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Validation of the Malay Version of the Social Functioning Scale (SFS) for Schizophrenia

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ABSTRACT--- *Social dysfunctions are essential symptom of schizophrenia after cognition which bring a hike in the rates of functional impairment. It is crucial for evaluating the success of treatment although the dimension is still debateable. This study aimed to translate and validate the Malay version of Social Functioning Scale (SFS) which measures social functioning in patients with Schizophrenia. The SFS was translated into Malay language and back translated. This validation study was conducted on 336 healthy and clinical respondents with Schizophrenia from four hospitals in Klang valley, Malaysia who completed for clinical group. The sociodemographic data were collected. Reliability was calculated through Cronbach's alpha for SFS full scale (α: .80) and all subscales (α: .54 to .89). The SFS has good face and content validity besides the convergent and discriminant validity. Significant bivariate correlation coefficients were found between all subscales and full scale (p<.01). The Malay SFS is consistent with the original, Spanish, German and Norwegian translations. It indicated a valid and reliable instrument for use in clinical practice and research settings in participants with Schizophrenia as well as healthy population in Malaysia.*

Keywords--- *Schizophrenia, Social Functioning, Reliability, Translation, Validity.*

I. INTRODUCTION

Deficits in social functioning are hallmark in schizophrenia after cognition which bring a hike in the rates of functional impairment. It has interchangeably defined through social dysfunction, social performance, social adjustment, social adaptation, and social competence (Bellack et al., 1990; Brissos et al., 2011). Significantly, intervention in cognitive impairment is promising to alleviate disabilities in schizophrenia including cognitive functioning, functional outcomes and clinical symptoms. It is vital for evaluating the success of treatment although the dimension is still debateable with the fact that social dysfunction such as socializing issues in community, daily life, and occupational is frequently present at the beginning of schizophrenia treatment (Hellvin et al., 2010).

Furthermore, medication management is important as well to keep patients living independently and healthily in their context that serve as an important outcome measure for effective treatment. Therefore, any long-term hazard of social impairment functioning should be avoided as early as possible together with psychopathological symptoms for better recovery. The psychosocial measures are relevant to evaluate social functioning comprehensive psychological approach for real world functional outcomes which consistent with previous findings

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of real-world outcomes. Noticeably, the relevance of Social Functioning Scale (SFS) until it was nominated as one of the robust assessments for cognitive performance, functional capacity and social functioning (Harvey et al., 2011).

Considerably, SFS was recognized to measure the psychosocial function of the participants which consists of 76 items with seven domains or subscales comprise of (1) social withdrawal (time spent alone, initiation of conversation, social avoidance); (2) interpersonal (number of friends, quality of communication); (3) pro-social activities (common social activities); (4) recreation (hobbies, interests); (5) independence-competence (ability to perform skills); (6) independence-performance (performance of skills); (7) employment (engagement in productive employment or related training).

Social dysfunctions are part of schizophrenia that affect performance due to the absence of skill and not competence in using skills. Hence, the domain is important to be included in a treatment plan and objective for psychological intervention to measure the functional outcomes in patients who suffering from social and vocational issues. In addition, the information of social functioning or any improvement demonstrated through behavioural changes can also be reported by the informant that signify the importance of SFS despite it was not originally meant for schizophrenia (Burns & Patrick, 2007).

Therefore, the objectives of the validation study which turn out to be the research hypothesis were (1) to establish reliability or internal consistency of Malay version of SFS, (2) to investigate the content validity of SFS Malay version (3) to evaluate the convergent validity of Malay SFS, and (4) to examine the discriminant validity of the scale.

II. PURPOSES OF STUDY

This study was performed in two phases (1) the translation from the original English to the Malay version; and (2) the validation study.

This self-reported item scale has confirmed its seven subscales assessing social functioning and other significant features. The translation process was carried out appropriately to ensure the items were validated according to Malaysian context. As the treatment effects on social functioning was based on SFS measure, the validation study of the Malay version is essential to ensure it is valid and reliable in evaluating patients' condition and progress after completing a psychological treatment.

The questions in the SFS are considered as multiple responses answers since the answer to each does not impede an answer for the others; the responses are not mutually exclusive. Validity and reliability tests were performed prior to use in the main study as they have already been established only in western countries but there is no such study in Malaysia. The structure of SFS has been confirmed by convergent and discriminant validities and is viewed as a significant tool to measure the social functioning is patients with schizophrenia to support the psychosocial outcomes.

In cross-cultural health care research, the consensus regarding the best approaches for instruments translation and validation are still ambiguous as there is no standards for translators qualifications identified. Although the methodological approaches are already well established since decades, the comprehensive way of executing translation, back-translation, validation, testing, revision and refinement of the instrument are still limited (Brislin,

1970; Cook & Beckman, 2006; Sousa & Rojjanasrirat, 2011; Sperber, 2004) except for forward translation which is not sufficient with unqualified translator for adaptation and cross-cultural validation process of evaluation (Sperber, 2004). Although it seems simple and straightforward process, a quality translation may not possibly be achieved without qualified bilingual raters and experts (Sousa & Rojjanasrirat, 2011).

A comprehensive procedure for a successful instrument translation and validation should initiate from the source language until target language which include cross-cultural into consideration (Bracken & Barona, 1991). This may increase the likelihood of better-quality translations of instrumentation from different cultural backgrounds (Bracken & Barona, 1991; Brislin, 1970). In fact, the translation process involved from the source language, English to target language of Malay language, which then back translated to English to check for the similarities in structure to the original source in the phase 1.

Pre-test technique involved checking the nonsensical answers in response as random probe by probing question about each item to selected sample of items in random towards randomly selected respondents to test the quality of question to the original that should be deliverable which indicates the clarity of questions. The SFS Malay version was found to be acceptable as the items are clear and understandable through pretesting. Apparently, the procedures clearly emphasized the equivalence of meaning which is important aspect in translation as recommended by Brislin (1970).

Validation of translation method has been carried out in phase 2 by 30 raters from both clinical and healthy respondents to validate the translated questionnaires of SFS instrument. This approach helps in identifying confusing or problem items followed by revising and comparing the original source-language version and the back-translated source-language version. The item of both versions was then ranked according to language comparability and interpretability similarity (Sperber, 2004).

Therefore, SFS was translated and back-translated according to comprehensive guideline (Brislin, 1970; Cook & Beckman, 2006; Sousa & Rojjanasrirat, 2011; Sperber, 2004). Its validity was determined through establishing its face and construct validity. According to Cook and Beckman (2006), the sources of evidence to support a tool's construct validity comprise of response process, internal structure, relation to gold standard and consequences. Meanwhile, the internal consistency was determined to ascertain its reliability.

III. METHODOLOGY

1) Participants

A total of 336 participants with diagnosis of schizophrenia (n=168), and healthy group (n=168) were involved in this study (Yurdugül, 2008). Thus, there were two types of participants recruited in this study, aged between 18 and 65 years and fulfilling the DSM-V (American Psychiatric Association, 2013) diagnostic criteria for schizophrenia, and followed in the two selected hospitals in Klang valley, Malaysia covering Putrajaya Hospital and Kajang Hospital for clinical respondents. Meanwhile, healthy participants were recruited from community setting. Each participant was given written informed consent prior to study commencement. There were clinical and healthy target population respondents which accounted for 88.42% after completed this study.

2) Measures

The SFS is a self-rated questionnaire of seven subscales with variable design in response including dichotomous questions (four items: one item records the time of getting up, one item is rated on a three-point Likert scale, two items are rated on a five-point Likert scale, and 68 items are rated on a four-point Likert scale of ability or frequency. A competent behaviour or higher frequency are demonstrated through higher score. Each subscale score is the sum of all item values of that subscale. Every subscale value is standardized and normalized to a Scaled Score (Mean = 100, SD = 15), based on a sample of 336 clinical with schizophrenia and healthy participants. The SFS full scale score is computed as mean of the seven subscales scaled scores or subdomains.

The SFS has been translated into and validated in several languages, including French, Japanese, German, Spanish, Italian and Persian, making it an appropriate instrument for internationally registering and comparing data for both clinical and research purposes. The present study translated the SFS from English to Malay language, and the back-translation that was approved by the original author, Max Birchwood.

3) Study Design

SFS validation study begin with quality in translation, adaptation process up to validation of the instruments. It is common in cross-cultural health care research to develop a rigorous planning and comprehensive adoption (Brislin, 1970, 1986; Hambleton et al., 2005; Sousa & Rojjanasrirat, 2011). The SFS content validity was conducted by the expert's fields and the pre-test using outsourcing of clinical and community settings followed by psychometric testing of the pre-final version including internal consistency, construct validity and criterion validity to establish the newly Malay version of SFS for Malaysian population.

Moreover, further psychometric properties evaluation was executed to measure other potential of SFS based on the findings of SFS validity and reliability. Before testing the hypothesised model, there is a need to validate the measures to reduce measurement errors besides evaluating the characteristics of a sound measurement, accuracy and applicability. Thus, there is a need to explore its convergent, discriminant and predictive validity as SFS seems to be beneficial as a screening tool in healthy population as well (Birchwood et al., 1990; Hellvin et al., 2010; Iffland et al., 2015).

4) Translation

There are numerous validated screening tools available globally for schizophrenia. However, the Malay version measures for social functioning is scarce except The Schizophrenia Quality of Life Scale Revision 4 (SQLS-R4) which measures quality of life in schizophrenia in Malaysian context. The translation of the original SFS into the target Malay language, involved forward translation or also known as one-way translation. Due to the rising number of schizophrenia and psychotic symptoms, initial screening of the condition is crucial to be completed before seeking for further help from mental health professional. Thus, the SFS is identified as suitable instrument to screen for social functioning in schizophrenia population in Malaysia. In the back-translation techniques, a translatable version should comprise of 1) simple sentences; 2) repetition of nouns rather than use of pronouns; 3) avoiding metaphor and colloquialisms; 4) avoiding English passive tense; and 5) avoiding hypothetical phrasings or subjunctive mood as suggested by Brislin (1970).

Therefore, two bilingual & bicultural translators were assigned with desired target language (TL) of Malay with criteria including (i) one knowledgeable about psychology and mental health terminology and the content area of the social functioning construct in the TL and (ii) one knowledgeable translator about the cultural and linguistic nuances of the TL. The comparison of the two translated versions of the instrument (TL1 & TL2) then classified as synthesis 1 followed with blind back-translation (blind backward translation (blind double translation) in the preliminary initial translated version of the instrument and the same step being repeated to compare the two back-translated versions of the instrument (B-TL1 & B-TL2) as in synthesis II. Pilot test of pre-final version of SFS in the target language (P-FTL) was then takes place after all the translation steps were completely conducted (Sousa & Rojjanasrirat, 2011). In this study, two linguistic experts from University of Putra Malaysia who are Academicians in English Translation and Malay literature were appointed to verify the whole process of translation besides practitioners. The translation process of SFS into Malay language was completed accordingly. It involves expertise from several areas such as Psychologists, Counsellors, Psychiatrists, Language and academic perspective from various institutions.

5) Validation Process

Validity and reliability tests were performed prior to use in the main study as they have already been established only in western countries but there is no such study for Malaysian context. The structure of SFS has been confirmed by convergent and discriminant validities and is viewed as a significant tool to measure the social functioning is patients with schizophrenia to support the psychosocial outcomes.

6) Content Validity

In this validation study, content validity index at the item level (I-CVI) and at the scale level (S-CVI) were calculated including the averaging calculation (S-CVA/Ave). The experts were selected based on the translation and validation guidelines as suggested by Sousa & Rojjanasrirat (2011), in which 10 experts is recommended with the I-CVI of 0.78 or above and S-CVA/Ave of 0.90 or above are the minimum acceptable indices.

In fact, the experts need to be conveyed with a structured procedure, a description of the full content domain or dimensions of variable and specific instructions as well as questions in a process of evaluation. It helps to determine the content relevance according to a 4-point ordinal rating scale for the items and instrument. Hence, the index of content validity (CVI), the most widely used quantification of content validity does count which connotes the relevancy (Lynn, 1985). The unmet items of the minimum indices acceptable were revised and re-evaluated. The process continues until acceptable both content validity and equivalence are achieved.

7) Face Validity

Furthermore, in evaluating the instructions, items & response format clarity, the internal validity or face validity was evaluated based on item relevancy using scale of 0 or 1 by 30 respondents of 16 clinical and 14 healthy populations. The SFS found to have a good face validity.

8) Reliability

The first thing in validation process was to refine the internal consistency which includes Cronbach ‘s Coefficient Alpha and item-total correlations (Churchill, 1979) to establish internal consistency reliability

(sensitivity and specificity). The estimation of index of consistency, Cronbach's alpha and the scoring agreement through percentage agreement. Although Cronbach's alpha coefficient is the most used in the assessment of internal consistency, there is no consensus on its interpretation. Even though some studies establish that values higher than 0.7 which is supreme for the item.

9) Construct Validity

Construct validity represents the construct which measured by a group of variables and predictions to support the instrument validity (Souza et al., 2017). These psychometric properties of SFS were determined which supported the convergent, and discriminant validity. The correlations among the composite scores were measured through Pearson by averaging all scores of the items through bivariate correlation coefficients. Furthermore, the Pearson correlations among the SFS and other 2 scales of SOFAS and SQLSR4 were evaluated too to determine the convergent and discriminant validity. For convergent analysis, the similar results produced between SFS and other scales were identified. While the mean scores of the high and low scores in both, clinical (schizophrenia) and healthy groups were compared in the discriminant analysis.

IV. DATA AND STATISTICAL ANALYSIS

The data was inspected for accuracy of data, missing values, normality of the distributions, and outliers before evaluating the statistical analyses. Fortunately, there is minimal missing value of 1.4% only. According to (Hair, Black, Babin, & Anderson, 2010), missing values should be replaced using mean when there are less than 5% missing values per item. In this study, missing value analysis indicated none of the indicators have 5% or more of missing values, it ranges from 0.2% to 1.5%. Hence, missing values were replaced using mean through SPSS version 23.

While for statistical analysis of instrument validation, reliability analysis was executed by counting the mean item-total correlations, mean inter-item correlations, and Cronbach's alpha for all subscale scores and the full-scale score. Pearson's product-moment correlation coefficients (r) between both the SFS full scale score and the seven subscale scores, and between the seven subscale scores will be measured.

The relationships for both groups, between the SFS and the SQLS-R4 scores, and key demographic, clinical, and functional characteristics, were computed by bivariate Pearson's product-moment correlation coefficients. Group difference in SFS scores were then analysed using independent t-test to conduct discriminant analysis based on SFS subscale scores, classifying (a) subjects in the healthy group from the clinical group, (b) classifying individual, and (c) separating subjects within each group. A frequency analysis will be performed to investigate floor and ceiling effects.

V. RESULTS AND DISCUSSION

This study aimed to evaluate the Malay SFS validation components in which the reliability took place as the first analysis followed by concurrent and convergent validity between SFS subscale items and the criterion scales, SQLS-R4 and SOFAS. It has been hypothesized (H1) that the Malay SFS will be significant and positively related to social occupational functioning and quality of life related measures. The discriminant validity was examined by

comparing between high and low scored of SFS. Based on this hypothesis (H2), the Malay SFS will be able to significantly discriminate the high and low scored social functioning in schizophrenia participants.

1) Sociodemographic Data

380 participants were recruited (clinical participants, n=168 and healthy participants, n= 168 (public servants, private sector staffs, university students, and community). The inclusion criteria were Malaysian of 18–65 years old, able to read Malay materials, and had no psychiatric or general medical illnesses for healthy population and diagnosed with Schizophrenia for clinical population. The age range was 18–65 years (M= 31.75, SD= 9.14) in schizophrenia and (M= 38.36, SD= 11.66) with 57.74% and 42.26% in clinical male and female respondents while 36.31% and 63.6% in healthy male and female respondents respectively. Out of 158 male respondents, there are 61.4% and 39.9% from 178 female respondents are schizophrenia patients involved in this validation study. Majority of respondents were Malays with 94.6%, 2.9% were Chinese, 1.8% were Indians, and 0.6% were other ethnic.

Demographic characteristics and group comparisons of both two groups, which the relationships between the SFS score, the SQLS-R4 score, clinical, and functional characteristics, have been computed as shown in Table 1.

Table 1: Demographic characteristics for schizophrenia and healthy

Profile	*Schizophrenia (n=168)*	*Healthy (n=168)*	*Total*
Gender			
Male	97	61	158
Female	71	107	178
Age	31.75 (9.14)	38.36 (11.66)	
18-30	8	1	9
31-40	67	39	106
41-50	72	83	155
51-65	21	45	66
Duration of Illness (in years)	4.75 (3.40)	-	
No illness	-	168	168
Less than 1	6	-	6
>1 -5	18	-	18
6-9	70	-	70
more than 10	74	-	74
Race			
Malay	156	162	318
Chinese	8	2	10
Indian	2	4	6
Others	2	0	2
Education			
Primary School	8	2	10

LCE/SRP/PMR	18	9	27
MCE/SPM	75	28	103
STPM/Matriculation	7	11	18
Diploma	32	47	79
Bachelor's degree	26	47	73
Master's degree	2	22	24
PhD	0	2	2
Employment			
Student	20	29	49
Housewife	6	6	12
Part Timer/ Freelance	8	0	8
Public Servant	6	83	91
Pensioner	2	13	15
Private staff	38	30	68
Self employed	14	3	17
Vocational Training	15	0	15
Unemployed	59	4	63
Marital Status			
Single	139	53	192
Married	23	113	136
Divorced	5	2	7
Separated	1	0	1
Housing			
Living with parents/ relatives	135	50	185
Living independently/ with partner	31	118	149
Institutionalized	2	0	2

Most of SFS validation study respondents are at the age range of 18 to 65 with average age of 32 years old and 38 years old for schizophrenia and healthy respondents. Number of male schizophrenia respondents are 97 compared to 71 in female. While 61 respondents are healthy male and 107 in female. The duration of illness for patients with schizophrenia is 4.7 years or equivalents to 5 years. Majority of the respondents' marital status is single that is 192 (57.1%) involved in this validation study. It followed by the status of married with 136 (40.5%) respondents, and the remaining are 7 (2.1%) and 1 (0.3%) respondents for divorced and separated status respectively. In terms of education level, the highest achievement is PhD with 2 respondents while the SPM holders is the majority achievement in education with 103 (30.65%) respondents followed by STPM/ Matriculation, Diploma, Degree, and Master degree that comprise of 18 (5.4%), 79(23.5%), 73(21.7%), and 24(7.1%) respectively. While the rest are PMR holders and primary school leavers with 27 (8%) and 10 (2.9%).

The public servants found to be dominant in this study which 83 (24.7%) respondents are healthy and only 6 (1.8%) of them are diagnosed with schizophrenia. 49 (0.15%) students, 12 (3.6%) housewife, 13 (3.9%) healthy pensioners and 2 (0.6%) pensioners with schizophrenia. Meanwhile, 59 (17.6%) patients are unemployed while

there is only 4 (1.2%) unemployed healthy respondents reported. The other characteristics are as displayed in the demographic table.

2) Reliability

The data was first examined its reliability for the Cronbach's alpha Coefficient prior to further psychometric properties analysis. In the study involving 336 outpatients with 168 diagnosed as schizophrenia, and 168 healthy participants, the internal consistency or reliability was calculated through Cronbach's alpha for SFS full scale of α= .801, which found to be high and six subscales ranged within .54 to .89 of Cronbach's alpha, except for the employment subscale as presented in table 2. The employment's Cronbach's alpha is -1.26, which indicates an unacceptable level of internal consistency for the scale with this specific group. Furthermore, the subscale (7) employment contains a filter item (Yes/ No) with different subsequent items, therefore measures of internal consistency were not computed. In reliability, a value of less than 0.6 is considered as unsatisfactory, whereas a value exceeding 0.6 is acceptable, while 0.8 is preferable. Ideally, an instrument is considered acceptable if the internal consistency is greater than 0.7 based on experts' view (Nunnally & Bernstein, 1994

Table 2: Reliability measures for Malay SFS

	Full Scale	*Social Withdrawal*	*Inter personal*	*Pro social*	*Recreation*	*Ind Competence*	*Ind Performance*	*Employment*
No. of Items (n)	7	5	3	22	15	13	13	5
Mean item-total correlation (*r*)	.67	.56	.57	.70	.64	.51	.63	-
Mean inter-item correlation (*r*)	.67	.47	.42	.38	.41	.44	.47	-
Cronbach's Alpha (α)	.80	.54	.64	.89	.78	.88	.88	-

The SFS has been known for its good psychometric properties which was globally chosen in numerous studies. The instrument and permission were obtained from the main author, to be used in the current research. For the mean item-total correlation (*r*), the range from .51 to .70 for the six subscales and .67 for the SFS full scale reported. Moreover, the mean inter-item correlations (*r*) ranged from .38 to .47 for the six subscales and .67 for the SFS full scale respectively. Significantly, this validation study has shown a solid measure in social functioning that consistent with the original English, Spanish, German and Norwegian version. Although the alpha value for items in employment are not considered to be appropriate, the items are accepted by the experts from content validity and relevant to measure functional and work outcomes in patients with social dysfunction particularly in schizophrenia or even for other psychiatric illness or healthy people. The result is consistent with the original version by Birchwood et al. (1990) which reported high internal reliability (α=0.80) and inter-rater reliability (α=0.94). Although the SFS has reasonable psychometric properties, it was designed for use with community-based patients.

Table 3: Bivariate Correlation Coefficients between SFS full scale and subscale scores (n=336)

Subscale	*Full Scale*	*Social Withdrawal*	*Inter personal*	*Prosocial*	*Recreation*	*Independence Competence*	*Independence Performance*
Social Withdrawal	.67						
Interpersonal	.75	.47					
Prosocial	.81	.42	.54				
Recreation	.77	.38	.41	.75			
Independence Competence	.65	.41	.37	.31	.34		
Independence Performance	.75	.44	.39	.50	.49	.57	
Employment	-.10	-.15	-.14	-.16	-.13	-.11	-.08

The bivariate correlation coefficients in table 3 revealed that the score of full-scale and the subscales of all participant. All correlation coefficients are higher than $r>.65$ except for the employment. The bivariate correlation between the six subscales are statistically significant with moderately correlated (r) between .31 and .75. The bivariate correlation between prosocial and recreation found to be positive and strong, r (334) = .75, $p< .01$.

3) Validity (Concurrent Validity)

In this study, there are criterion-related validity involved for construct validity in which concurrent, convergent and discriminant validity were evaluated. Concurrent validity was conducted to test the validity of Malay version of SFS compared to other well-established scales. In this study, the concurrent validity by of SFS was conducted by examining the relationships between the total scores of SFS and SQLSR4 and SOFAS. Table 4 shows the calculated Pearson correlations for the scores obtained on the SFS and the other two assessments. All the correlations were significant at $p<.01$. The correlations of the SFS with other scales ranged from r-.34 to .38.

Table 4: Correlation of SFS with the criterion scales

	SFS	*SOFAS*	*SQLS-R4*
SFS			
SOFAS	.38		
SQLS-R4	-.34	.166	

The correlations between the full-scale score of SFS and SOFAS range were positive and moderately correlated, r = -.38, $p<.01$. Meanwhile, the correlations between the full-scale score of SFS and SQLS-R4 were moderately negative correlated, r= -.34. Based on the findings, the SFS total score was significantly positive correlated with the SOFAS score signifying the domain of social functioning. Despite the fact, the SFS total score was significantly negatively correlated with the SQLS-R4 score demonstrating the domain of quality of life. This manifested through the moderate score in SQLS-R4 comparable to SOFAS to establish the psychosocial functioning and quality of life. Hence, the research hypothesis was supported.

4) Construct Validity

The measures of construct validity in instrument could be observed if they are related to each other to show a correspondence or convergence between similar construct or discriminate between dissimilar constructs if they are not related. Moreover, convergent validity was determined by having a significant relationship between SFS and other measures of SQLS-R4 and SOFAS. Table 4 shows the results with a positive correlation between the Malay version of SSF and SOFAS, r=.38, p<.01, while negative correlation reported between SFS and SQLS-R4, r=-.34, p<.01. Although it would be evidence of convergent validity to have high correlations between the same construct in testing new scale to other related measure, at least moderate construct validity for most of the related scales is acceptable (Gregory, 2014) as reported through the convergent validity in Malay translated SFS. Therefore, the hypothesis for convergent validity was also supported the SFS for social occupational functioning and quality of life.

5) Discriminant Validity

The social functioning level had discriminated the scores of the high and low rated from the clinical and healthy group. These scores supported that the Malay version of SFS differentiate high-level and low-level social functioning of an individual. From all participants, scoring 1 standard deviation below the mean of the SFS were grouped into the schizophrenia group while the rest fell into the healthy population group. The independent t-test analysis showed that the SFS mean scores from the pooled data differentiated the low rated clinical group from the high rated healthy group. The SFS total score of respondents from two groups of clinical and healthy were compared to examine if the instrument could differentiate the groups on social functioning as shown in table 5. It was hypothesized that the healthy group would have the least impairment in social functioning as compared to the clinical group of schizophrenia.

Table 5: SFS measures in clinical and healthy groups

Subscale	Schizophrenia (n=168)	Healthy (n=168)
	Mean Std. Deviation)	Mean (Std. Deviation)
Social Withdrawal	98.87 (10.34)	110.93 (10.53)
Interpersonal	124.53 (24.15)	142.42 (9.35)
Prosocial	103.67 (16.45)	119.04 (10.97)
Recreation	99.17 (16.93)	114.47 (14.11)
Independence Competency	101.39 (15.06)	115.08 (9.42)
Independence Performance	101.13 (15.43)	114.96 (10.34)
Employment	117.78 (77.85)	120.84 (4.67)
Full Scale	101.97 (9.43)	114.29 (5.64)

6) Face Validity

Internal validity has been carried out to the respondents by evaluating the sample of pre-final version of Malay SFS. There is slight modification with 9.4% of the instructions, response format and items of the instrument that are found to be unclear and has been re-evaluated. This is vital so that the items are adequate and easily understood

by target population in terms of conceptual, semantic, word suitability and content equivalency of the translated instrument and the structure of sentences used in the instructions to ensure appropriateness, understanding and comprehension which measured through the inter-rater agreement with the duration of 3 weeks' time. Overall, the respondents agreed that the Malay version of the SFS was clear, straightforward, and easy to understand.

A few words and sentences were discussed as they could give different meaning such as in subscale Prosocial (3), the word meeting or mesyuarat has been enhanced with *perjumpaan* and church activity was replaced to *aktiviti keagamaan atau kerohanian* in general to adapt with social and multicultural context in Malaysia which has multiracial community with several religions and, Recreation (4), rambling or *bersiar-siar* instead of *merayau-rayau* as alternative word so that it will be understandable and familiar able in community setting. The expert panels agreed to enhance those words and sentences for more accuracy in terms of meaning and interpretation. Otherwise, number of items remained the same as in original scale.

7) Content Validity

Content validity is the determination of the content representativeness of the elements of an instrument by the two stages application which comprise either development or judgment process by the panel with expertise in the content or domain area of the instrument. The process of assessing in judgment quantification stage is fundamental in validation which entail the assertion by a specific number of minimum of five experts for sufficient level of control for chance agreement or three for sufficient restriction and up to maximum of ten agreements for content validity to be established and quantified through the index of context validity (CVI).

As a result, there are eight expert panels were assigned to further evaluate the internal validity, conceptual and content equivalence of the Malay SFS items who are knowledgeable about the content areas of the construct of the instrument and the target population in which the instrument used and whose mother language is Malay as in SFS. They were appointed based on their expertise in the field of psychology and psychiatry from various settings to verify the SFS. They were four academicians from University of Cyberjaya, University of Putra Malaysia, Sultan Idris Education University (UPSI) as well as four practitioners and clinicians who are consultant Psychiatrists, Senior Psychologists, and Counsellors from Putrajaya Hospital, Public Service Department of Malaysia and Ministry of Education respectively. Hence, content equivalence (content-related validity) of all 76 items using CVI were validated based on these experts' review. Thus, the content validity index at the item level (I-CVI) and at the scale level (S-CVI) were calculated with the I-CVI average from the range of 0.825 to 0.9 and S-CVI average of 0.94 respectively.

The Cronbach's alpha of .80 for the full scale revealed a good reliability in the Malay SFS. These results revealed an identical pattern, inter-item correlations, and item-total correlations to the original English and other translated version despite lower in scores. Significantly, social functioning and employment are commonly described in schizophrenia which therefore highlighted as a treatment target.

Overall, a satisfactory discriminant analysis in this study showed significant difference in clinical and healthy. Hence, SFS could be considered as a screening instrument for schizophrenia, reflecting the dysfunctionality in social functioning through higher ceiling while the lower ceiling effects in healthy population correspondingly.

Therefore, a few suggestions should be taken into account based on these results. The SFS Malay version can be used to measure social functioning of clinical and healthy population in Malaysian adults. The self-rated scale

can be a faster approach to evaluate the social functioning in schizophrenia, however, the evaluation can be subjective, and it depends on the patients' interpretation of the questions. Nevertheless, this robust scale is significant to be an indicator for both populations accordingly through its distinctive scores. The limitation of this study is that the construct factorial validity of Malay SFS has not been evaluated as the item stability were significantly proven from the previous validation studies' findings. Hence, the factor analysis was not conducted in this study. Likewise, the low inter-item correlations and Cronbach's alphas score were discovered as low as stated by Birchwood et al. (1990), Hellvin et al. (2010) and Iffland et al. (2015) which their relevance remains ambiguous, given satisfactory alpha scores that postulate a constraint of the Malay SFS.

VI. CONCLUSION

The Malay translated of the Social Functioning Scale (SFS) is reliable and valid to be used as a screening tool to assess social functioning in schizophrenia as well as non-clinical population in Malaysia. It has produced such meaningful measure and relevant to predict the psychosocial outcomes effectively yet comprehensible in both research and clinical settings in line with the original and other previous versions. Further investigations may need to be taken into consideration to enhance SFS psychometric properties for more robust outcomes in future.

VII. ACKNOWLEDGEMENTS

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