Tamil in Chennai. The SFS was not available in French and Tamil, and to our knowledge, had not been used in India. It was constructed for the UK context in 1990 for multiple-episode schizophrenia patients. Since then, massive cultural and technological changes have likely altered the meaning and nature of social, recreational and independent functioning, especially for young people. We therefore reviewed, updated, adapted, and translated three SFS subscales (prosocial activities, independence-performance, and recreation activities). This paper presents this process, along with the psychometric evaluation of the adapted subscales, which we call the SFS-Early Intervention. Our goals are twofold—to make the SFS-Early Intervention available for wider use in the psychosis community and to describe our process as an exemplar of the adaptation of well-established measures to different times and contexts.

Methods

Setting and sample: This work was conducted within our outcomes study of young people with first-episode psychosis treated in similar early intervention services in Montreal (N=165) and Chennai (N=168) (Malla et al., 2020). Separate samples were recruited to establish test-retest reliability of the SFS-Early Intervention. Subsets of patients at each site provided feedback on the scale. The study received ethics approval and all participants provided written consent.

Measure: Three SFS subscales were selected– *prosocial activities* to assess social functioning, usually activities involving others or social spaces, e.g., going to the movies, visiting relatives; *independence-performance* to assess independent living skills, e.g., shopping for food, cooking meals; and *recreation activities* to assess engagement in solo leisure/recreation activities, e.g., swimming, knitting. Permission for adaptation and translation was sought from SFS's lead developer (MB, co-author on current report).

Review and adaptations: Clinician-scientists and clinicians at both sites systematically reviewed the three SFS sections and added items to reflect young people's contemporary activities (e.g., playing video games); modified existing items for suitability to persons from diverse backgrounds (e.g., 'church activity' replaced with 'religious/spiritual activity'); and included context-specific examples (e.g., 'cricket' in India and 'hockey' in Canada instead of 'rugby' or 'football' in the British original). Patient advisors' feedback was also integrated (e.g., 'online gambling' added) and final modified subscales were created (Supplementary material 1 and 2).

Performance on some items in the independence-performance subscale (e.g., payment of bills, cooking meals) may not be part of normative expectations for some persons with first-episode psychosis, as these expectations are shaped by age, gender, and context. E.g., an 18-year-old Indian man living with

family may not be expected to pay bills or cook meals. A version of this subscale was therefore created for a clinician/staff member to record whether a given patient was expected to perform each of the items based on their knowledge of the larger cultural context and the patient's age and family context. This would allow the evaluation of individuals with reference to expectations calibrated to their age and context.

Translation: The SFS-Early Intervention was translated from English into French and Tamil, following recommended steps (WHO, 2019) including back-translation.

Scoring: Patients were asked to indicate how often (0=never to 3=often) they had participated in each activity over the past three months. As in the SFS, we calculated totals for each subscale. Some items (added based on patient partners' inputs) represent possible habit-forming behavioural addictions (see Supplementary material 1†) as discussed in DSM5 and the draft ICD11 (Saunders, 2017), and can be scored separately.

Testing: 31 Montreal and 29 Chennai patients completed the measure twice, with 7-23 days between assessments. Test-retest reliability was computed using intraclass correlation coefficients, 2-way random effect, with absolute agreement, single measure [ICC(2,1)], ranging from 0 to 1. The ICCs were interpreted as "poor" (ICC< 0.40), "fair" (0.40–0.59), "good" (0.60–0.74) and "excellent" (ICC>0.75) (Cicchetti, 1994).

Internal consistency (Cronbach's alpha) was estimated for each subscale, at each site and separately for the three language versions and interpreted as "unacceptable" (alpha<0.70), "fair" (0.70-0.79), "good" (0.80-0.89) and "excellent" (alpha> 0.90) (Cicchetti, 1994). To establish concordance, Pearson correlations were computed for each subscale, with and without the new items, the latter representing a close approximation of the original SFS. Data from patients who completed the SFS-Early Intervention at month 6 of their treatment (n=99 in Montreal, n=123 in Chennai; 89 in English, 39 in French and 94 in Tamil) were used to estimate internal consistency and concordance.

Twelve Montreal and 10 Chennai patients provided feedback, by rating ease of completion and comprehension on 1 (difficult) to 10 (easy) scales, and rating the overall measure as easy, difficult, or somewhat difficult to answer.

Results

Table 1 presents the demographic and clinical characteristics of the internal consistency sample. Like in the larger study (Malla et al., 2020), Chennai and Montreal patients were similar with regards to education, duration of untreated psychosis and baseline negative symptoms, while different in terms of gender, age, marital status, affective versus non-affective psychosis and substance use diagnosis, and baseline positive symptoms. For the test-retest sample, Chennai and Montreal samples were similar in age, gender, and education (Table 2).

Test-retest reliability: Reliability estimates for the combined and site-specific samples were "excellent", with scores between 0.813 and 0.964 in Chennai; 0.856 and 0.946 in Montreal; and 0.856 and 0.949 for the combined sample (Table 3).

Internal consistency: Cronbach's alphas for the three subscales overall; in the Montreal sample; in the Chennai sample; and in the three language groups were in the "good" to "excellent" range (0.809-0.936; Table 4) with the exception of the recreational activities subscale in the Montreal sample (0.749) and in French (0.769), whose Cronbach's alphas were in the "fair" range.

Correlations with SFS: The SFS-Early Intervention subscales correlated highly with scores calculated using only items from the SFS. For the combined, Montreal and Chennai samples, respectively, Pearson's *r*'s were 0.982, 0.980 and 0.983 for prosocial activities; 0.982, 0.970 and 0.987 for independence-performance; and 0.980, 0.943 and 0.979 for recreational activities (all significant at $p<0.001$).

Acceptability: The scale was rated easy to complete (Montreal: 8.3/10; Chennai: 7.7/10) and understand (Montreal: 8.6/10; Chennai: 7.8/10). All 10 Chennai patients, and 10 of 12 Montreal patients rated the scale as easy to answer.

Discussion

The SFS was updated for greater relevance to the modern-day context and adapted for applicability in two distinct contexts operating in three languages through simple means like adding, re-wording or detailing items and rigorous translation. Our supplementary scale that allows an evaluation of independent functioning calibrated against culturally normed and developmentally appropriate expectations is a conceptually important, novel extension.

In our sample, the new subscales proved concordant with the original subscales. Test-retest reliability was "excellent" at both sites. Internal consistency was "good" to "excellent" for the overall and the three language versions and compared favorably to the original scale, whose alpha reliabilities were 0.69-0.85 (Birchwood et al., 1990). Furthermore, young users with psychosis rated the SFS-Early Intervention as easy to use.

Overall, the SFS-Early Intervention was found to be psychometrically sound and acceptable in three languages and across settings. That the scale lends itself to context-specific adaptation without changing its essential structure enhances its usability in cross-national research as in our India-Canada study (results to be separately published). We therefore recommend it as a patient-reported outcome measure of social, recreational, and independent functioning among young people with psychosis across geo-cultural and linguistic contexts. Clinically, the scale can help monitor leisure and independent functioning throughout treatment. The endorsement of potentially unhealthy leisure activities (Weybright, Son, & Caldwell, 2019) or possible addictions (Saunders, 2017) can prompt dialogue and action. Additional research is needed to ascertain the scale's suitability across wider youth mental health settings (Hetrick et al., 2017).

Our report demonstrates how an established measure, based on a relevant conceptual framework and with sound psychometric properties, can be modernized and adapted for diverse sociocultural contexts. Doing so allows one to build on existing research based on the original measure, while ensuring that measures used are culturally relevant and updated to reflect newer preoccupations, preferences, or activities of the target population. Our approach is an exemplar of a more feasible alternative to creating completely new measures in health research.

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Table 1 Clinical and demographic characteristics of the SFS-Early Intervention month 6 sample

	Montreal Mean (SD); n (%)	Chennai Mean (SD); n (%)	Statistical Test	P value
Age at entry (years)	24.41 (4.90)	26.80 (5.31)	F(1,220) = 11.92	0.001
Gender				
Men	65 (65.7%)	63 (51.2%)		
Women	33(33.3%)	60 (48.8%)	$\chi^2(2) = 6.35$	0.042
Transgender	1 (1%)	0		
Education (years)	12.60 (2.79)	12.24 (3.78)	F(1,218) = 0.61	0.436
Education				
Less than high school	25(25.8%)	29 (23.6%)	$\chi^2(1) = 0.14$	0.707
High school or more	72(74.2%)	94 (76.4%)		
Occupation				
Student	17(17.9%)	17(13.9%)		
Paid employment	22(23.2%)	20 (16.4%)	$\chi^2(3) = 26.14$	<.001
Homemaker	0	29(23.8%)		
Unemployed	56(58.9%)	56(45.9%)		
Marital Status				
Single	93(94.9%)	70(56.9%)		
Married / Common-law / in Relationship	4(4.1%)	48(39.0%)	$\chi^2(2) = 40.84$	<.001
Separated / Divorced / Widowed	1(1%)	5(4.1%)		
Living Situation				
Alone	9(9.2%)	1(0.9%)		
With family	77(78.6%)	103(96.3%)	$\chi^2(2) = 15.19$	.001
With friend / roomate, in residence, in group home, homeless	12(12.2%)	3(2.8%)		
SCID Diagnosis Type				
Schizophrenia spectrum	69(69.7%)	110(89.4%)	$\chi^2(1) = 13.68$	<.001
Affective psychosis	30(30.3%)	13(10.6%)		
Substance Abuse or Dependence (SCID)				
Yes	29(32.6%)	13(10.6%)	$\chi^2(1) = 15.75$	<.001
No	60 (61.4%)	110(89.4%)		
Age at onset of current psychotic episode (years)	23.46 (5.19)	26.17 (5.26)	F(1,217) = 14.46	<.001
DUP to presenting episode (weeks) (analysis conducted on log of means)	43.45 (94.0) Median = 9.93 Range= 0 – 684.3	34.08 (52.36) Median = 12.64 Range = 0.29 - 223	F(1,204) = 0.02	0.892
SAPS‡ Total	36.48 (15.35)	20.45 (9.22)	F(1,209) = 88.83	<.001
SANS§ Total	23.96 (12.54)	20.91 (15.47)	F(1,213) = 2.45	0.119

‡SAPS – Scale for the Assessment of Positive Symptoms, §SANS – Scale for the Assessment of Negative Symptoms

Table 2. Demographic characteristics of the test-retest reliability sample

Participants	**Montreal (N=31)** *M(SD); n(%)*	**Chennai (N=29)** *M(SD); n(%)*	**Statistical Test**	**P value**
Age at entry (years)	23.9 (5.07)	26.31 (5.10)	F(1,58) = 3.30	0.075
Gender Men Women	 18 (58.1%) 13 (41.9%)	 15 (51.70%) 14 (48.3%)	$\chi^2(1) = 0.243$	0.622
Education (years)	12.23 (2.17)	12.62 (3.91)	F(1,58) = 0.238	0.628
Language English Tamil / French	 17 (54.8%) 14 (45.2%)	 8 (26.6%) 20 (71.4%)	$\chi^2(1) = 4.16$	0.041

Table 3. Test-retest reliability of SFS-Early Intervention (ICC)

	Prosocial Activities **ICC (95%CI), N**	**Independence-Performance** **ICC (95%CI), N**	**Recreation Activities** **ICC (95%CI), N**
Montreal	.856 (.724, .928), 31	.903 (.795, .955), 26	.946 (.891, .974), 31
Chennai	.813(.631, .91), 27	.952(.893, .978), 27	.964 (.922, .983), 27
Total	.856 (.765, .913), 58	.930 (.883, .959), 53	.949 (.916, .970), 58

Table 4. SFS-Early Intervention internal consistency (Cronbach's Alpha)

SUBSCALE	SFS-Early Intervention	**N**	**SFS(Birchwood et al., 1990); provided for comparative purposes)**			
Prosocial Activities	0.911	209	0.82			
Independence-Performance	0.889	211	0.85			
Recreation Activities	0.915	206	0.69			
SUBSCALE	**Montreal**	**N**	**Chennai**	**N**		
Prosocial Activities	0.894	86	0.924	123		
Independence-Performance	0.826	90	0.910	121		
Recreation Activities	0.749	83	0.925	123		
SUBSCALE	**English**	**N**	**French**	**N**	**Tamil**	**N**
Prosocial Activities	0.899	80	0.893	35	0.929	94
Independence-Performance	0.860	84	0.809	35	0.915	92
Recreation Activities	0.882	81	0.769	31	0.936	94