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Title

Validation of the French version of the Global Functioning: Social and Global Functioning: Role Scales in adolescents and young adults seeking help in early intervention clinics

Running title

GF:S and GF:R scales French validation

Authors

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Abstract

Aim

Social and role functioning impairments characterize patients along the schizophrenia spectrum, but the existing evaluations tools do not specifically address younger population issues. The Global Functioning Social (GF:S) and Global Functioning Role (GF:R) scales have been specifically designed for that purpose. The aim of this study is to establish the reliability and concurrent validity of the French version of GF:S and GF:R scales.

Methods

The two scales GF: Social (GF:S) and Role (GF:R) have first been translated into French and independently back translated and validated by the original authors. Between March 2021 and March 2022, we enrolled 51 participants (20.3 ± 3.7 years old; female = 22/51) among help-seekers referring to two different early mental health services in the Île-de-France. In an ecological design, participants met different diagnoses, 7 (13.7%) met the criteria for Ultra-High Risk of psychosis (UHR) using CAARMS criteria.

Results

Inter-rater reliability was excellent for scores related to the past month and to the higher levels of functioning over the past year. Both scales showed good to excellent concurrent validity as measured by correlation with the Social and Occupational Functioning Assessment Scale (SOFAS) and the Personal and Social Performance Scale (PSP).

Conclusion

Overall, this study confirms the reliability and validity of the French version of the GF:S and GF:R scales. The use of these scales may improve the evaluation of social and occupational functioning in French-speaking young help-seekers, in a transdiagnosis approach, both in clinical and research settings.

Keywords

At risk mental state; youth mental health; functional predictors; prodromal schizophrenia; outcome

Introduction

Chronic stages of schizophrenia are characterized by a severe impairment in social and occupational functioning, linked in particular to negative symptoms and to neurocognitive deficits (Brissos et al., 2011). Impaired functioning actually often predates the first episode of psychosis and is an early hallmark in subjects during the prodromal phase (individual at Ultra-High-Risk -UHR- of psychosis) (Engen et al., 2022; Lim et al., 2022). This early impaired functioning has an impact on quality of life, socio-professional integration, and education accomplishment, whatever the final diagnosis.

Researchers and clinicians working in the field of early intervention and psychosis prevention are increasingly aware of the importance of the evaluation of functional disability in at-risk individuals (Addington et al., 2008; Carrión et al., 2013; Romanowska et al., 2020). For these reasons, the evaluation of social and occupational functioning should systematically integrate the assessment of patients with schizophrenia spectrum disorders and of help-seekers with prodromal symptoms.

Some instruments are available to rate the levels of social and occupational functioning in patients with psychiatric disorders. These include the Social and Occupational Functioning Assessment Scale (SOFAS) (Goldman et al., 1992) and the Personal and Social Performance Scale (PSP) (Morosini et al., 2000). Another instrument commonly used in the literature is the Global Assessment of Functioning Scale (GAF) (Hall, 1995), which however includes both the evaluation of functioning and psychopathological aspects. However, those tools were initially designed and validated with samples of adults, and this might represent a significant limitation when working with younger subjects. In particular, the functional impairments that the latter usually present are more subtle than those of adults in chronic stages of psychotic disorders and the scales mentioned above do not take into account the issues occurring in adolescence and young adulthood, like peer interactions, dating, and school achievement (Carrión et al., 2019).

To fill this gap, Cornblatt and colleagues introduced two parallel scales for the assessment of social and role functioning in young subjects especially targeting individuals in the UHR phase. These scales are the Global Functioning: Social (GF:S), and the Global Functioning:Role (GF:R) scales (Auther et al., 2006; Cornblatt et al., 2007; Niendam et al., 2006).

These tools disentangle the social and the role domains of functioning. Moreover, they have been reported to be easy to use and relatively brief (Carrión et al., 2019). In the initial validation study, the scales showed excellent inter-rater reliability (ICC for the current level of functioning of 0.85 for the GF:S and 0.93 for the GF:R) (Cornblatt et al., 2007). The authors also performed additional validation of the tools with a larger sample, confirming high inter-rater reliability and showing acceptable convergent and discriminant validity. The high-risk group showed higher impairment in functioning as compared to healthy controls and, among high-risk subjects, the future converters displayed a more pronounced social decline than non-converters (Carrión et al., 2019).

Since their first validation, the GF:S and the GF:R scales have been internationally adopted in several settings and with different groups of subjects, including primarily youth at risk of psychosis (Burton et al., 2019; Carrión et al., 2019; Cornblatt et al., 2007; Lepock et al., 2021), patients with first episode of psychosis (Burton et al.,

2019; Engen et al., 2022; Hamoda et al., 2019; Piskulic et al., 2011) and patients with schizophrenia (Ventura et al., 2020). Moreover, the scales have been translated and validated in various languages (Lee et al., 2017; Lo Cascio et al., 2017; Markulev et al., 2017), but not in French.

The objective of the present study is to validate the French version of the Global Functioning: Social and Role scales in a population of help-seeking adolescents and young adults.

Methods

Participants

Between March 2021 and March 2022 we enrolled 51 help-seeking adolescents and young adults, referring to two different mental health services in the Île-de-France region: the Adolescents and Young Adults Assessment Centre ('Centre d'Évaluation pour les Jeunes Adultes et Adolescents') of the GHU Psychiatrie et Neurosciences in Paris and the Psychiatry Service of the Hospital Centre of Clermont de l'Oise.

After a detailed explanation of the study's aims and procedures by the clinicians, participants (or their legal guardians in case of minors) gave their written consent to participate. The procedures adopted for this study are in accordance with the ethical standards of the national and local committees on clinical research and with the Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments including humans.

Inclusion criteria were: 1) age between 15 and 30 years; 2) sufficient knowledge of the French language. Exclusion criteria were: 1) serious or non-stabilized somatic and neurological disorders; (2) head injury; (3) IQ below 70.

Translation of the GF:S and R Scales

The Global Functioning: Social (GF:S) (Auther et al., 2006; Niendam et al., 2006; Carrión et al., 2019; Cornblatt et al., 2007) assesses the number and nature of peer relationships, the degree of peer tension, age-appropriate intimate relationships, and connection to family members. Emphasis is placed on age-appropriate social contacts and interactions outside of the family, with a particular focus on social withdrawal and isolation. The scale is rated regardless of the etiology of social dysfunction or level of clinical symptomatology.

The Global Functioning: Role (GF: R) (Auther et al., 2006; Niendam et al., 2006; Carrión et al., 2019; Cornblatt et al., 2007) assesses performance in school or work, depending on age. In addition to age-appropriateness, ratings are based on the demands of the role, the level of independence or support required, and the individual's overall performance in the role.

The scores for each GF:S and R scales range from 1 (extremely impaired functioning) to 10 (excellent functioning). Both scales provide questions to help the assessment, as well as detailed score descriptions for a reliable evaluation. For each scale, interviewers give three scores: the lowest level of functioning over the past month, the lowest level of functioning over the past year, and the highest level of functioning over the past year. Moreover, we computed for each scale a 'worsening score' (the highest score over the past year minus the score of the past month) (Lo Cascio et al., 2017).

The GF: S and R scales were translated and adapted into French following the specific guidelines for translations and cultural adaptation standards (McKown et al., 2020) which include the following steps.

First, we contacted the authors (A Auther and B Cornblatt) of the scales and obtained formal authorization to conduct the French translation and adaptation. Second, the scales were translated into French by two independent translators (MK, IA). Third, a third expert compared both forward translations and resolved any discrepancies between the two by producing a single target translation (CJ). Fourth, a back-translation was then done by a bilingual expert (MOK); a comparison between the back-translation and the original tools was revised and any discrepancies were discussed and resolved. Fifth, the back-translation and the original versions were compared to verify that both English versions were equivalent in terms of conceptual content by consensus. Sixth, following a panel discussion a harmonized version of the tools in French was proposed. The final versions were approved by the original authors (A. Auther and B. Cornblatt).

Once the finalized versions of the French GF scales were developed, the clinical teams received full training on administering and scoring them. The training took place at the Adolescents and Young Adults Assessment Centre of Paris and included clinical examples as well as group discussions regarding the scoring. Specifically, the training covered how to conduct the evaluation as well as how to administer the ratings.

Assessment instruments

All participants underwent a psychiatric non-standardized interview to gather socio-demographic, illness, and treatment information.

The psychopathological assessment of this research included the Comprehensive Assessment of At Risk Mental States (CAARMS) (Krebs et al., 2014; Yung et al., 2005), the Social and Occupational Functioning Assessment Scale (SOFAS) (Goldman et al., 1992), the Personal and Social Performance Scale (PSP) (Blanc et al., 2010; Morosini et al., 2000) and the Global Functioning: Social (GF:S) and Global Functioning: Role (GF: R) scales (Auther et al., 2006; Cornblatt et al., 2007; Niendam et al., 2006) updated in 2019 (Carrión et al., 2019).

Specifically trained psychiatrists evaluated all participants through the French version of the CAARMS (Krebs et al., 2014; Yung et al., 2005). The CAARMS is a clinical interview specifically designed to assess attenuated psychopathology, used to define UHR criteria. This include subjects with Attenuated Positive Symptoms (APS), Brief Limited Intermittent Psychotic Symptoms (BLIPS) and Genetic Risk State and Deterioration Syndrome (GRD). Moreover, the scale allows to diagnose if the psychosis threshold is met. After the assessment, a consensus meeting for best-estimated diagnosis established if help-seekers met the criteria to enter the UHR group.

We used the French version of the SOFAS scale (Goldman et al., 1992), which measures social and occupational functioning with a rating ranging from 0 to 100, with higher scores denoting better functioning. For this scale interviewers gave two scores: average level of functioning over the past month and the lowest level of functioning over the past year.

Finally, we used the French version of the PSP scale (Blanc et al., 2010; Morosini et al., 2000), a 100-point single-item rating scale that explores four areas: socially useful activities; personal and social relationships; self-care, and disturbing/aggressive

behaviors. For this scale interviewers gave two scores: average level of functioning over the past month and average level of functioning over the past year. Finally, participants were evaluated through the GF:S&R scales following the scoring instructions mentioned above.

Statistical analysis

To perform the statistical analysis, we used the R software (R Core Team, 2021). First, we calculated descriptive statistics including mean and standard deviation for continuous variables and absolute and relative frequencies for categorical variables. After checking for variables normality, we compared continuous variables using the Wilcoxon-Mann-Whitney test, while for comparisons of categorical variables we relied on the χ^2 test.

We used the absolute agreement type and two-way random effects model for the calculation of the Intra-Class Correlation (ICC) coefficient, to assess the inter-rater reliability of the French Version of the GF:S and GF:R scales.

Finally, to establish the concurrent validity of the GF:S and GF:R scales we performed the correlation with the SOFAS and PSP scales, using the Spearman's rho.

Results

Descriptive statistics

Table 1 represents the demographic and clinical features of the total sample, the UHR group, and the comparison group. Of the 51 participants, 7 (13.7%) met the criteria for attenuated positive symptoms and formed the UHR group. The UHR and the comparison group subjects significantly differed regarding age and assigned sex, with the UHR group being younger and mainly represented by female participants. Most of the UHR participants were recruited at the C'JAAD in Paris. Among the comparison group, 16 (36.4%) of the subjects were diagnosed with first episode of psychosis, 8 (18.2%) with schizophrenia, 5 (11.4%) with a mood disorder, 8 (18.2%) with a neurodevelopmental disorder, 3 (6.8%) with autism spectrum disorders and 4 (9%) with an attention deficit hyperactivity disorder.

The scores for SOFAS, PSP, GF:S, and GF:R for the total sample, the UHR group, and the comparison group are described in Table 2. The two groups did not significantly differ in SOFAS, PSP, GF:S, and GF:R scores. Moreover, social and role functioning were not correlated with age.

Combined inter-rater reliability

To assess inter-rater reliability, 22 patients were independently evaluated by two experienced raters among a group of six using both the GF:S and GF:R scales. Table 3 shows the ICCs for the scales. Table 3 shows the ICCs for each scale. ICCs were >0.75 for both scales related to the past month and to the higher levels of functioning over the past year, while ICCs for the lowest scales scores were >0.50 .

Concurrent validity

Concurrent validity was assessed with respect to the SOFAS and the PSP scales. First, we looked for associations between the scores of the scales referring to the past month finding significant positive correlations (Table 4).

Then, we performed correlation analyses between the scores of the scales referring to the past year, finding significant positive correlations especially for the highest scores on the GF:S and GF:R scales (Table 5).

Discussion

This study evaluated the reliability and concurrent validity of the French version of the GF:S and GF:R scales in a group of help-seeking adolescents and young adults of 20.3 ± 3.7 years. Seven (13.7%) of the participants met the criteria for UHR, all with APS syndrome. Among the comparison group, we found patients with first episode of psychosis, schizophrenia, and neurodevelopmental disorders, together with patients with bipolar disorder and ADHD. The UHR group and the comparison group differed in age and assigned sex. In contrast with previous literature, we did not find differences in GF:S and GF:R scores between the two groups. In the first validation studies, the two scales differed between high-risk subjects and the comparison group, consisting of healthy controls (Carrión et al., 2019; Cornblatt et al., 2007). Similarly, Romanowska and colleagues found that subjects with attenuated psychotic symptoms had significantly lower scores of GF:S and GF:R as compared to healthy controls and subjects with risk factors for mental illness, while they showed lower social but not role functioning in comparison with subjects with mild symptoms (Romanowska et al., 2020). Unlike the non-UHR groups in these studies, the participants of the comparison group in our sample were diagnosed with different psychiatric conditions, including first episode of psychosis and schizophrenia, thus revealing a certain level of social and role functioning impairment. In line with our results, Lee and colleagues found that social and role functioning in UHR were compromised at the equivalent level to those of first-episode schizophrenia patients (Lee et al., 2017). Conversely, in the study by Lo Cascio and colleagues (Lo Cascio et al., 2017) the GF:S and GF:R were able to discriminate between UHR and non-UHR subjects, also diagnosed with psychiatric disorders, but mostly mood disorders. Moreover, UHR participants showed a steeper decrease from the highest scores in the past year to their respective current scores as compared to the non-UHR group. However, it is important to highlight that our UHR sample was relatively small, which can explain the discrepancies with other reports and limits the robustness of our results. On the other hand, and in line with the transdiagnosis approach in youth mental health services (Shah et al., 2020), our sample was not limited to psychosis spectrum, including patients with mild autistic disorders for who functioning scales are lacking.

Noteworthy, the mean scores for the GF:S and GF:R scales for the UHR group were in line with those of the US and of the Italian samples, suggesting that the anchors seem relevant despite differences in cultural settings (Carrión et al., 2019; Lo Cascio et al., 2017).

The inter-rater reliability of the GF:S and GF:R was excellent for the scores related to the last month and to the maximum level of functioning over the past year, while the reliability was fair for the scales referring to the lowest level of functioning during the previous year. This could be at least partially due to the intrinsic difficulties with retrospective functioning assessment, as already highlighted by the authors of the scale (Cornblatt et al., 2007)

We investigated the existence of correlations between the two scales and other established tools for functioning assessment, the SOFAS, and the PSP scales. We found significant associations, confirming the concurrent validity of the GF:S and GF:R. However, although the correlation indexes were higher for the scores related to the last month and to the best levels of functioning over the past year, they were smaller for the scores referring to the lowest functioning during the past year. Again, this could partially be attributed to the higher difficulty of retrospective evaluations. Besides, contrary to the other validation studies that used the GAF scale as a reference tool, we chose the more recent and dedicated to evaluate functioning SOFAS and PSP scales, widely employed in our practice. This could limit at least to some extent the comparisons with previous results.

Potential limitations of this research are the small sample size and the cross-sectional nature of the study, which involved a retrospective assessment of functioning.

Overall, this study confirms the reliability and validity of the French version of the GF:S and GF:R scales. The use of these scales may improve the evaluation of social and occupational functioning in French-speaking young help-seekers. In clinical settings, they could better inform treatment choices, e.g. by motivating interventions targeting social and role functioning impairments. In research contexts, this work contributes to better outcome assessment, increasing the quality of future studies on French speaking subjects.

We validated the French version of the Global Functioning: Social and of the Global Functioning: Role scales in a sample of 51 help-seeking adolescents and young adults, with a wide range of diagnosis. The study showed that the GF:S and the GF:R are effective and reliable tools to evaluate social and role functioning, with the advantage over other instruments like the SOFAS or the PSP of being specifically designed for youth.

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Conflict of interest statement

The authors declare no conflict of interest.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Tables

Table 1: Demographic and clinical features of the sample

	Total sample (n = 51)	UHR (n = 7)	Comparison Group (n = 44)	p-value (UHR vs CG)
Age (mean ± SD)	20.3 ± 3.7	17.7 ± 2.4	20.7 ± 3.7	0.05*
Assigned sex (F, %)	22 (43.1)	6 (85.7)	16 (36.4)	0.02*
Recruitment Centers (n, %)				1
C'JAAD Paris	40 (78.4)	6 (85.7)	34 (77.3)	
Clermont-de-l'Oise	11 (21.6)	1 (14.3)	10 (22.7)	
Current treatment (n, %)	41 (80.4)	4 (57.1)	37 (84.1)	0.12
Current AP treatment (n, %)	29 (56.9)	2 (28.6)	27 (61.4)	0.21
Current AD treatment (n, %)	20 (39.2)	3 (42.9)	17 (38.6)	0.5
Current other treatment (n, %)	22 (43.1)	2 (28.6)	20 (45.5)	0.68

1. Abbreviations: AD, anti-depressive treatment; AP, anti-psychotic treatment; C'JAAD Centre d'évaluation pour les Jeunes Adultes et les Adolescents ; SD, standard deviation ; UHR, ultra high-risk. * p value ≤ 0.05

Table 2: scores for SOFAS, PSP, GF:S and GF:R for the total sample, the UHR group and the comparison group

(mean ± SD)	Total sample (n = 51)	UHR (n = 7)	Comparison Group (n = 44)	p-value (UHR vs CG)
SOFAS score				
last month	59.4 ± 13.3	59 ± 10.1	59.5 ± 13.8	0.93
min last year	50 ± 16.6	57.1 ± 24.1	48.7 ± 15	0.30
PSP score				
last month	57.4 ± 14.2	59.3 ± 11	57.1 ± 14.7	0.72
mean last year	56.6 ± 16.2	65.3 ± 18.5	55.2 ± 15.6	0.13
GF:S score				
last month	6.2 ± 1.3	6.7 ± 1.4	6.1 ± 1.3	0.39
min last year	4.8 ± 1.4	5.3 ± 2	4.7 ± 1.2	0.56
max last year	6.8 ± 1.3	7.1 ± 1.3	6.7 ± 1.3	0.48
worsening	0.6 ± 0.8	0.5 ± 0.5	0.7 ± 0.8	0.76

GF:R score				
last month	5.7 ± 1.7	5.5 ± 1.5	5.8 ± 1.7	0.73
min last year	4.7 ± 1.6	5.3 ± 2.3	4.7 ± 1.5	0.54
max last year	6.7 ± 1.7	6.3 ± 2.1	6.7 ± 1.7	0.69
worsening	0.9 ± 1.1	0.8 ± 0.9	0.9 ± 1.2	0.78

UHR: Ultra-High-Risk; CG: Comparison Group; SD: Standard Deviation; SOFAS: Social and Occupational Functioning Assessment Scale; PSP: Personal and Social Performance Scale; GF:S: Global Functioning: Social Scale; GF:R: Global Functioning: Role Scale

Table 3: combined inter-rater reliability

	Absolute Agreement ICC (95% CI)
GF:S last month	0.76 (0.43-0.90)
GF:S min last year	0.51 (-0.17-0.79)
GF:S max last year	0.80 (0.53-0.92)
GF:R last month	0.85 (0.65-0.94)
GF:R min last year	0.52 (-0.13-0.80)
GF:R max last year	0.85 (0.63-0.94)

GF: S: Global Functioning: Social Scale; GF: R: Global Functioning: Role Scale

Table 4: Spearman correlation coefficients of the GF:S and GF:R scales scores with the SOFAS and PSP scores, referring to the last month

	SOFAS last month	PSP last month
GF:S last month	0.77 (p<0.001)	0.74 (p<0.001)
GF:R last month	0.74 (p<0.001)	0.84 (p<0.001)

SOFAS: Social and Occupational Functioning Assessment Scale; PSP: Personal and Social Performance Scale; GF:S: Global Functioning: Social Scale; GF:R: Global Functioning: Role Scale

Table 5: Spearman correlation coefficients of the GF:S and GF:R scales scores with the SOFAS and PSP scores, referring to the past year

	SOFAS min last year	PSP mean last year
GF:S min last year	0.41 (p<0.001)	0.42 (p<0.001)
GF:S max last year	0.61 (p<0.001)	0.75 (p<0.001)
GF:R min last year	0.58 (p<0.001)	0.47 (p<0.001)
GF:R max last year	0.59 (p<0.001)	0.63 (p<0.001)

SOFAS: Social and Occupational Functioning Assessment Scale; PSP: Personal and Social Performance Scale; GF:S: Global Functioning: Social Scale; GF:R: Global Functioning: Role Scale