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Adaptation and Validation of Ryff's Psychological Well-being Scale (RPWS) Among Adolescents in Jimma Town, Southwest Ethiopia

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Abstract

This research aimed to investigate the psychometric properties of Ryff's Psychological Well-being Scale (RPWS) among adolescents residing in Jimma town, southwest Ethiopia. A cross-sectional study design was used. The study sample comprised 340 adolescents in grades 9 to 12, chosen through a stratified random sampling technique. The validation stool, RPWS, was utilized to gather data together with an anchor scale: Engagement, Perseverance, Optimism, Connectedness, and Happiness-EPOCH Measure of Adolescent Well-being. In order to ensure content equivalence and consistency of meaning between the source English version and Afaan Oromoo version of the scale, professional bilingual experts have conducted forward and backward translation. Moreover, an expert review panel consisting of six psychologists assessed the content validity of both scales. The internal consistency reliability of the scales were evaluated by using Cronbach's alpha. Furthermore, descriptive statistics, Pearson product-moment correlation coefficients, and Confirmatory Factor Analysis (CFA), were employed to analyze the data. Overall reliability index for the RPWS was acceptable (α = 0.89). The convergent validity of the RPWS was established by a significant moderate positive correlation (r = 0.62, P < 0.01) with the EPOCH measure of adolescent well-being, which assesses a similar construct. Confirmatory Factor Analysis (CFA) confirmed the RPWS six-factor model fit to the data gathered from a sample of Ethiopian adolescents residing in Jimma town, yielding a Chi square value of 4.268, CFI of .962, and an RMSEA of .067.Tthe findings confirm that the original factor structure of the RPWS, following the exclusion of items with insufficient factor loadings, effectively captured the distinct dimensions of psychological well-being within the study sample.. The researchers recommended further psychometric testing of the RPWS in different Ethiopian socio-cultural contexts.

Keywords: **a**dolescents, psychological well-being, Ryff's Psychological Well-being Scale, validity, reliability

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Introduction

Adolescence represents a pivotal developmental period during which young people establish the core social, physical, and psychological foundations of their future identities. Adolescents undergo significant changes in biological, cognitive, and psychosocial domains (Steinberg, 2014). The changes in these domains interact with each other and the environment, thereby shape adolescents' pathways to adulthood (Bonnie et al., 2019). The period of adolescence offers adolescents a great opportunity for positive development, though it requires support and scaffolding from their parents, schools, relatives, friends, peers, and potential others (Viejo et al., 2018). According to Páez-Gallego et al. (2020), the period of adolescence encompasses all aspects of Ryff's positive psychological well-being components. Self-acceptance, Autonomy, personal growth, positive relationships with others, purpose in life, and environmental mastery are cultivated, practiced in daily life, and evaluated both individually and socially. Adolescents' psychological well-being has a measurable impact on their efforts to achieve positive development (Geldhof, 2013). In this regard, Gómez-López et al. (2019) highlighted that psychological wellness would make valuable contributions in helping adolescents to deal with pertinent developmental milestones. Given the significant impact of adolescents' psychological well-being on their overall development, it is imperative to cultivate a supportive social and psychological context that allows them to maintain their mental health fully.

Pertinent actors' understanding of adolescents' psychological well-being appears critical to the efforts exerted to improve their overall wellness. Hence, it is praiseworthy for researchers and counselors in the field of adolescent psychology to generate empirical evidence on the status of adolescents' psychological well-being. The literature confirms that such knowledge is essential for promoting adolescents' current and future mental health, improving their quality of life, and assisting their development into well-adjusted adults (Arslan & Coskun, 2023; Yasmin et al., 2015). Similarly, Garcia et al. (2023) argued that assessment of adolescents' psychological well-being is fundamental to identifying and treating mental health problems while simultaneously fostering overall psychological health..

Numerous measurement models and scales, characterized by robust psychometric properties, have been developed to evaluate adolescent well-being. One such example is the

Comprehensive Inventory of Thriving (Su et al., 2014), which evaluates various aspects of psychological well-being among youth, including support, mastery, engagement, autonomy, optimism, meaning, and subjective well-being. Another widely used tool is the Child and Adolescent Wellness Scale (Copeland et al., 2010), which measures overall well-being in adolescents by focusing on empathy, self-efficacy, and emotional self-regulation. The Social and Emotional Health Survey (Furlong et al., 2014) is also notable, as it assesses positive social-emotional indicators such as self-belief, belief in others, emotional competence, and engaged living. The Psychological Well-Being Scale (Ryff, 1989) is another significant measure, utilizing a six-factor structure—including autonomy, purpose in life, positive relation with others, self-acceptance, personal growth and environmental mastery,-to examine psychological health. According to Gao and McLellan (2018), this scale's robust theoretical underpinning makes it an effective framework for assessing the flourishing and positive growth of adolescent populations..

Overall, measures for adolescent psychological well-being developed in one part of the world have been adapted and validated in diverse contexts across the globe for their cultural relevance and have begun to be utilized with minor to major modifications. The primary objective of this investigation is to culturally adapt and psychometrically validate Ryff's psychological well-being scale among adolescents residing in Jimma town, Ethiopia.

In 1989, Carol Ryff developed the RPWS with the intent of moving beyond the simplistic view of well-being as merely the maximization of pleasure and the avoidance of pain—a hedonic perspective that dominated much of the psychological research at the time.. She derived the dimensions of psychological well-being from a broad spectrum of psychological theories (Ryff, 1989). The major ones included Maries Jehoda's theory of positive mental health, Carl Jung's analytical psychology of individuation and self-realization, Erick Eriksons' theory of psychosocial development-identity versus purpose, Gordon Allport's theory of personality -maturity and health personality, Carl Roger's conceptualization of self-actualization and autonomy in person centered therapy, and Abraham Maslow's hierarchy of needs (Ryff, 1989). These foundational perspectives collectively informed Ryff's six core dimensions of well-being: autonomy, self-acceptance, , environmental mastery, personal growth,positive relations with others and purpose in life.

The indicators of the RPWS were formulated to be self-referential, theoretically grounded, and psychometrically robust across diverse demographic groups, including both genders and various age ranges. Originally developed in the United States' socio-cultural context, Ryff's Psychological Well-being Scale (RPWS) has further been culturally adapted and psychometrically validated by scholars in countries including Sweden (Garcia et al., 2023), China (Gao & McLellan, 2018), Canada (Clarke et al., 2001) and Italy (Sirigatti et al., 2009), among others. The validation of RPWS in a Swedish socio-cultural context yielded internal consistency results ranging from α = 0.53 for the autonomy subscale to α = 0.71 for the environmental mastery subscale. The analysis validated the six dimensions of the RPWS factor structure, reporting an Adjusted Goodness of Fit Index (AGFI) of 0.95, Comparative Fit Index (CFI) of 0.90, and Root Mean Square Error of Approximation (RMSEA) of 0.06. RPWS validation study in mainland China yielded internal consistency estimates as low as α = 0.60 for autonomy to α = 0.78 for purpose in life and positive relationships with others. The results indicated a preference for the six-factor model of the RPWS, along with the recommendation for additional modifications and context-specific adaptations to improve the scale's reliability and validity. Clarke et al.'s (2001) RPWS validation study in Canada found subscales' internal consistency estimates ranging from α =0.26 for purpose in life to α =0.52 for self-acceptance subscales. Consistent with the original theoretical framework, the six-dimensional structure was preferred, demonstrating a robust AGFI of 0.95, although the study did not explicitly report CFI and RMSEA. The study recommended that further modifications and adaptations tailored to the specific context be made to improve the scale's reliability and validity. Psychometric evaluation of the RPWS in Italy revealed significant variability in reliability; specifically, internal consistency coefficients ranged from a marginal α = 0.21 for the autonomy dimension to a robust α =0.82 for self-acceptance. . The Confirmatory Factor Analysis (CFA) substantiated the validity of Ryff's six-factor model; however, the findings also emphasized the necessity of ongoing cross-cultural research to further refine the instrument's application in diverse global contexts..

In the African context, RPWS was validated in South Africa and Nigeria, while it was used without modification in a Kenyan study. Henn et al. (2016), for instance, investigated the factor structure of the RPWS using two distinct South African samples; their findings

indicated that the original six-dimensional model could not be fully replicated within that specific socio-cultural context.. In Nigeria, Igbokwe et al. (2016) performed a revalidation of the RPWS, and the result supported the applicability of the scale in Nigerian contexts, though the study was not as extensive as the one conducted in South Africa. Furthermore, Ndunda et al. (2020) used RPWS to measure psychological well-being in a Kenyan sample, despite the limited availability of thorough validation studies in this context. In the Ethiopian context, to the exhaustive search and knowledge of the researchers, RPWS has not yet been formally validated for use with adolescents.

The researchers opted to adapt and validate RPWS in the Ethiopian context for the following reasons. One is the need for monitoring the psychological well-being of Ethiopian youth and adolescents who make up a third of the country's population and represent the future workforce using a relevant tool validated in the Ethiopian cultural and social context. Having such validated tools would encourage more researchers to focus on adolescents' wellbeing, leading to diverse findings that can inform various adolescent development programs. The other rationale is the drive to promote positive adolescent development studies with a widely recognized scale like RPWS, adapted and validated in the Ethiopians context, as an alternative to a deficit-based approach to adolescent development studies. Lastly, the researchers learned that few unpublished studies have used the scale in examining adolescents' and adults' psychological well-being with no prior validation (Nebeyou, 2018; Shamil, 2017). Thus, to support future studies using an adapted and validated psychological wellbeing assessment tool, it is essential to validate the RPWS within the Ethiopian context.

Given the stated drivers for RPWS, the present study designated to address the following questions, taking the social-cultural context of the research into account.

- What do the internal consistency reliability coefficients of Ryff's Psychological Well-being Scale and its sub-dimensions look like?
- Does Ryff's Psychological Well-being Scale have adequate convergent validity?
- Does the six-dimensional configuration of Ryff's Psychological Well-being Scale remain consistent or vary within the current study sample?

Methods

Framework utilized in the scale validation process

Scholars in the field of psychology recommend applying a high methodological rigor during validation and adaptation of scales measuring psychological variables (Cassepp-Borges, 2010; Borsa et al., 2012; Ambuehl & Inauen, 2022). However, there remain no commonly agreed-upon steps to be followed. The literature suggests that the adaptation of instruments involves five crucial stages: (1) translating the instrument from the source language to the target language, (2) synthesizing the translated versions, (3) having expert judges analyze the synthesized version, (4) backward translation, and (5) trying out the scale (Hambleton, 2005; Sireci et al., 2006). Building on the five-stage process, Borsa et al. (2012) subsequently introduced two additional stages: evaluating the instrument with the target population and assessing the underlying factorial structure of the instrument. In the present study, adaptation and validation of Ryff's psychological well-being scale was conducted by adhering to the five-stage validation procedure proposed by aforementioned scholars).

Research Design

A cross sectional design was employed to undertake the present research.The researchers chose this design as it allows collection of pertinent data at a time, which facilitates a quicker and more cost-effective approach compared to other longitudinal studies (Levin, 2006; Setia, 2016). Going forward, a quantitative approach was employed to analyze data gathered from the study participants.

Study Area

Jimma town, the site of this investigation, is located to the southwestern part of Ethiopia. It is the capital of the Jimma Zone, one of the 19 zones of the Oromia region, Ethiopia. The town is located 345 kilometers away from the capital of Ethiopia, Addis Ababa. Jimma town comprises 18 kebeles (the smallest unit of local government), which are the smallest administrative units used to facilitate local governance and community organization. According to the UN World Population Prospectus (2024), Jimma town has an estimated

population of 207,573 people, with the youth population (ages 15-24) making up approximately 21% of the total, which is around 40,539.

The RPWS has been validated among adolescents worldwide in a number of countries, demonstrating its usefulness in a diverse context (Villarosa et al., 2018; Stavraki et al., 2022). The scale's validation in Jimma town supports these initiatives and advances intercultural studies of psychological well-being.

Participants

This study focused on adolescents in Jimma town aged between 14 and 20 years who are pursuing their high school education in grades 9-12. There are a total of thirteen high schools in Jimma town, comprising eight public and five private schools. A total of 14,745 adolescents were registered for formal education at these schools, with 6,574 males and 8,171 females. Among these students, 12,801 were enrolled in government schools, while the remaining 1,944 attended private schools. A lottery method was employed to choose three high schools from the public schools and two from the private ones. Participants were subsequently selected proportionally according to their age, sex, grade level, and whether they attended private or public schools, using stratified random sampling from each school. Size of the sample was determined based on the instrument validation guideline suggested by scholars (Suhr, 2006; Tabachnick & Fidell, 2019), who recommended a minimum of five participants per item, endorsing a respondent-to-item ratio of at least 5:1. Drawing on a 5:1 respondent-to-item ratio to the 42-item version of the RPWS, a minimum sample of 210 participants was required to ensure sufficient statistical power for the validation process. To improve statistical accuracy and address potential issues with incomplete, inappropriate, or non-responses from participants, the researchers increased the number of study participants to 350. Due to unanswered questions, instances of double responses for individual items, and incomplete answers from 10 participants (Female=3, Male=7), the analysis was conducted using data from 340 participants, consisting of 182 females and 158 male students.

Measures

Demographic Questions: The first section of the instrument consisted of a socio-demographic profile items designed to capture the background characteristics of the sample.

Participants provided information regarding their age, sex, and grade level, as well as their institutional affiliation (public vs. private schooling)..

Ryff's Psychological Well-being Scale (RPWS): Ryff developed psychological well-being scale with the aim to assess positive aspects of human psychological functioning (Ryff, 1989). She derived the construct from research on aging and life-span development that included individuals ranging from young to older age groups within the general population (Burns, 2015). The scale has six dimensions (personal growth, self-acceptance, environmental mastery, autonomy, purpose in life, and positive relationship with others) stemming from self-actualization notion of Maslow , Rogers' concept of a fully functioning individual, and Allport's assertion of mature personality (Waterman, 2013). Since its development, the initial 120-item iteration (Ryff, 1989) of the RPWS has been adapted into shorter versions of 84, 54, 42, 24, 18, and 12 items (Abbott et al., 2010; Shryock & Meeks, 2018) primarily to address practical and psychometric considerations. The reduction of the RPWS overtime was mainly due to certain items showing weak correlations with their designated subscales, while some items correlated more strongly with different scales, suggesting issues with item effectiveness or redundancy (Garcia et al., 2023; Ryff & Singer, 2006). Additionally, shorter versions of the scale help minimize burden on respondents and enhance the practicality of administering the tool, particularly in studies with large samples or limited time constraints (Abbott et al., 2010).

In the current study, the most commonly used version of Ryff Psychological Well-Being Scale, 42-item version, was used for validation. This version was chosen over the others for its demonstrated statistical soundness in assessing psychological well-being among adolescent population (Ryff et al., 2007). Sample items of the scale for the respective six subscales include: [1]autonomy (e.g., "*My decisions are not usually influenced by what everyone else is doing",* [2]Positive relations with others (e.g., "*I know that I can trust my friends, and they know they can trust me",* [3]Purpose in life (e.g., "*I have a sense of direction and purpose in life.",* [4]Environmental mastery (e.g., "*I often feel overwhelmed by my responsibilities.",* [5]Personal growth (e.g., "*I have the sense that I have developed a lot as a person over time.", and* [6] Self-acceptance(e.g., "*I like most aspects of my personality."* Each item on the scale uses a 6-point Likert format, with responses scored from 1 (strongly

disagree) to 6 (strongly agree).Of the 42 items, 21 negatively worded items were reverse-scored following the established guidelines for the Ryff's Scale of Psychological Well-Being (Ryff, 1989; Danrobertsgroup, 2018). Higher scores, with reverse coding of negatively worded items, indicate better psychological wellness of adolescents. In the original form, all dimensions of the scale demonstrated strong internal consistency reliability: Autonomy (α = 0.71), Self-acceptance (α = 0.79), Positive relations with others (α = 0.78), Environmental mastery (α = 0.68), Purpose in Life (α = 0.82), and Personal growth (α = 0.71), with an overall scale reliability of α = 0.82 (Ryff, 1989)..

The EPOCH Measure of Adolescent Well-being: It was developed by Kern et al. (2016) to evaluate five key positive psychological characteristics of adolescents in terms of Engagement, Perseverance, Optimism, Connectedness, and Happiness, that can promote their overall well-being, physical health, and positive long-term outcomes in adulthood.. In this study, EPOCH adolescent Well-being scale is used as a reference instrument to assess convergent validity of Ryff's psychological well-being scale, as both tools assess similar psychological constructs. EPOCH consists of a total of 20 items, with four items each measuring the five domains. Sample items of the subscales include: Engagement (e.g., "*I become so immersed in activities that I lose track of everything else."*), Perseverance (e.g., *"I complete whatever I start."*), Optimism (e.g., *"I feel positive about my future."*), Connectedness (e.g., *"I have friends whom I truly care about."*), and Happiness (e.g., *"I consider myself a cheerful person."*). Respondents indicate their agreement with each item using a 5-point scale, ranging from 1 (almost never) to 5 (almost always).EPOCH demonstrates strong internal consistency reliability of α=0.88 and respective subscales internal consistency coefficients α = 0.70 for Optimism, α = 0.64 for Connectedness, α = 0.80 for Perseverance, α = 0.85 for Happiness, and α = 0.72 for Engagement (Buerger et al 2023). Research has shown that EPOCH Measure of Adolescent Well-Being exhibits strong internal consistency, stability over time, and effective content validity, as well as convergent validity (indicating strong correlations with other well-being measuring tools) and divergent validity (distinguishing it from tools measuring negative well-being) (Kern et al., 2016; Zeng & Kern,

2019). Therefore, the EPOCH is an appropriate instrument for testing the convergent validity of Ryff's Psychological Well-Being Scale.

Instrument Translation Procedure

The translation process for the study instruments from English (source language) to Afaan Oromoo (target language) encompassed two key steps for both the validation and anchor tools.At first, the tools were translated from English to Afaan Oromoo (forward translation) with the support of a bilingual language expert possessing a master's degree in Afaan Oromoo and Literature, and with a very good command of English. The forward-translated version was subsequently reviewed by two PhD students in psychology who are proficient in both Afaan Oromoo and English. Their evaluation aimed to ensure that the translation accurately captured the conceptual meanings of the scales' items. During their assessment, only minor errors, including terminology inconsistencies, grammatical errors, spelling mistakes, and ambiguous phrases were identified in the translation of the tools into Afaan Oromoo, and corrections were made accordingly. The second step involved back-translating the Afaan Oromoo version into English to minimize errors, pinpoint equivalences and discrepancies between the two versions, and ensure the final instruments were semantically comparable. To this end, one PhD student specializing in English language and literature, who has a strong command of Afaan Oromoo, conducted the backward translation. Following the same rigorous method as the first step, two bilingual PhD candidates, one specializing in Language and Literature and the other in Psychology, assessed the conceptual equivalence of the back-translated English versions of the instruments. A limited number of minor discrepancies, such as omitted details, overly literal translations, and punctuation errors, were identified in a few scale items during the back-translated version review and subsequently resolved through consultation with the translation experts. Consequently, the Afaan Oromoo versions of both the validation and anchor instruments were prepared and finalized for data collection.

Content Validity Assessment of the Instrument

The content validity index (CVI), a widely recognized method for evaluating the content validity of data collection instruments (Polit et al., 2007), was used to assess the

proposed data collection tool. This method involves a panel of experts independently evaluating each item to determine its relevance to the instrument's domain. Furthermore, it ensures that the translated items accurately represent the intended constructs and are appropriate for the target population (Hambleton et al., 2005).Accordingly, six experts were invited to evaluate the content validity of Ryff's Psychological Well-Being Scale. The panel consisted of two PhD holders in psychology, one assistant professor in psychology, and three PhD students in psychology. Following Lynn's (1986) guidelines, the expert panel rated how accurately each item measured its intended dimension using a 4-point scale ranging from 'not relevant' (1) to 'highly relevant' (4)The expert scores were dichotomized into zero (ratings of 1 or 2) and one (ratings of 3 or 4), as recommended by Schilling et al.'s (2007) and Lynn (1986). Furthermore, to ensure adequate content validity, this study adopted the thresholds suggested by Polit and Beck (2006): a minimum Item-level Content Validity Index (I-CVI) of 0.78 and a Scale-level Content Validity Index (S-CVI) of 0.83 to indicate adequate content validity.

The experts' review results exceeded the minimum content validity thresholds for all 42 items, with each item achieving an I-CVI of 0.83 or higher. Overall scale-level content validity index (S-CVI) was found to be 0.955, indicating excellent content validity for Ryff's Psychological Well-Being Scale. In light of these validity indices, the instrument was considered suitable for use in the next stage of the study.

Data Collection Procedure

Before the data collection day, four data collectors, who were master's degree students specializing in psychology at Jimma University, were briefed on the objectives and the types of tools to be used. On data collection days, which spanned five days, one day for each of the five sample schools, participants were first identified and seated in separate rooms within the three public and two private schools involved in the study. Subsequently, participants' voluntary participation in the study was checked and confirmed. Next, the first author together with the data collectors, provided clear explanations on objectives of the study and how to respond all items of the questionnaire. Copies of the questionnaire were

then distributed to the participants. Participants were encouraged to ask for clarification if they had any doubts about any of the questions while responding.

Data Analysis

The data were analyzed by using SPSS version 26.0, supplemented with Amos 24.0 version. The internal consistency of both the validated tool and the anchor scales were evaluated using Cronbach's alpha. Confirmatory Factor Analysis (CFA) was conducted to evaluate whether original six-factor model of Ryff's psychological well-being scale (personal growth, positive relations with others, self-acceptance, purpose in life, environmental mastery, and autonomy) adequately fits the data gathered from Ethiopian adolescents residing in Jimma town. This was primarily aimed to verify whether the tool under validation consistently functions across different populations and cultural contexts, which is essential for valid comparison and generalizations. Pearson product-moment correlation coefficient was employed to assess convergent validity between RPWS and the EPOCH measure of adolescents' well-being, a measure assessing a construct related to RPWS.

The study reliability test

The internal consistency of the scales, both validation and anchor measures, was evaluated using the Cronbach's alpha coefficients. For the Ryff Psychological Well-Being Scale (validation measure), items exhibiting factor loadings of 0.4 or below on their respective latent factors were removed, in line with expert recommendations (Tabachnick & Fidell, 2019).. Furthermore, the criterion of a minimum Cronbach's alpha of 0.7, as recommended by Tabachnick and Fidell (2007), was adopted as the threshold for determining the acceptability of the reliability coefficients calculated in this study.

Table 1

Cronbach's alpha coefficients of Ryff's Psychological Well-being Scale (after factor analysis) and the Anchor Scale

	Ryff Psychological Well-being Scale (RPWS)						
Validation Measure	RPWS	Aut	EM	PG	PRO	PiL	SA
	[29 items]	[4 items]	[4 items]	[5 items]	[6 items]	[5 items]	[5 items]
	.89	.81	.87	.90	.92	.86	.88
	EPOCH Measure of Adolescent Well-being						
Anchor Scale	EPOCH	Eng	Perse	Opt	Conn	Happ	
	[25 items]	[5 items]	[5 items]	[5 items]	[5 items]	[5 items]	
	.76	.80	.77	.83	.74	.76	

Autonomy=Aut; Environmental Mastery =EM; Personal Growth =PG; Positive Relations with Others=PRO; Purpose in Life=PiL Self-Acceptance=SA=; Eng=Engagement; Perse=Perseverance; Opt=Optimism; Conn=Connectedness; Hap=Happiness

As shown in Table 1, Ryff's psychological well-being scale demonstrated acceptable and very good internal consistency reliability with α = 0.89. For its individual dimensions,as shown in the same table, reliability coefficients ranged from α = 0.81 (Autonomy) to α = 0.92 (Positive Relations with Others). Table 1 also shows that the EPOCH Adolescent Well-Being Scale (anchor tool) achieved acceptable internal consistency reliability, with a Cronbach's α of 0.76. Its subscale alphas spanned from α = 0.74 (Connectedness) to α = 0.83 (Optimism), reflecting acceptable level of reliability throughout the subscales.

Ethical Considerations

The study first received approval from the School of Psychology Ethical Committee (reference: SoP-Eth-Co/23/2023), confirming full compliance with ethical standards throughout the research. As participants of the study were (minors under 18), informed consent was acquired from school administrators acting in loco parentis, alongside the ethics committee's confirmation of the study survey questionnaire posing no harm to the adolescents. Prior to the data collection, participants were briefed on the research objectives, guaranteed anonymity, informed of their right to withdraw anytime if uneasy, and assured their data would remain confidential for research purposes only, with no disclosure to a third-party. Subsequently, assent was secured from the participating adolescents, after which data collection commenced.

Results

Background characteristics of participants

This section presents a summary of participants' background information, such as age, gender, grade level, school type, and family composition. Comprehensive descriptive statistics for participants' background characteristics are detailed in Table 2 below..

Table 2

Background characteristics of the study participants (N=340)

Variables	Categories	Frequency	Percentage
Sex	Female	182	53.5
	Male	158	46.5
Total	-	340	100
Grade level	9	111	32.6
	10	81	23.8
	11	87	25.6
	12	61	17.9
Total	-	340	100
Family structure	Intact	231	67.9
	Non-intact	109	32.1
Total	-	340	100
Age	Range: 14-20		$\bar{X}$=17.8 (SD =3.42)

As shown in Table 2, female adolescents account for more than half (53.5%) of the study participants. Regarding grade level, most participants were in grade nine (32.6%), followed by those in grade eleven (25.6%), grade ten (23.8%), and grade twelve (17.9%). As

grade levels increase from 9 to 12, there is a decreasing proportion of participants, primarily due to the declining number of students per grade level from grades 9 to 12. Most study participants reported originating from intact families, while nearly one-third (32.1%) indicated a non-intact family background (e.g., residing with stepparents, single parents, relatives, or others).The age range of adolescents participated in this study ranged from 14 to 20 years, with a mean age of 17.8.

The construct validity test

The construct validity of RPWS, whether it truly captures the concept it claims to measure, was tested using a convergent validity test. This test assessed how well RPWS corresponds with an established and conceptually related scale of adolescent well-being, specifically the EPOCH scale of adolescent psychological well-being. The assessment result, which involved correlating Ryff's psychological well-being scale (RPWS) and its sub-scales with EPOCH scale of adolescent well-being and its sub-scales, is presented in Table 3.

Table 3

Summary of Inter-correlations between Ryff's Psychological Well-being Scale and EPOCH Measure of Adolescent Psychological Well-being (N=340)

Scales	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
RPWS [1]	***1***												
PG [2]	.84**	1											
PRO [3]	.71**	.31**	1										
Aut [4]	.47**	.49**	.32**	1									
EM [5]	.51**	.60**	.41**	.15*	1								
PiL [6]	.67**	.51**	.14	.28**	.24**	1							
SA [7]	.58**	.46**	.21*	.21*	.31**	.50**	1						
EPOCH [8]	.62**	.30**	.36**	.42**	.52**	.41**	.65*	1					
Eng [9]	.42**	.39**	.41**	.46**	.45**	.62**	.51**	.81**	1				
Perse [10]	.37**	.26*	.34**	.29*	.36**	.34**	.70**	.53**	.42**	1			
Opt [11]	.51**	.32**	.44**	.26*	.61**	.73**	.34**	.47**	.60**	.62**	1		
Conn [12]	.39**	.48**	.32**	.33**	.42**	.58**	.41**	.61**	.41**	.38*	.48**	1	
Hap [13]	.53**	.50**	.71**	.23*	.50**	.28*	.30**	.48**	.39**	.52**	.61**	.54**	1

RPWS=Psychological Well-being Scale; Autonomy=Aut; Environmental Mastey=EM; Personal Growth =PG=; Positive Relations with Others=PRO=; Purpose in Life=PiL=; Self-Acceptance=SA; Eng=Engagement; Perse=Perseverance; Opt=Optimism; Conn=Connectedness; Hap=Happiness

*p<.05 **p<.01

The summary of correlation coefficients presented in Table 3 indicates a significant positive correlation was found between the overall scores of Ryff's psychological well-being scale and the EPOCH scale of adolescent psychological well-being ($r = 0.62$, $p < 0.01$), thereby confirming the convergent validity of Ryff's scale. At the subscale level, significant positive correlation coefficients were found among all the subscales of both measures. The correlations are all positive and the magnitudes of relationship range between low for the Autonomy subscale of the RPWS and the Happiness subscale of the EPOCH ($r=0.23$, $P<0.05$), to a high correlation between the Purpose in Life subscale of the RPWS and the Optimism subscale of the EPOCH ($r=0.73$, $P<0.01$). These results demonstrate a significant positive relationship between the RPWS and the EPOCH measure, lending support for the **convergent validity** of the RPWS and its suitability for assessing adolescent psychological well-being.

Confirmatory Factor Analysis

Prior to running the confirmatory factor analysis (CFA), three key assumptions put forward by the scholars (Kline, 2016; Tabachnick & Fidell, 2007) were checked with the aim of achieving a more accurate estimate, good model fit, and avoiding misleading conclusion. These assumptions are the normality of the sample data, the linearity in the relationship between observed variables and latent factors, and absence of multicollinearity among the observed variables. The sample data met all these assumptions, allowing for the performance of CFA.

Furthermore, all the items of RPWS were checked for their proper loading on their respective latent factors. According to experts in the field, items with factor loadings of 0.40 and below are generally recommended to be removed, as such low loadings indicate a weak association between the item and its underlying latent factor (Brown 2015; Tabachnick & Fidell, 2019). Accordingly, the CFA led to the removal of 13 items with factor loadings of 0.40 or below from the 42 items of RPWS. Specifically, three items were removed from each of the autonomy and environmental mastery subscales, two items from each of personal growth, purpose in life, and self-acceptance subscales, and one item from positive relations with others subscale. Subsequently, four commonly used statistical indices in CFA-goodness of fit index (GFI), comparative fit index (CFI), chi-square and root mean square residual

(RMSR) were considered to examine the model's fit to the sample data. Table 4 presents standardized factor loadings for all items of Ryff's Psychological Well-being Scale, along with model fit results for the retained items used in subsequent analyses.

Table 4

Standardized Factor Loadings for 42 Items and Model Fit Summary of Confirmatory Factor Analysis for 29 Retained Items of Ryff's Psychological Well-being Scale (N=340)

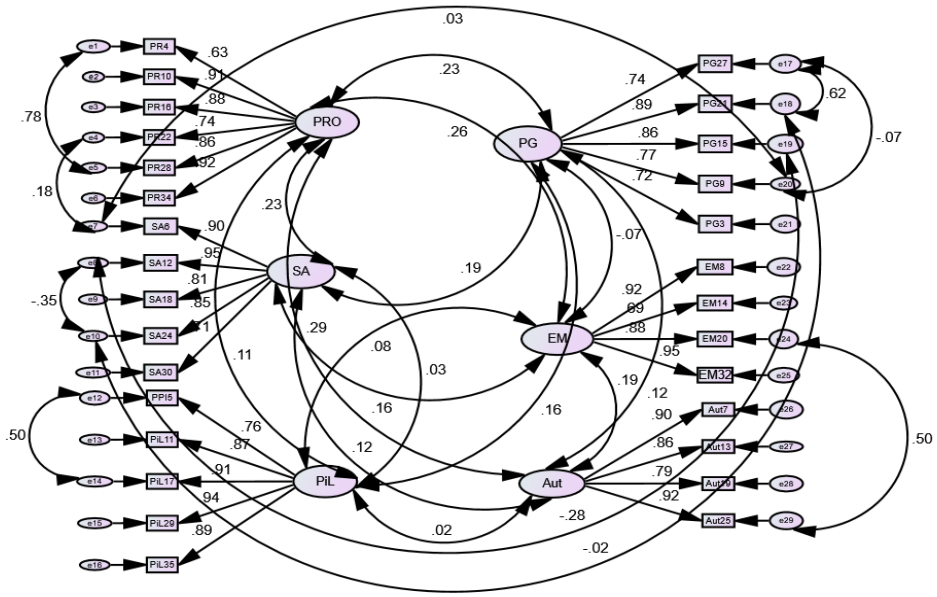
Items	**Standardized Loadings**	**Factors**	**Items**	**Standardized Loadings**	**Factors**
PG27	.74		PiL15	.76	
PG21	.89		PiL11	.87	
PG15	.86		PiL17	.91	
PG09	.77	Personal Growth	PiL29	.94	Purpose in Life
PG03	.72		PiL35	.89	
PG33	.26		PiL23	.18	
PG39	.31		PiL41	.33	
EM8	.92		SA6	.90	
EM14	.89		SA12	.95	
EM20	.88	Environmental Mastery	SA18	.81	
EM32	.95		SA24	.85	Self-Acceptance
EM2	.09		SA30	.71	
EM26	.33		SA36	.14	
EM38	.17		SA42	.32	
Aut7	.90		PR4	.63	
Aut13	.86		PR10	.88	
Aut21	.79		PR16	.74	
Aut25	.92	Autonomy	PR22	.86	Positive Relations with Others
Aut1	.36		PR28	.92	
Aut31	.08		PR34	.52	
Aut37	.24		PR40	.30	
Fitted Items	CMIN/DF	P	GFI	CFI	RMSEA SRMR
29	4.268	.000	.911	.962	.067 0.049

As indicated in Table 4 above, six-factor structure of Ryff's psychological well-being scale, comprising 29 well-fitting items, was adequately replicated with the adolescent sample residing in Jimma town, Ethiopia. This is evidenced by CFA model fit statistical indices, including Chi Square=4.26 (N=340. P<.000), GFI=.911, CFI=.962, RMSEA=.067 and SRMR=0.49, which fall within the recommended ranges suggested by experts in the field (Hooper et al., 2008). The satisfactory model fit indicates that the multidimensional construct of psychological well-being, including self-acceptance, personal growth, environmental mastery, autonomy, positive relations with others, and purpose in life, is a relevant and meaningful construct for understanding psychological well-being among Ethiopian adolescents.

Furthermore, the CFA path diagram below, Figure 1, clearly supports the six-factor structure of Ryff's psychological well-being with corresponding items appropriately clustering under their intended factors, while the factors themselves portray a meaningful but non-overlapping correlation. This confirms that the structure of the scale works well in the study context.

Figure 1

Measurement Model with Six Dimensions of Ryff's Psychological Well-being Scale



Discussion

The present study assessed psychometric properties of Ryff's Psychological Well-being Scale (RPWS) in a sample of Afaan Oromoo speaking Ethiopian adolescents living in Jimma town. Across the world, different researchers have adapted, validated and used RPWS for research purposes and generated pertinent findings on adolescents' well-being (Clarke et al., 2001; Gao & McLellan, 2018; Garcia et al 2023; Sirigatti, et al 2009). Henceforth, validation of the RPWS tool in the Ethiopian context will make a valuable contribution in widening the horizon of adolescent development research works, aiming to produce empirical evidence that can inform potential interventions designed to positively influence the development of adolescents.

The internal consistency reliability of RPWS obtained in the current study is $\alpha = 0.89$, which is slightly higher than the reliability coefficient ($\alpha = 0.82$) reported during the tool development in the original study (Ryff, 1989). Ursachi et al. (2015) suggest that this difference may be due to factors such as variations in socio-cultural context, respondents' social desirability bias, the removal of weak and cross-loaded items, or other personal or social influences. The achieved internal consistency reliability falls within the range classified as very good as per the guidelines set by Netemeyer et al.'s (2003), which categorize α values ranging from 0.6 to 0.7 as acceptable, those above 0.8 as very good, and notes that $\alpha > 0.95$, though excellent, may signal item redundancy.

In various adaptation and validation studies of the RPWS, findings on internal consistency have been documented. For example, Zhou et al. (2024) reported Cronbach's alpha of 0.92 in their analysis of RPWS factor structure. Similarly, Sasaki et al. (2020) found an alpha of 0.75 in their validation study. A study by Luștrea et al. (2018) revealed an impressive Cronbach's alpha coefficient of 0.96 in their adaptation and validation research. Additionally, Gao and McLellan (2018) conducted a study that explored six RPWS sub-scales, revealing that five out of six subscales had a Cronbach's alpha coefficient greater than 0.7, while Autonomy subscale had a lower alpha of 0.60. The RPWS internal consistency coefficients obtained in the current study are consistent with the good internal consistency reliability coefficients reported in comparable studies conducted abroad.

Therefore, the reliability of the RPWS items has been shown to be suitable for assessing the psychological well-being of Ethiopian adolescents speaking Afaan Oromoo.

The correlation analysis between RPWS and the anchor scale showed that RPWS had good convergent validity, with all correlations in the theoretically expected direction. Significant positive correlation ($r = 0.62$, $p < 0.01$) was found between the RPWS and the EPOCH measures of adolescent well-being, confirming good convergent validity of RPWS. Similarly, a Japanese RPWS validation study (Sasaki, 2020) reported a significant positive correlation ($0.24 < r < 0.71$) between RPWS and scales designed to assess positive psychological state (life satisfaction, positive affect and self-esteem), as well as significant negative relationship ($-0.55 < r < -0.13$) between RPWS and scales assessing negative psychological states (negative affect and perceived stress). Studies by Calderon et al. (2020); Negovan (2010); Purnama (2022); and Weziak-Bialowolska et al. (2021) have also reported evidence of good convergent validity for RPWS. In contrast, Abbott (2006); Gao and McLellan (2018), Hsu et al. (2017), Kafka and Kozma (2002) reported poor convergent validity of RPWS and recommended further investigation to test the tool's adaptability across socio-cultural contexts.

The six-factor structured RPWS factorial validity assessment, conducted using confirmatory factor analysis, demonstrated the model fit to the data, as evidenced by a Chi Square value of 4.268 ($N=340$, $p<.000$), with a comparative fit index (CFI) value of .962, and the root mean square error approximation (RMSEA) value of .067. Diaz et al. (2006) have also found similar results for the six-factor structure of RPWS with the elimination of weaker items during the adaptation study of the scale. Moreover, other adaptation studies of the RPWS have reported similar results of the hexa-dimensional model fitness to the sample data (Clarke et al., 2001; Fernandes, 2010; Garcia et al., 2023; Lindfors et al., 2006; Sirigatti, et al., 2009). Unlike six-factor structure of RPWS confirmed in this study, other adaptation studies of the scale have found the model fitness to less number of factors than originally proposed (Abbott, 2006; Henn, 2016; Sasaki, 2020), with a recommendation of further investigation of the measure for factorial validity assessments. These findings highlight that the six underlying positive functioning factors in Ryff's Psychological Well-being Scale, as

proposed by Ryff (1989), may either be replicated or may not retain the original number of factor structures when evaluated in various socio-cultural contexts.

Conclusion and Recommendations

The current adaptation and validation study of the hexa-dimensional Ryff's Psychological Well-being Scale comprising Self-acceptance, Personal growth, , Autonomy, Positive relation with others, Environmental mastery, and Purpose in life sub-scales revealed acceptable psychometric properties, confirming that the scale is suitable for measuring the psychological well-being of Ethiopian adolescents who speak Afaan Oromoo. The tool's retention of its original six-factor structure, along with acceptable reliability coefficients and confirmed construct validity—demonstrated by the convergent validity result—are primary findings established the scale's reliability and validity. Accordingly, these findings support the use of the 29-item RPWS by future researchers to investigate the developmental trajectory of psychosocial well-being among Afaan Oromoo-speaking Ethiopian adolescents. Ethiopia, being a multicultural country with more than 76 ethnic groups, necessitates recommending further research to validate the suitability of the RPWS for assessing psychological well-being across the diverse subcultures within these ethnic groups. Additionally, as the current study examined the psychometric properties of RPWS using data collected from single town, future researchers are advised to incorporate data from multiple towns to verify the consistency of findings and produce more reliable and valid results.

Declaration of Conflicting Interests

No potential conflict of interest was reported by the authors.

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