FACTOR ANALYSIS OF BRIEF SCALE OF PSYCHOLOGICAL WELL-BEING AMONG INDIGENOUS ADOLESCENTS IN NILGIRIS, INDIA

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Abstract

Background: Despite the growing popularity of employing psychological well-being assessments in research, it is essential to ensure the effective translation and validation of these psychometric tools for indigenous communities, which place a high value on preserving their language and culture at this 21st century. Methods: The objective of this study is to conduct a factor analysis of the measurement to use in the new cultural group of indigenous community. Cross-sectional study was conducted by using translated questionnaire of Brief Scale of Psychological Well-being for adolescents (BSPWB-A) data were collected from 321 indigenous adolescents in the Nilgiris, India. Results: Translated BSPWB-A dimensions Cronbach alpha values is above 0.8 means highly reliable. Confirmatory factory analysis (CFA) values of comparative fit index (CFI) were 0.90 (close to 1), Root Mean Square Error of Approximation (RMSEA) value below 0.08 was good, result indicates that 0.076 which suggested the model fit. Conclusion: Model fit and factor analysis were supports the translated questionnaire of BSPWB-A was psychometrically sound for indigenous adolescents. Assessing their mental health with culturally validated tool was more appropriate which is helpful to policy makers and Non-Government Organization (NGOs) who is working for upliftment of indigenous community people.

Keywords: Factor Analysis, Well-Being, Indigenous Community, Translation, Adolescents, Validation.

1. INTRODUCTION

Our moods, physical health and social relationship assist us in dealing with adversity and unforeseen challenges. When we are in a good mood, everything seems to be manageable (mood); after getting a good sleep, an issue doesn't seem as significant (physical health); and a phone call from a friend makes us feel better (social relationship) these all are the impact of our psychological well-being (PWB) that we experience in everyday life. World Health Organization stated that significant overall impact of mental illnesses on society is high but there is a dearth of knowledge on the seriousness of mental health issues. There are one in seven young people in the age of 10-19 have some kind of behavioral, emotional, or developmental issues, and one in eight have a mental illness[1]. Therefore, it is believed that children and teenagers from various socio-economic background were more vulnerable to inequalities, that would negatively affect their health and well-being[2]. Furthermore, it has been stated that the worldwide burden of disease from mental illness were increased to 15% by 2020[3,4]. As a result, it is turning into a serious public health issue such as Depression, anxiety, and eating disorders are some of the most prevalent mental health issues, particularly among young people[5,6,7]. Since, India comprises about a fifth of largest adolescent population (243 million) their contribution to the country considered as paramount importance for nature's future, demographic and economic growth[8]. Despite the fact that the Indian government priorities mental health through the National Adolescent Health Program of Rashtriya Kishor Swasthya Karyakram continue to get insufficient attention[9,10,11,12]. However, the initiative has to take into account and the demands of indigenous community that needs special attention in

terms of mental health. Devarapalli et al.,[13] systematically reviewed mental health of indigenous people and suggested that, need more efficient research in the area of indigenous psychology, and future study should close the gaps wisely using resources while carrying out the studies. The majority of indigenous people are marginalized and reside in rural areas. The lack of advanced healthcare infrastructure in these remote locations highlights a significant gap in policy implementation that needs to be addressed to improve indigenous mental health.

There has been a significant increase in indigenous mental health issues but the awareness and treatment seeking behavioir are still low for reasons such as cultural differences, lack of mental health literacy and limited access to necessary resources. Most of the researchers assessed indigenous mental health by using the original version of the scale (mostly in English). It would be simple to comprehend and answer the questions accurately if the assessment instrument is in their mother tongue or local language especially for particularly vulnerable tribal group (PVTGs). Additionally, factors of constructs play a significant role in positive impact in psychological interventions[14]. So, there is a need to cultural psychometric validation of BSPWB-A for indigenous adolescent population.

Present research focused on two objectives

(i) Translation of PWB tool into required language (RL) by using the stages of forward & backward translation, experts consultation and pilot study to validate the translated questionnaire[15].

(ii) The translated BSPWB-A is psychometrically tested by factor analysis among indigenous adolescent population.

Based on previous studies following hypotheses were framed;

H1: Translated Brief Scale of Psychological Well-being for Adolescents and its subscales is demonstrate the substantial reliability when administered to indigenous population.

2. MATERIALS AND METHODS

2.1. Population and Sample

Study was conducted in three higher secondary schools located in the Nilgiris district, India. The Nilgiris Hills (referred as "Blue Mountains") is a region of mountains, forests and tea plantations located in southern India where the south states of Tamil Nadu, Kerala and Karnataka all come together and rise to a height of 2,400 meters. Geographically, the Nilgiris district is part of the Western Ghats, a UNESCO World Heritage Site and one of the eight "hottest hotspots" of biological diversity in the world. The Nilgiris are also home to six ancient indigenous or tribal communities each with its unique and rich cultural heritage, traditions, and lifestyle. Some of the major indigenous people that have historically lived in the Nilgiris include the Toda, Kota, Kurumba, Irula, Paniyas and Kattunayakkans (PVTG) was studied in the present research.

Sample consisted of 321 indigenous adolescents in Eklavya Model Residential schools (which is provide free education for indigenous), Government Tribal Residential Schools located in the Nilgiris district by using stratified random sampling technique. Age range between 10-19 years, participants belongs to indigenous

community in the Nilgiris district and willingness to participate were the inclusion criteria for this study. Participants who are under psychological intervention were excluded.

2.2. Procedure

2.2.1 Ethical consideration: To receive clearance from Directorate of Tribal Welfare, Tamil Nadu the researcher submitted a proposal along with a questionnaire, consent form, and contact information. Data from indigenous adolescents in the Nilgiris were obtained with consent from the Ministry of tribal welfare department. Participation was optional, and anyone could opt out at any time. Every technique was performed in accordance with the regulations and directions.

Prior to data collection, authorization was obtained from each school, and the questionnaires was administered during school hours and filled by each participant. The students were informed that their participation would be voluntary, confidential and anonymous. The average time required to complete the questionnaires was around 20 min.

2.3 Instrumentation

Demographic data were collected which includes name of the indigenous group, type of family, parents education and occupation.

2.3.1 Psychological Well-being

Brief Scale of Psychological Well-Being for Adolescents (BSPWB-A) by Viejo et al (2018)[30]. This instrument adapted from Ryff psychological well-being scale (2014)[31]. It's a self-report scale which contains 20 items on 6-point Likert scale ranging from completely disagree (1) to completely agree (6) which measures adolescents self-acceptance, positive interpersonal relationship, autonomy and life development. Required to mention that, positive interpersonal relationship doesn't indicate romantic relationship rather it is focused friendship and relationship in general.

2.4 Need for Translation

The choice of an appropriate scale or measure to assess psychological dimensions of interest is perhaps one of the biggest hurdles in psychiatric research. Selecting a scale with appropriate psychometric features can occasionally be made simpler by a current comprehensive review of the existing measures. Indigenous people consider language to be essential to the transmission and preservation of cultural legacy. Therefore, it would be challenging for them to comprehend and grasp the knowledge. Comprehending or evaluating an individual's behaviour requires time. However, the most straightforward and simple way to learn about someone is by their self-assessment which includes a description of their past behaviour as well as potential response to specific situations. Since PWB is a self-report and culturally impacted notion, it is also essential for evaluating the mental health of those who might not fluent speaker of that original language of the scale. There is a need to assess the PWB accurately in their primary or local language.

2.5 Questionnaire translation process

2.5.1 Forward Translation: The original questionnaire BSPWB-A was translated into Tamil (required language) by two separate independent bi-lingual translators. Translators should be proficient in both languages. Two translators of subject expert

(psychology) and language expert (Tamil) translated the instrument in a way that closely resembles the original evaluation. Translators debated and contrasted two versions, ideally in the company of a researcher or an objective bilingual translator who had not been involved in any earlier translation discussion.

2.5.2 Backward Translation: To guarantee translation accuracy, translated tools ought to be back-translated into English (original language). Backward translators removed bias and familiarity that were not part of the previous translation process. The back translation may clarify any ambiguities or misinterpretations in the original translations.

2.5.3 Expert committee: The back translated BSPWB-A tool was submitted for review to an expert committee consisting of psychometric construct specialist, language expert, methodologists and forward & backward translators. In order to achieve experiential and conceptual equivalency, experts examine the translated items in BSPWB-A and validated the instrument. As a result, all the 20 translated items had equivalent meaning and measurement as the original called prefinal version of BSPWB-A.

2.5.4 Translated Tool: Prefinal version of BSPWB-A was given to 38 indigenous adolescents. After that we asked the respondents about their thought and understanding of each items. Based on their responses translated questionnaire retained the items with same meaning as the original items, and to ensure that prefinal version would be considered as final translated questionnaire.

3. RESULTS

3.1 Table 1

Chi square test for level of PWB dimensions of type of indigenous group

Dimension of PWB	Toda %	Kota %	Irulas %	Kurumbas %	Paniyas %	Kattunayakans %	Chi sqaure	p value
Self-acceptance								
Low	34.4	46.2	15.1	32.3	33.3	29.4	23.2	0.010**
Medium	53.1	53.8	37.7	48.4	43.3	52.9		
High	12.5	0.0	47.2	19.4	23.3	17.6		
Personal IR								
Low	50.0	15.4	17.0	38.7	33.3	17.6	21.5	0.018*
Medium	37.5	69.2	41.5	41.9	40.0	58.8		
High	12.5	15.4	41.5	19.4	26.7	23.5		
Autonomy								
Low	21.9	23.1	20.8	45.2	36.7	23.5	21.3	0.019*
Medium	71.9	53.8	41.5	32.3	33.3	52.9		
High	6.3	23.1	37.7	22.6	30.0	23.5		
Life development								
Low	40.6	38.5	17.0	45.2	33.3	29.4	24.6	0.006**
Medium	34.4	23.1	170	3.2	16.7	5.9		
High	25.0	38.5	66.0	51.6	50.0	64.7		
PWB								
Low	31.3	38.5	11.3	45.2	30.0	23.5	21.3	0.019*
Medium	56.3	53.8	49.1	25.8	40.0	52.9		
High	12.5	7.7	39.6	29.0	30.0	23.5		

*denotes significant at 5% level   **denotes significant at 1% level

p value of PWB dimensions and overall PWB associated to type of indigenous group. Self-acceptance (Chi square= 23.2, p= 0.010), and life development (Chi square=

24.6, p=0.00) of indigenous community highly associated at 1% level of significance; Personal interpersonal relationship (Chi square= 21.5; p=0.018), Autonomy (Chi square= 21.3, p=0.01) and overall PWB (Chi square= 21.3; p value= 0.019) of indigenous community were associated at 5% significant level. Based on row percentage, 39.6% of Irulas indigenous have highest PWB whereas 45.2% of kurumbas indigenous have low level of PWB.
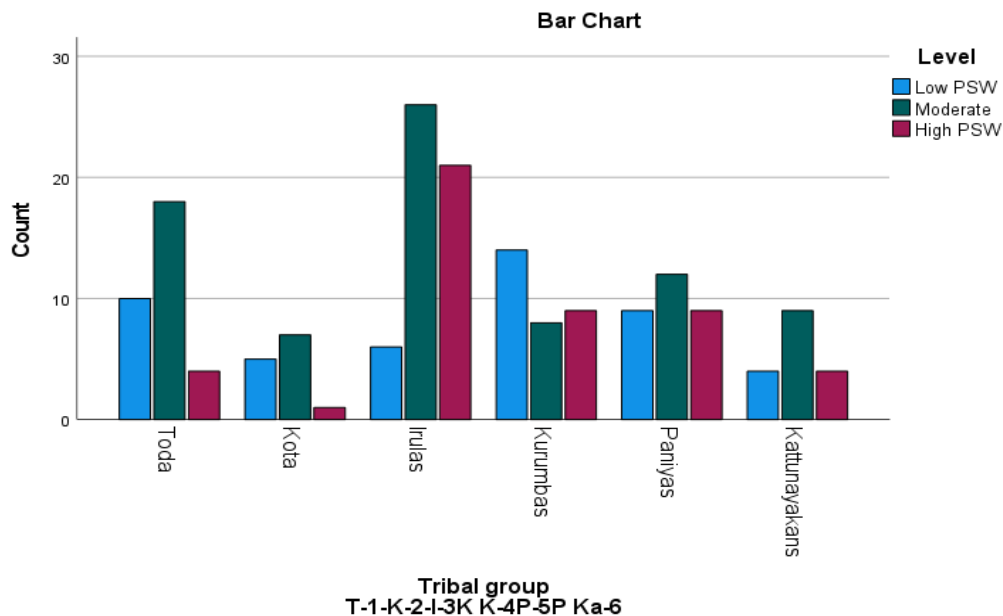

Figure 1: *level of PWB among PVTG in the Nilgiris*

3.2 Table 2

Factor loading values, Average, SD and reliability among PVTG adolescents PWB factors

Domain	Factor Loading	Mean & SD	Cronbach's α
F1- SA			
SA1	0.843	17.2 (6.4)	0.888
SA2	0.859		
SA3	0.817		
SA4	0.768		
Covariance SA-IR 0.382 Covariance IR-A 0.412 Covariance A-LD 0.362			
F2- IR			
IR1	0.730	26.1 (8.0)	0.847
IR2	0.723		
IR3	0.671		
IR4	0.609		
IR5	0.692		
IR6	0.731		
Covariance SF-A 0.296 Covariance IR-LD 0.412			
F3- Autonomy			
A1	0.689	25.8 (8.3)	0.860
A2	0.732		
A3	0.712		
A4	0.719		

A5	0.707		
A6	0.708		
Covariance SA-LD 0.212			
F4 -LD		17.4 (6.4)	0.804
LD1	0.488		
LD2	0.822		
LD3	0.826		
LD4	0.773		

Standardized factorial weight of all the items (except LD1) showed significant high values (above 0.8). This value indicates the strength of the relationship between each item and higher values (closer to 1) indicate a stronger relationship. Factor loadings generally seem strong, indicating that the items are good indicators of their respective factors. The factors appear to have considerable internal consistency, as indicated by the reasonably high Cronbach's α values (SA α= 0.88; IR α= 0.84; A α= 0.86; LD α= 0.80). Moreover, covariances provide insights into relationships between factors. Results indicated that all factors have relatively high Cronbach's α value, suggesting good internal consistency.
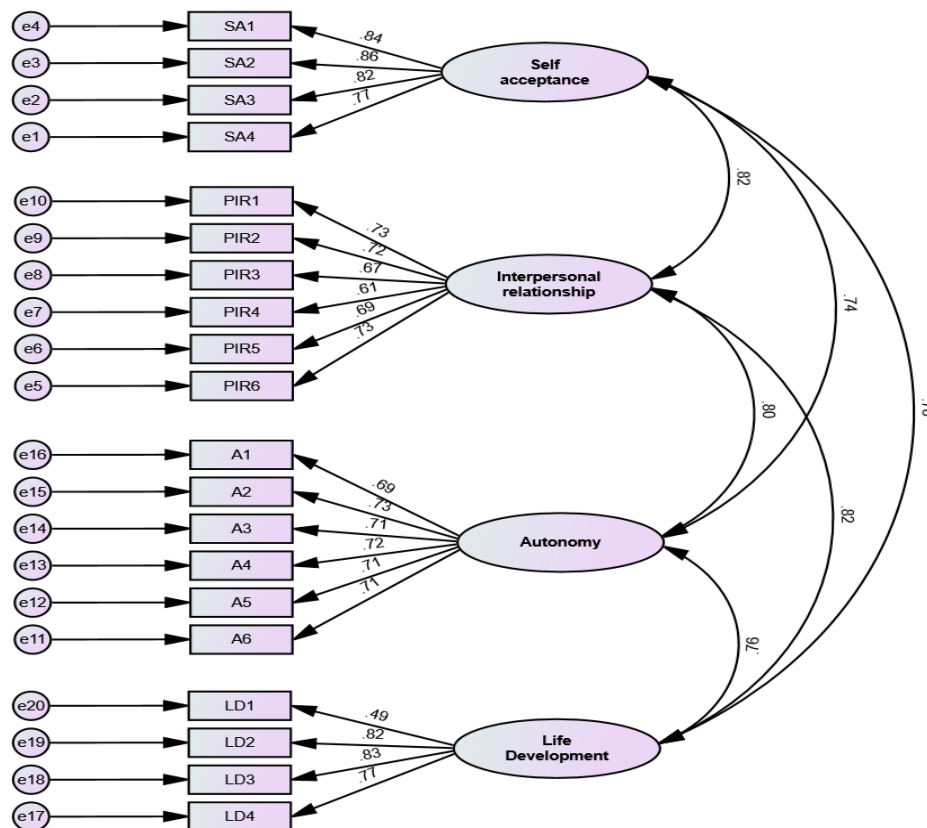

Figure 2: *Four-factor BSPWB model*

Translated BSPWB-A tool was validated, after carrying out a CFA: Chi-square (X^2)=1285.8; Degrees of freedom (df) =157; Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values between 0.90 to 1 indicates good fit, here the value of CFI= 0.901 and TLI= 0.939 which is acceptable. Lower Root Mean Square Error of Approximation (RMSEA) values below 0.08 indicates better fit, result shows RMSEA= 0.076 it is suggested the model fits the data reasonably well. Hence hypothesis 1 is accepted.

4. DISCUSSION

Emphasizes the increasing focus on investigating well-being as a key indicator of both physical and mental health[16,17]. This underscores the importance of possessing dependable and valid tools for its assessment, applicable across diverse cultural and geographical contexts. Consequently, the translation of these instruments into native languages becomes essential. In alignment with this objective, this study aimed to translate and validate the BSPWB-A into Tamil, a language prevalent in indigenous communities in Nilgiris. Irulas stand out for their high participation percentage and relatively high illiteracy rates among both fathers and mothers. This community traces its lineage to gypsies who initially inhabited caves and engaged in ancestral activities of hunting and gathering later they acquired agricultural skills. Studies carried out in specially irula indigenous in the Nilgiris also found that, Irula indigenous residing in the foothills of forests lacked awareness regarding the significance of education, consequently leading to their placement within the poverty spectrum[18,19,20]. Kota and Toda show a higher percentage of fathers with college education.

The results indicate that significant connection between self-acceptance, personal interpersonal relationships, and overall psychological well-being in an indigenous group. Specifically, the Irula adolescents demonstrate that higher levels of self-acceptance and overall psychological well-being compared to other indigenous groups. In a 2017 article, Bharathi. G described a serendipitous experience during a one-day visit to the Irula settlement, highlighting how the encounter provided a fresh perspective on life and inspired a positive living narrative[21].

"*'Serendipity' is one word to describe my experience: I stumbled upon the Irula indigenous when I was on the lookout for something completely different. This event gave me a completely new perspective of life and an excellent story to write about- Positive living.*

She gave me a stern look and asked, "What are you going ask me? How old am I? What sufferings I and my indigenous face? And write a sympathetic sad story about us? We all are very happy people, the forest gives us resources and strangers take the resources away from us. Yet, we all are happy. We are all happy," she said again and paused took a sip of water.

"If you take a picture of us, don't post it in grayscale and write a story that we lead sad lives. Write a colorful story with bright pictures of us," she said. She kept her face stern the whole time I was taking the photos. Finally, she turned to Shivayya and ordered him to make sure I sent them a copy of what I wrote.

Shivayya laughed at this. The old lady looked at me again and said, "No sad stories about us, ok?" Dare I disobey?

At least for that one day, the positive attitude of the Irula group had rubbed off on me too. The writer in me was saying that I would never be on a holiday but would always look for interesting stories to write about."

Above mentioned article provided evidence that, despite the underdevelopment of the Irula indigenous, they embrace their circumstances and lead content and joyful lives. According to Durai, a government licensed snake catcher from the Irula indigenous reported that, "They are just happy with what they get everyday"[22].

The concept of fostering positive relationship with others, as described by Ryff and Keyes and Ryff and Singer involves cultivating fulfilling and reliable relationships, couples with the ability to empathize and establish intimacy. In comparison to other indigenous group, Kattunayakkans adolescents were observed to possess elevated levels of personal interpersonal relationships[23,24]. Aravindan. M also conducted an empirical study in Panthalur taluk, Nilgiris determined that kattu-nayakkan indigenous exhibited a modest degree of empowerment, leading to increased social inclusiveness within the community[25].

Psychometric properties pertain to the accuracy and consistency of a measurement instrument. To declare that a questionnaire possesses commendable psychometric properties, indicating both reliability and validity, it must undergo thorough evaluation[26,27]. Cronbach's α, a commonly employed reliability measure, gauges how effectively the items in the questionnaire capture the same underlying construct. Ratings of 0.80 or higher are deemed excellent, with a minimum acceptable value of 0.70[28,29].

5. CONCLUSION

This research successfully acquired and validated the BSPWB-A in Tamil, demonstrating its reliability with strong internal consistency and alignment with a 4-factor model. The tool employed in this study exhibited improved internal consistency specifically in the aspects of self-acceptance and autonomy among indigenous adolescents, as noted in previous studies[30,31]. Notably, personal growth, which previously displayed lower alpha coefficients in other studies, showed enhanced performance in our version. Validity evidence from the internal structure was acquired using Confirmatory Factor Analysis (CFA), revealing favorable fit indices for BSPWB-A items during the Tamil validation for indigenous adolescents. These results affirm the consistency of the four-factor structure of the BSPWB-A scale, aligning with findings from prior studies that consistently support its effectiveness in assessing the psychological well-being of adolescents[32,33]. So the adapted version of BSPWB-A in Tamil was well-suited for application in studies involving indigenous adolescent population.

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