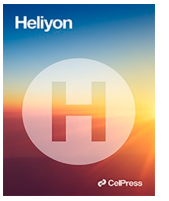
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Translation and validation of the satisfaction with life scale in the native Quechua (Collao variant) language of southern Perú

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ABSTRACT

Research on life satisfaction in indigenous populations is limited due to language barriers. Therefore, this paper aimed to translate and validate the Life Satisfaction Scale into the original Quechua language (collao variant) of southern Peru. The research was classified as instrumental and transversal and was conducted with the voluntary participation of 242 Quechua adults speaking the collao variant. The instrument that was translated was the 5-item SWLS, previously adapted to Peruvian Spanish. The internal structure was analyzed under an analytical-factorial approach, and the discrimination and difficulty of the items were evaluated from the item response theory (IRT). Expert judgment was favorable for all items ($V > 0.70$), confirming the 1-dimensional structure of the scale ($\chi 2 = 8.972$, $df = 5$, $p = .000$; $CFI = 0.985$; $TLI = 0.970$ and $RMSEA = 0.057$), with acceptable reliability ($\omega = 0.65$). All the items of the scale presented adequate discrimination indices; in addition, the results of the evaluation of factorial invariance as a function of gender demonstrated configurational equivalence but an absence of metric invariance. In conclusion, the SWLS translated into Collao Quechua (collao variant) has a stable factorial structure and adequate internal consistency, although it was not possible to completely demonstrate the invariance by gender, it can be used for initial investigations to measure satisfaction with life of the Quechua-speaking indigenous population of southern Peru.

1. Introduction

The development of positive psychology has promoted the study of subjective well-being in the world population [1]. Researchers from different countries have measured variables such as pleasant emotions, happiness, quality of life and life satisfaction. In this case, subjective well-being is composed of 2 aspects, i.e., cognitive and emotional, where the cognitive component is evaluated through life satisfaction, and the affective component is evaluated through happiness (Schnettler et al., 2013).

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Currently, recent circumstances such as the COVID-19 pandemic have caused perceptions of satisfaction with life to decrease significantly, as observed in various studies conducted in different regions of the world [2,3]. This factor is important to study because it represents an important indicator of quality of life [4]. Satisfaction with life is usually defined as a cognitive self-assessment process by which people value the quality of their lives based on their own criteria [5].

According to the scientific literature, satisfaction with life is associated with having good health [6], a better perception of family satisfaction [7], better interpersonal relationships [8] and a better economic situation [9]. However, these concepts of well-being differ from the worldview of indigenous populations, for whom their perception of satisfaction includes other elements, such as harmony with nature and community unity [10].

Indigenous disadvantage is currently a critical issue [11]. A clear example of this is the indigenous populations who are exposed to high levels of psychological distress [12]. For example, in Colombia, a sample of 902 indigenous people showed untreated mental disorders [13]. In Mexico, the indigenous population of Oaxaca suffered serious psychological distress, such as manifestations of stress and depression, resulting from the impact of COVID-19 [14].

Some researchers have confirmed that social and health disparities between indigenous and nonindigenous peoples influence variables such as satisfaction with life [15], an aspect that represents an important indicator of subjective well-being [16]. With regard to interpreting this variable under the worldview of indigenous peoples, there have been no investigations using cultural or holistic approaches; however, in recent years, there have been important advances, such as the discovery that mental health is interpreted under the cosmovision of good living [17].

Although for many of these groups it is not clear what satisfaction with life or subjective well-being means, some studies have been carried out to explore this variable; for example, in a population originating in Mexico, the variable satisfaction with life was considered a protective factor for mental health. Likewise, for the Mapuche population of Chile, satisfaction with life increases with more children in the home, sustained family nutrition, availability of independent work and an orderly life [18]. At the international level, a study conducted with the indigenous population of the Western District of Ngamiland, Botswana, found negative perceptions about quality of life, mainly due to climate change and natural disasters [19].

Given that in Latin America there are many indigenous and native peoples who communicate in different native languages, such as Aymara, Quechua, Náhuatl, Maya, and Mapuche, among others [20], researchers with experience in the subject recommend that the study of variables related to well-being should include culturally appropriate tools [15]; experiences in other countries reveal how difficult and imprecise life satisfaction can be to measure without instruments adapted to time and cultural context [21].

Peruvian is a multicultural country; since ancient times, it has been occupied by various peoples with different customs and ways of conceiving life and well-being [22]. Specifically, one of these populations communicates in the original Quechua language, with variants such as Amazonian, northern, central and southern. The latter is divided into 2 subvariants, Chanka Quechua and Collao Quechua, used in departments such as Apurímac, Cusco, Puno, Arequipa and Moquegua [23].

Considering that positive psychology combined with indigenous worldviews can produce prosperity [11], it is necessary to conduct research in the original Quechua language to evaluate life satisfaction in indigenous communities. To address this challenge, the researchers involved in the present study sought to adapt the Satisfaction with Life Scale (SWLS) by Ref. [24] and adapted to Peruvian Spanish by Ref. [25]. This instrument has had very good acceptance in the Peruvian scientific community, given its interesting psychometric characteristics such as content-based validity, internal structure, and others tested in the Peruvian context; however, it is necessary to study its psychometric performance in vulnerable and difficult-to-access native populations to determine if it is invariant according to gender as the understanding of the construct can vary for cultural reasons. Thus, this measure emerges to be a helpful alternative to support diagnosis and intervention in Quechua speakers of the Collao variant of the department of Puno, Peru.

Therefore, this research aimed to translate and validate the Life Satisfaction Scale into the original Quechua language (collao variant) of southern Peru.

2. Method

2.1. Design

This was a cross-sectional and instrumental study [26] in which the SWLS was adapted to and validated for the Quechua-speaking (collao variant) population in the department of Puno, Peru.

2.2. Participants

The department of Puno is a high Andean city whose main economic activities are livestock, agriculture and mining. It has a population of approximately 1,172,697 inhabitants, of whom 464,231 speak the Quechua variant Collao and inhabit the northwest area of the city of Puno, mainly in the provinces of San Román, Azángaro and Melgar [27].

Under intentional non-probabilistic sampling, 242 Quechua speakers of the Collao variant participated in an online survey, and reported a mean age of 30 years old (30.79 ± 11.54). Most of the participants were female (51.2%): regarding the marital status, 55.8% were single, 26% were married, 10.7% were cohabiting partners, 5.8% were widowed, and 1.7% were separated; and regarding the level of education, 61.6% completed higher education, 21.1% only finished secondary school, 9.5% finished primary school, and 7.9% were uneducated.

2.3. Procedures

This study was developed in 2 stages: the translation of the SWLS from the Peruvian Spanish version into Quechua (Collao) and its subsequent validation. Before starting, permission was obtained from the corresponding author of the original instrument through email.

The translation process was performed in accordance with the guidelines detailed by Ref. [26]; i.e., initial translation by 2 translators and back translation by 2 other translators without knowledge of the original questionnaire, a review committee and a focus group for pretesting, and a pilot test.

2.4. Initial translation

Two professional translators were invited to translate the Peruvian Spanish version of the SWLS into Quechua (Collao). The translators spoke Peruvian Spanish and were proficient in the Quechua variant of Collao. Each translator prepared an independent translation, and then, the 2 translators met together with a Peruvian psychologist (experience in the care of anxiety in adults) whose native language was Quechua (Collao) and a Peruvian psychologist who was an expert in instrument translation, forming a translation review committee. The 4 members reviewed the translation of the questionnaire in a face-to-face meeting and prepared a consolidated version, i.e., a written version of the SWLS in Quechua (Collao).

2.5. Back translation

The consolidated version of the SWLS in Quechua was sent to 2 translators (different from those who completed the translation); these translators were responsible for performing the reverse translation. The 2 had no prior knowledge of the study and worked independently. After completing the reverse translation, the translators met face-to-face with a Quechua-speaking (Collao) psychologist. Both of the translators, the Quechua-speaking psychologist and another researcher reviewed the similarities and differences between the version translated from Quechua into Peruvian Spanish and the original version of the instrument. After verifying that the reverse-translated items still measured the constructs in the original version, the group approved the final version.

2.6. Focus group

The structure for the focus group was developed and implemented by a Quechua-speaking psychologist researcher who was an expert of qualitative data collection methods; the researcher was asked to organize a focus group with 9 Quechua (Collao) speakers. These participants were older than 18 years, 6 men and 3 women, and all had completed high school; therefore, they could read in Quechua and were bilingual, that is, they spoke Quechua and Peruvian Spanish. Initially, they were asked to answer a written survey. After the application of the Quechua SWLS, the moderator invited the participants to comment, in everyday Quechua, on the clarity of the items and their understanding of the items. Finally, with verbal approval of the participants, clarity for and understanding by the beneficiary population was verified, resulting in the final version of the Quechua SWLS (Table 1).

2.7. Evaluation of the agreement between experts

The validation of the scale consisted of a review by experts. Three psychologists (with a master's degree) participated, 2 with at least 1 year of work experience in the clinical area and 1 in university teaching. The response sheet for the review contained a space where the experts could provide qualitative suggestions for each item with regard to the contextualization and relevance of the words in Quechua. Additionally, the review contained a quantitative component that consisted of assigning a specific score for each item. Content validity was determined through the relevance, representativeness and clarity of the items, and the Aiken V value was calculated for each item. Finally, a Collao Quechua version was obtained.

2.8. Instrument

Satisfaction with Life Scale (SWLS; [24]). This measure has been validated in the Peruvian context by Ref. [28]. It consists of 5 items, all organized under a single factor, which evaluate the global cognitive judgments of individuals' satisfaction with their lives. In

Table 1
Final translation of the SWLS from Spanish to Colla Quechua.

N °	Items of the Spanish version	Items in Collao Quechua
1	In most aspects, my life is close to my ideal.	Imapipas, munasqay hinapunin kawsayniyqa.
2	The conditions of my life are excellent.	Kawsakuyniypas y tiyakuyniypas nishu allimpunin
3	I am completely satisfied with my life.	Ancha kusisqan kani kawsayniywan, imayna kasqaywan.
4	So far, I have achieved the important things I wanted in my life.	Kunankaman, imapas ashwan munasqayta ayparuniñan.
5	If I could live my life again, I wouldn't change anything.	Yapamanta kawsanay kanman chayqa, kikillaymi kayta munayman, manan waq runa kaytaqa munaymanchu.

the present research, a 5-option response scale was established (0 = Strongly disagree, 1 = Disagree, 2 = Neither agree nor disagree, 3 = Agree, 4 = Strongly agree) to minimize potential confusion caused by multiple response options [29].

2.9. Data analysis

To assess content validity, the Aiken's V coefficient was utilized, with appropriate values being ≥0.70. This coefficient is applied to quantitative data derived from expert judgment. Additionally, its 95% confidence intervals (CI) were taken into account. Subsequently, descriptive analyses of the items were conducted, which included mean, standard deviation, skewness, and kurtosis. For skewness and kurtosis values, scores > ±2 were used as the reference point [30]. Regarding construct validity, due to the pre-existence of a structural model, confirmatory factor analysis (CFA) was carried out to reaffirm the structure of the original model. The diagonally weighted least squares method with mean and variance adjusted (WLSMV) was chosen for this purpose since the assessed items are ordinal in nature [31]. Moreover, the model's goodness-of-fit was evaluated using the chi-square index ($\chi 2$), the Tucker-Lewis index (TLI), and the comparative fit index (CFI). In addition, parameters from the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR) were considered. Based on criteria set by Ref. [32]; TLI and CFI values should be greater than 0.90, while RMSEA and SRMR values should be ≤0.08. Lastly, internal consistency was determined using McDonald's omega coefficient (ω), where an $\omega > 0.80$ is deemed appropriate [33].

Regarding the analysis based on Item Response Theory (IRT), a Graded Response Model (GRM) was selected. This choice was made by extending the 2-parameter logistic model (2-PLM), which is ideal for ordinal polytomous items [34]. This model describes each item's behavior based on two types of parameters: discrimination (a) and location (b). Specifically, the 'a' parameter is estimated at each point and gauges the slope of change in item responses relative to an individual's skill level. Here, values > 1 signify a high level of discrimination. In the case of the 'b' parameter, it determines the amount of latent trait required to respond to an item. For this model, the 'b' parameter is estimated for each threshold between different response categories. Given that the SWLS has five response categories for each item, it was necessary to present four estimates for the 'b' parameter, one for each threshold. In this context, each threshold represents the latent variable level where a participant has a 50% probability of scoring equal to or higher than a specific response category [35].

In alignment with the aforementioned, the IRT model's fit was assessed using the $\chi 2$ test for ordinal items [36]. Relevant fit criteria included: RMSEA ≤0.08, SMSR ≤0.05 [37], and CFI and TLI ≥0.95 [38,39]. Additionally, both the item information curves (IIC) and the test information curve (TIC) were calculated. Pertaining to these metrics, the IICs denote the range of trait levels where items best discriminate between participants. Items with a steeper slope in the IIC are more discerning and therefore can accurately differentiate between various degrees of the evaluated construct, thus they are more sensitive to changes. Conversely, the TIC represents the amount of information a test provides at different points of the latent trait. Higher data values at a specific trait level suggest that a test offers more information and is more accurate in relation to a participant's latent trait. As such, more information would indicate greater precision at various levels of the assessed construct.

Lastly, measurement invariance between men and women was evaluated through multi-group CFA, comparing various nested models. In this process, three invariance models were assessed: metric invariance, where factorial loads are constrained to be equal between groups; configural invariance, which examines the presence of the same factorial structure between groups without constraints (baseline or reference model); and scalar invariance, where both factorial loads and intercepts are similarly restricted in compared groups. For this, the ΔCFI was the primary criterion for comparing more restricted models to less restricted ones [40].

Analyses were conducted in the RStudio environment [41] for R [42], using the "lavaan" package for CFA [43], and "semTools" [44] and "mirt" for IRT [45].

2.10. Ethical considerations

Before initiating the research, authorization was obtained from the Research Ethics Committee of the Peruvian Union University, which approved the project through resolution: 2022-CEUPeU-0028. Similarly, the study adhered to the ethical principles outlined in the Helsinki Declaration concerning human research. This ensured voluntary participation, with informed consent obtained from all participants.

Table 2
Aiken's V for the evaluation of the relevance, representativeness and clarity of the items of the SWLS.

Items	Relevance (n = 3)				Representativeness (n = 3)				Clarity (n = 3)			
	M	SD	V	95% IC	M	SD	V	95% IC	M	SD	V	95% IC
Item 1	3.00	.00	1.00	.89–1.00	3.00	.00	1.00	.89–1.00	2.33	.82	.78	.60–.89
Item 2	2.83	.41	0.94	.80–.99	2.83	.41	.94	.80–.99	2.17	.75	.72	.54–.85
Item 3	2.50	.84	0.83	.66–.93	2.50	.84	.83	.66–.93	2.50	.84	.83	.66–.93
Item 4	2.33	1.03	0.78	.60–.89	2.33	1.03	.78	.60–.89	2.67	.82	.89	.73–.96
Item 5	3.00	.00	1.00	.89–1.00	3.00	.00	1.00	.89–1.00	3.00	.00	1.00	.89–1.00

3. Results

3.1. Validity evidence based on content

Table 2 shows the results of the evaluation by 3 experts who analyzed the relevance, representativeness and clarity of the items of the SWLS scale. All the items received a favorable evaluation (V > 0.70). In particular, Items 1 and 5 were more important than the others (V = 1.00; 95% CI: 0.89–1.00). Items 1, 5 and 6 were the most representative (V = 1.00; 95% CI: 0.89–1.00), and Items 5 and 6 were the clearest (V = 1.00; 95% CI: 0.89–1.00). Therefore, the SWLS scale shows validity evidence based on content.

3.2. Descriptive analysis and correlations between items

Table 3 shows the mean, standard deviation, skewness, kurtosis and polychoric correlation matrix. For the sample, Item 5 ("If I could live my life again, I would not change anything.") had the highest average score, and Item 1 ("In most aspects, my life is close to my ideal.") had the lowest average score. Likewise, all the items presented asymmetry and kurtosis values within the expected limits (As <± 2; Ku <± 7). Regarding the correlation matrix, values between 0.19 and 0.38 are observed, which indicates a predominance of moderate and significant correlations.

3.3. Validity based on internal structure and reliability

CFA was used to evaluate validity evidence based on the internal structure of the SWLS (Table 4). The original model (5 items in a single latent variable) presented a good fit in the total sample ($\chi^2 = 5.622$, df = 5, p = .345; CFI = 0.995; RMSEA = 0.023 [90% CI: 0.000–0.095]; and SRMR = 0.034). Similarly, the model was adequate in the women's ($\chi^2 = 2.858$, df = 5, p = .722; CFI = 1.00; RMSEA = 0.000 [90% CI: 0.000–0.092]; and SRMR = 0.034) and men's sample ($\chi^2 = 7.090$, df = 5, p = .214; CFI = 0.965; RMSEA = 0.060 [90% CI: 0.000–0.151]; and SRMR = 0.054). Table 4 shows the factor loadings and reliability of the SWLS in the total sample and subsamples of men and women.

3.4. Calibration of items with the graduated response model (GRM)

All items of the SWLS presented adequate discrimination indices (Table 5). Regarding the location parameters, all the threshold estimators increased monotonically. In addition, the GRM of the SWLS presented adequate fit indices (χ^2 [df] = 97.83 [5]; p = .16; RMSEA = 0.049; SRMSR = 0.053; TLI = 0.96; CFI = 0.98). The IIC and TIC (Figs. 1 and 2) show that items 2 and 3 are more accurate for assessing quality of life. Furthermore, the TIC shows that the factor is more reliable (accurate) in the scale range between −2 and 2.

3.5. Factorial invariance

Regarding the measurement invariance of the SWLS between groups of men and women, multigroup CFA showed that the configurational model had good fit indices. However, both the metric and scalar invariance models presented a ΔCFI of >0.01. The results suggest the absence of gender MI for SWLS because the fit indices were inconsistent due to the increasing model constraints (Table 6).

4. Discussion

The measurement of life satisfaction has gained relevance as an indicator of mental health and quality of life. Therefore, it is crucial to have instruments for measuring life satisfaction that demonstrate adequate psychometric properties and that can be applied in different cultural and linguistic contexts. The SWLS is a widely used measure in different cultural contexts because it is easy to use and is short in length [46]; hence, its translation into native languages has become a necessity. In this scenario, the objective of this research was to translate and validate the SWLS into the Quechua language, in its Collao variant, for application in inhabitants of southern Peru.

Table 3
Descriptive analysis and matrix of polychoric correlations.

Items	1	2	3	4	5
Item 1	–				
Item 2	.28	–			
Item 3	.29	.38	–		
Item 4	.31	.29	.36	–	
Item 5	.23	.37	.32	.19	–
Mean (*M*)	3.00	3.18	3.33	3.34	3.70
Standard deviation (*SD*)	1.15	1.10	1.13	1.04	1.12
Asymmetry (*g*1)	−.15	−.44	−.68	−.55	−.52
Kurtosis (*g*2)	−.94	−.72	−.53	−.44	−.59

Table 4
Factor loadings and reliability coefficients (ω) of the satisfaction with life scale in the total sample and subsamples of men and women.

	Total Sample	Men's Sample	Women's Sample
Item 1	.46	.62	.39
Item 2	.51	.56	.55
Item 3	.60	.45	.73
Item 4	.55	.61	.42
Item 5	.49	.38	.56
ω	.65	.68	.67

Table 5
Parameters of the items.

Item	a	b_1	b_2	b_3	b_4
Item 1	1.104	−2.240	−.752	.453	2.655
Item 2	1.439	−2.148	−.928	.045	2.343
Item 3	1.639	−1.913	−.988	−.281	1.970
Item 4	1.204	−2.781	−1.274	−.135	2.415
Item 5	1.085	−2.634	−1.258	−.130	2.378

Note. a = discrimination parameters; b = location parameters.

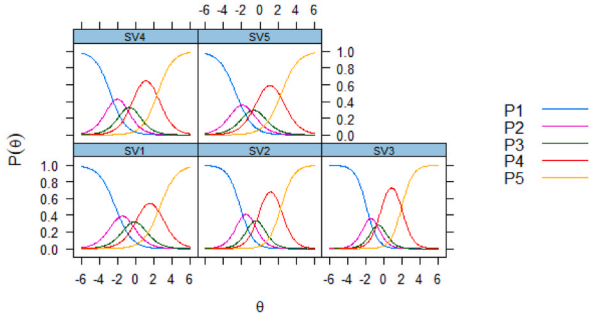


Fig. 1. Item information curves of the satisfaction with life scale. P1 to P5 represent the response options for each of the items.

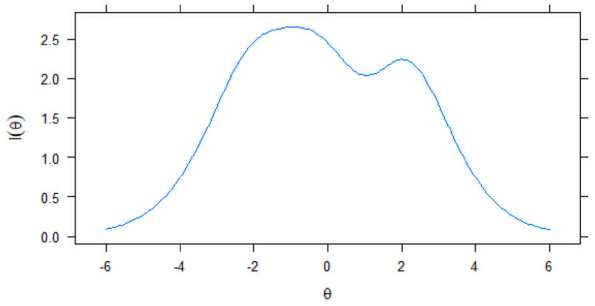


Fig. 2. Test information curve.

Regarding the evidence of validity based on content, expert judges corroborated the relevance, representativeness and clarity of the items translated into Collao Quechua. The validity evidence based on the internal structure, obtained through CFA, allowed the confirmation of the 1-dimensional structure of the SWLS. This finding is consistent with that reported in previous studies, both in Peruvian samples [25,28] and in samples from other countries [47–53]. In fact, previous studies that evaluated the measurement invariance of the SWLS by culture or nationality presented results that support the 1-dimensional structure [46,54,55].

For the analysis of factorial loads, as in the study by Ref. [28]; Item 5 (If I could live my life again, I would not change almost anything) had the lowest factorial load; therefore, it explains the variance in the construct to a lesser extent. This can be explained by the temporal orientation of the item, i.e., it focuses on the past [56], unlike the rest of the items. In addition, unlike the study by Ref. [25]; in which a correlation between the errors for Items 4 and 5 and the errors for Items 1 and 2 is suggested, when evaluating the modification indices, in the present study, it was not necessary to model the correlation between the errors of the items translated into

Table 6
Measurement invariance models by gender.

One-dimensional model	χ^2	$\Delta\chi^2$	df	Δdf	P	CFI	RMSEA	ΔCFI	ΔRMSEA
M1	12.85	–	10	–	1	.969	.087	–	–
M2	32.423	17.2094	14	4	.001	.904	.130	.065	.043
M3	49.759	20.9076	28	14	.104	.875	.105	.030	.025

Note: M1 = configurational invariance; M2 = metric invariance; M3 = scalar invariance. χ^2 = chi-square; df = degrees of freedom; SRMR = standardized root mean square residual; TLI = Tucker–Lewis index; CFI = comparative fit index; RMSEA = root mean square error of approximation; $\Delta\chi^2$ = differences in chi-square; Δdf = differences in degrees of freedom; ΔRMSEA = change in the root mean square error of approximation; ΔCFI = change in the comparative fix index.

Collao Quechua. This discrepancy can be explained because the correlations between errors can vary based on the cultural and linguistic characteristics of the groups studied; for example, similarity in the phrasing of items is one of the sources that explain the covariance of the errors for the items [57]. Likewise, it was not necessary to eliminate items to culturally adapt the SWLS to Quechua (Collao). According to the evidence found and its consistency with previous findings, the 1-dimensional structure of the SWLS translated into Quechua (Collao) has sufficient empirical support.

The findings regarding to the discrimination capacity of the items, evaluated from the IRT approach, affirmed that all the items of the SWLS presented adequate discrimination indices. This result indicates that the items differentiate between Quechua-speaking individuals who have low and high levels of life satisfaction. Specifically, the items that stood out for their discriminative power were Items 2 and 3 (indicators that best explain satisfaction); the other items presented a moderate level of discrimination. With respect to the monotonically ascending difficulty parameters, a higher level of satisfaction was necessary to choose the highest response options. Specifically, location parameter b3 is relatively higher for item 1 than for the other items, especially in comparison to item 3. Therefore, in item 1 a higher level of trait is needed than in item 3 to choose answer option 4.

Additionally, the results of the evaluation of the factorial invariance of the SWLS as a function of gender demonstrated configurational equivalence but an absence of metric invariance. Therefore, although there was substantive equivalence of the construct and the 1-dimensional model was acceptable for men and women, there was no equivalence between factor loads and regressive slopes. This may be the result of the difference in the relevance of the items, as indicators of the construct, by gender. Although these findings contradict those found in previous studies ([48,49,54]; they are consistent with data presented in a systematic review by Ref. [46]; i.e., the highest level of invariance that was corroborated, by gender, varied, with configurational invariance being the most common and metric invariance being less common. These results suggest that the importance of the items, considering the values and aspirations implicit in their content, in the judgment of life satisfaction was different between men and women in the study sample. Future research should explore such differences.

Regarding reliability, although the magnitude of the omega coefficient was below that obtained in some previous studies [28,48,49,51,55], it was still considered acceptable, as in other studies that tested internal consistency [47,50]. It is still unknown whether the reliability is affected by the number of response options in the Collao Quechua SWLS; therefore, future research should address such an analysis using the item response theory (IRT) to deepen the invariant properties of the items, addressing cultural differences [53]. Despite the above, the results suggest that the SWLS translated into Collao Quechua is a reliable instrument.

This research was not without limitations that should be reported. Among them, the number of participants and convenience sampling limit the generalization of the results. Indeed, future research should evaluate the psychometric properties of the SWLS translated into Collao Quechua in the different geographical contexts in which this language is used, in addition to the region of Puno. Another limitation in the present study is that only 2 sources of validity evidence were tested, i.e., based on content and based on internal structure. Therefore, it is recommended to explore the evidence of validity based on the relationship with other variables, considering variables associated with mental health, such as depression, whose measures have been shown to be strongly related to the SWLS [58]. On the contrary, although the discrimination of items in Table 5 was relatively high, the reliability of the raw scores is relatively low recommending that future research configure homogeneous samples to determine the internal consistency of the instrument. Finally, it is suggested that in future research, the invariance of the measure be tested with the Spanish version of the questionnaire used in Peru, to analyze if comparisons can be made between people from the same country speaking different languages. Moreover, since the model is not invariant by gender, perhaps the shorter version of this questionnaire can be studied, as proposed by Ref. [59]; which has also shown good performance in Latin American populations.

This study yielded an instrument translated into a native language whose interpretations are valid and reliable to measure satisfaction with life. Thus, there is a brief, simple and useful measurement tool for the clinical evaluation of aspects related to the well-being and mental health of ethnic minorities. Likewise, this instrument can be used in future research to deepen the study of the psychological phenomena of the population that speaks Collao Quechua.

5. Conclusions

The SWLS translated into Quechua (collao variant) has a stable factorial structure, and internal consistency that could be improved. Thus, there is a brief, simple, and helpful measurement tool for the clinical evaluation of aspects related to the well-being and mental health of ethnic minorities. It can, therefore, be used in future research works to deepen the study of satisfaction with life in the population that communicates in native language, Quechua (variant Collao), in southern Peru.

CRediT authorship contribution statement

Oscar Mamani-Benito: Conceptualization, Investigation, Methodology, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Renzo Felipe Carranza Esteban:** Data curation, Formal analysis, Investigation, Methodology, Supervision, Validation, Writing – review & editing. **Julio Cjuno:** Formal analysis, Investigation, Methodology, Resources, Validation, Writing – review & editing. **Madona Tito-Betancur:** Funding acquisition, Investigation, Project administration, Resources, Validation, Visualization, Writing – original draft. **Tomás Caycho-Rodriguez:** Data curation, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing. **Carlos Carbajal-León:** Data curation, Formal analysis, Investigation, Resources, Software, Writing – original draft. **Susana K. Lingan:** Investigation, Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.heliyon.2023.e21918.

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