Original Article

Development and Validation of Tools for Measuring Psychological Challenges of and Support Services to Students in Special Secondary Boarding Schools

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Abstract

Special secondary boarding schools (SSBS) are increasingly becoming familiar in Ethiopia. In the Oromia Regional State alone, there are seven government special secondary boarding schools and two additional ones operated by non-government actors. Experience shows that several psychological challenges and limited support services characterize these schools. However, research evidence is not available supporting these claims mainly because research tools have not been developed in the Ethiopian context. The primary objective of this research is to develop and validate instruments that can help measure these two constructs: psychological challenges and support services. Psychometric procedures were followed in item generation selection, refinement, and validation with a sample of 250, (45.1% females and 54.9% male students). Then, item reduction and classification were made through a joint use of exploratory factor analysis (EFA) conducted to analyze the factor structures, followed by confirmatory factor analysis(CFA) to substantiate the proposed factors. The EFA result has revealed two interpretable factors: the psychological challenges faced by adolescents and the support services available at the special secondary boarding schools. The reliability indices of both subscales are also acceptable.

Keywords: adolescents, psychological challenges, support services, validation

1. Introduction

Nowadays, government boarding schools are emerging and being practiced in different regions of Ethiopia. In relation to this, special secondary boarding schools are increasing and becoming more familiar in the country. In the Oromia Regional State alone, there are seven government special secondary boarding schools and two non-government non-profit special secondary boarding schools on board. The Oromia Education Bureau (OEB) is concerned with improving the quality of education in the region. Therefore, the OEB has allocated 6 billion Birr to fund these schools from its fiscal year 2020/21 budget. The OEB developed and expanded boarding school programs in 2010 implemented across the region called "Tomorrow's Light," aimed at symbolizing the future of the nation. According to OEB, the key data, innovations, and

technological progress of present boarding school students have been selected to shed light on the political and socioeconomic environment of this generation (OEB, 1992).

The existing studies indicated that adolescents in special secondary boarding schools encounter different psychological challenges (Wang & Liu, 2018). The student experience is often marked by several challenges, such as feelings of homesickness, instances of bullying, pressures related to academic achievement, culture shock. the challenges associated with adapting to a new school atmosphere, anxiety, differences in academic difficulty across subjects, and apprehensions about their academic accomplishmentsThese psychological challenges can affect their psychological well-being and academic achievement of the students unless supply appropriate and scientific support services are provided in the school environment (Skorodzien, 2020).

Studies also show that boarding schools have their own psychological challenges and limitations of support services (Prebble et al., 2005). Therefore, it is mandatory to develop a validated research instrument that can effectively assess students' psychological challenges and the support services provided to the adolescents who engage in the boarding school environment. Additionally, it is important to assess or to create the appropriate tools according to the Oromia special secondary boarding school context in order to analyse the school challenges and support services in the boarding school existing situation.

In relation to psychological challenges and support services of the psychometric measurement tools have been created (ProProfs, n.d.; Khusumadewi et.al. n.d. and Boarding, 2021). This measurement is crucial for further research investigation on the newly established govermnet boarding schools. Hence, all the developed tools may not adequately address the challenges according to the boarding school according to the Ethiopian context. Therefore, it is important to adapt and create relevant psychometric measurement tools for psychological challenges and support services in the boarding school context.

It is crucial to comprehend these challenges and the available support systems to foster a healthy educational atmosphere within boarding schools. Thus, the support services within the special boarding schoollack strength that is why there is a need for a comprehensive and well-established support mechanism. So adequate attention and support should be provided to adolescents in boarding schools to protect their psychological wellbeing effectively.

The Ethiopian government's special secondary boarding school adolescents' psychological challenges have not yet been widely studied so far. There is no adequate research instrument to study these psychological challenges and the support services. We do not have appropriate tools to study. Nevertheless, there are a lot of research instruments . For instance, the strategy on boarding school development Boarding, (2021) & The Healthy Minds Study for Secondary Schools (Hms2): Boarding School Questionnaire Modules Tabrani et al., (2023) developed a lot of items regarding boarding school. However, these instruments did not satisfy the boarding school issues and the current context of the OSSBS.

The Oromia Development Association (ODA), reported that the Oromia National Regional State of Ethiopia is characterized by a diverse population, particularly among students enrolled in government secondary boarding schools. These schools are vital for delivering education and promoting personal growth. (Hack-Polay & Mahmoud, 2021)studies show that students in these settings frequently encounter various psychological challenges that may adversely affect their academic success and overall well-being , such as homesickness, academic pressure, anxiety, loneliness, cultural identity, acceptance, and social isolation in developing countries. Given the high demands of a competitive academic landscape and the experience of separation from family, students may endure homesickness, social anxiety, and academic stress, in addition to other symptoms associated with anxiety are the major challenges in boarding schools.

In the special boarding school, students are typically in the age of middle to late adolescent stage. This period can be particularly demanding as young individuals confront significant changes and new responsibilities. However, it also presents a unique opportunity for growth, allowing adolescents to cultivate essential skills such as problem-solving, critical thinking, and resilience. According to OEB, providing quality education for the community is one of its major goals. The Bureau has opened boarding school, allocated huge budget and work towards raising future competent, committed, responsible, intellectual leaders and model professionals for the region and country at large (Bureau, n.d., 2023).

This analysis concentrated on the psychological challenges and available support services within selected special secondary boarding school settings but it is difficult to take the instruments as a tool which are already developed because they are not aligned with the context of OSSBS.

In addition to identifying these challenges, it is crucial to evaluate the effectiveness of the support systems in place within boarding schools. Especially, boarding schools have implemented counseling services that provide students with access to mental health professionals who can offer guidance and support (Bahiroh & M. Suud, 2020). These services may include individual counseling, group therapy, and workshops focused on coping strategies and resilience-building. Furthermore, peer support programs can play a vital role in fostering a sense of community and belonging among students. By encouraging students to connect with one another, these programs can help mitigate feelings of isolation and promote emotional well-being (Kanga et al., 2015).

This is as a result of the outstanding education given to them, which enables students to become independent, develop morality, and create friends for life. It is the ideal life and getting ready for college (Bass, 2014). It is important to note that the concept of education in boarding schools has developed significantly over time, and different cultures and regions have had their own systems of education and boarding schools too (Boarding School Education, 2019) Consequently, it is essential to validate the scale within the context of special boarding secondary schools in Ethiopia. In light of this, the following specific objectives have been established for the validation process.

Nowadays, there is a noticeable increase in the establishment of government boarding schools and being increased from time to time. For instance, in Oromia alone, seven such schools have been established and ODA openeda non-profitable special boarding school. Therefore, to improve the boarding school support services, and to address the existing challenges, it is essential to establish various and different support mechanisms, like; professional school counseling and guidance, professional school therapy, extracurricular activity, food nutritionist physical fitness/physical coach and the like.

The main objective of this study was to validate measures of psychological challenges and support services of adolescents in the special secondary boarding school context in ONRS. The instrument validation has the following three specific objectives:

- What is the content validity of the measure?
- How reliable is this measure?
- What factor structures constitute this measure?

2. Approaches

The validation of a questionnaire designed to assess experiences in boarding schools is a critical process that ensures the reliability and validity of the data collected. This process typically involves several stages, including the development of the questionnaire, expert reviews, and pilot testing. According to Kalkbrenner (2021), a well-structured validation process enhances the credibility of the instrument, allowing researchers to draw meaningful conclusions from the data. By engaging experts in the field to review the content and structure of the questionnaire, researchers can identify potential biases and ensure that the questions are relevant and comprehensible to the target population. Following the expert review, pilot testing is essential to evaluate the questionnaire's effectiveness in capturing the intended experiences of the special boarding school students.

This phase involves administering the questionnaire to a small, representative sample of the target population to identify any issues related to question clarity, response options, and overall flow (Fowler Jr, 2014). The feedback obtained from this pilot study is invaluable, as it allows researchers to make necessary adjustments before the full-scale administration of the questionnaire. This iterative process not only improves the instrument but also increases the likelihood of obtaining valid and reliable data. Ultimately, the validation of a questionnaire focused on boarding school experiences contributes significantly to the field of educational research. By ensuring that the instrument accurately reflects the experiences of students, researchers can better understand the unique challenges and benefits associated with boarding school life. This understanding can inform policy decisions and improve the overall quality of education in such settings Doyle et al., (2016) & Creswe, (2014). Thus, a rigorous validation process is essential for producing high-quality research that can lead to meaningful insights and improvements in educational practices.

Development of the two measures (of psychological challenges and support services) went through a lengthy process of validation that encompasses critical work in three phases: pre-piloting, piloting, and post-piloting phases. The pre-piloting involves item development, selection, and preparation for piloting. The piloting involves administering the tool to potential sample targets to examine item qualities, format, and administration issues. The post-piloting aims to examine psychometric properties along with tool clustering and item reduction.

2.1. The Pre-Piloting Phases

During this phase, we engaged in the collection and preparation of questionnaires that were deemed relevant to the study. The items were gathered through an extensive review of literature, academic articles, and dissertations. After the initial collection, a thorough screening process was implemented to identify the items that were most applicable to this research. Furthermore, while visiting schools, I identified and included additional relevant items. These visits involved informal interviews with school principals, administrative staff, teachers, and students, which helped uncover pertinent questions that were incorporated into the questionnaires to better reflect the context of the newly established government boarding schools. The pre-piloting phase is divided into two parts: the exclusion of irrelevant items and the adaptation of relevant materials sourced from literature and online platforms Notably, (Iskandar et al., 2022) (Hack-Polay & Mahmoud, 2021) contributed a variety of items related to boarding school challenges.

2.2. Item Pooling

a) Review of literature and existing relevant tools as sources

we took the items of psychological challenges from three different sources; web pages and borrowed from the existing tools. I collected 18 items from Kanine (2019), and 14 from review of literature by Colmont et al., (2005) and 16 items from existing tools referenced in (panoba, 2022). In addition to this, while I was on school visit, I made informal interview and developed 7 items according to the government SSBS context.

b) Initial visits and consultative meetings with officials

The main objective of this study is to develop the relevant psychometric instrument. In the course of my initial visits and consultative meetings with the school administration, staff, and students residing in the boarding facility, I engaged in informal observations and interviews.

The existing instrument cannot accurately measure the psychological challenges according to the Ethiopian special secondary boarding school context. Therefore, it is essential that its tools have sound psychometric properties to ensure the reliability of the instrument designed for the psychological well-being and support services of the boarding schools. Therefore, the relevant instrument on psychometric measurement tools should be relevant if it is reliable, and valid, and its factor structure is properly defined.

c) Initial pool

Tool 1. Measure of Psychological Challenges of students in Boarding School (MPC)

Subscales/ themes	Item name	Number of initial items for Expert Judgment
Home-sickness	PsyCh1	Missing my family creates obstacles in my ability to concentrate on my studies.
	PsyCh2	I regret not having stayed with my family and maintaining contact with them.
	PsyCh3	I find myself concerned about my family when I am lying in bed.
	PsyCh4	I hold my parents responsible for the challenges I am facing.
	PsyCh5	I struggle to sleep in the absence of my parents.
	PsyCh6	I have a strong desire to visit my family every weekend.
	PsyCh7	I sometimes feel sad and depressed without a clear reason.
	PsyCh8	I regularly experience feelings of loneliness.
	PsyCh9	I feel unable to express my emotions in boarding school.
Emotional stress	PsyCh10	I am occasionally unable to control my worries.
	PsyCh11	I frequently feel isolated from my friends.
	PsyCh12	I am not feeling happy to be here in this boarding school.

Keys: PsyCh?

Tool 2 Measure for Support Services provided to Students in Boarding schools (MSP)

Subscales/ themes	Item Name	Number of initial items for Expert Judgment
School Professional Guidance and counseling	SUPSR1	I have the opportunity to access guidance and counseling services in this school.
	SUPSR2	I and my friends get the access to healthcare facilities and medical professionals to address our health needs.
	SUPSR3	I am offered academic counseling to be successful and excel in my studies.
	SUPSR4	It is difficult to get help from the school counseling and guidance office.
	SUPSR5	I have had the opportunity to participate in sports, arts, and other extracurricular activities.
	SUPSR6	I am good at football playing with my friends.
Extracurricular Activities	SUPSR7	I am offered the provision of tutoring and study groups in the class.
	SUPSR8	Teachers give me support when I feel homesickness in school.
	SUPSR9	Having a discussion about any problem with friends is very easy.
	SUPSR10	My teachers are happy to see me paint
	SUPSR11	I regret not having stayed with my family and maintaining contact with them.
Teacher Peer support	SUPSR12	I find myself concerned about my family when I am lying in bed.

SUPSR13	I struggle to sleep in the absence of my parents.
SUPSR14	I have a strong desire to visit my family every weekend.

2.3. Preliminary Screening by the Researcher and Experts

The face validity of psychological challenges and support services (PCSS) was evaluated based on the judgments of ten educational psychologists; the PhD candidates and the instructors. For them to do the rating, they were provided with the following definitions of the two constructs:

Psychological challenges in boarding school mean the mental and emotional struggles that students might encounter due to being away from their families and familiar surroundings. These issues can impact their overall well-being, academic success, and social interactions (Ryff & Singer, 1996)

Support services in the boarding school mean the range of resources and programs designed to promote the well-being and academic achievement of the students in all aspects of their lives (Van Hoof & Hansen, 1999)

On psychological challenges 15 items were relevant and 9 of the evaluators forwarded their opinion on the need for improvement or irrelevant on the 6 items. The tool is revised and improved based on their profession point of view. This was conducted as a preliminary validation to make the tool ready for further re-inspection. Eight educational experts comprised of individuals who have ample experience in working with students in the higher education were used to further evaluate the content validity of the PCSS. The Content Validity Ratio ($CVR = \frac{\mathrm{ne}-\mathrm{N}/2\mathrm{N}}{N/2}$, in which n_e is the number of raters indicating "relevant" and N is the number of raters) was computed, and (Soleimani et al., 2019) guidelines were used to select relevant items. All the experts expressed their concern on the relevance of the 15 items, and 6 experts were agreed on the relevance of the 2 items. Moreover, only 6 items were rated as relevant by 8 experts which later on modified by expressing it differently. Extensive review and judgments were conducted on the items based on the experts' judgment to ensure PCSS items valid and relevant to the constructs aims to measure.

Tool 3: The relevant items selected by the experts.

	Psychological Challenges Please rate how true each statement is for you. Use the scale below to make your choice." ***5 = strongly agree 4= agree 3 = Neutral 2 = disagree 1 = strongly disagree.***
1.	I would be happy if I attended at the previous school near my parents' home.
2.	I take it great satisfaction being I am part of this school community.
3.	I sometimes feel loneliness and I could not study hard.
4.	My parents did not visit me for the last 10 months.
5.	I sometimes cry for unknown reasons.
6.	I would love to be able to visit my family every weekend.
	Support Services ***5 = strongly agree 4= agree 3 = Neutral 2 = disagree 1 = strongly disagree***
1.	I can access guidance and counseling services at my school.
2.	I have opportunities for tutoring and study groups in my classes.
3.	Academic counseling is available to help me succeed in my studies.
4.	I can participate in sports, arts, and various extracurricular activities.
5.	My friends and I have access to healthcare facilities and medical professionals for our health needs.
6.	My teachers at my school provide me with applicable counseling and guidance both within the school and beyond.
7.	During the moments of homesickness, I find that my teachers and friends are always willing to help me.
8.	Getting help from the school counseling and guidance office can be challenging.
9.	Sharing my school challenge with my classmates is easy.

The researcher created tools to fill the gap that emerged from the recently established boarding school environment. (Manwell-Jackson, 2004) said: "...in the absence of criteria, you can always asses a test's validity by inspecting its content, that is, by judging content validity." content validity applies to any context where you create a test or questionnaire for a particular construct and want to ensure that the questions actually measure what you intend them to. (Nikolopoulou 2022). Furthermore, factor analysis was conducted not only for construct validity verification but also to say something regarding other aspects of validity such as content validity; i.e., the loading part of the analysis also provides insights about content validity. (Megersa & Tefera, 2021) for example, a researcher could address the content covered by the items that are associated with various factors implying that items with strong correlations with one another and those commonly measuring a certain factor/construct tend to factor are likely load to allow the researcher to partially validate the content validity.

The Content Validity Index (CVI) of items was computed to assess the validity of each item using Lawshe's content validity assessment method (Romero Jeldres et al., 2023). The boarding school staff members were two who were experienced in teaching. The school teaches helping and, supporting me during data collection and interview sessions. Eight teaching staff of the school were contacted orally and secured their willingness to participate in FGD and interview.

The item screening has two main phases: the researcher screening out relevant items. 10 items during item pooling seem trivial. Therefore, I dropped them out. During this phase, I added some relevant items. Secondly, the experts screened out the relevant items according to the current of the boarding school context. They were checked by applied experts' judgment to check if the items fairly and reliably to cover the variables that they propose to cover the psychological challenges and support services. It helps to check the relevance of the items. In addition, one of the Haramaya staff experts in statistics who is conducting his PhD in statistics analysed the validity of the items which was related to the psychological challenges and the support services. The following tables indicate the experts' judgment on items of psychological and support services.

Table 1: The experts' Judgment on Psychological challenges
S-CVI/= 0.70 (Ave)

(Sum of proportion relevance rating) (Number of experts)

Item Description	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 8	Number of Agreemen	I-CVI	Interpretation
PsyCh1	3	2	3	3	3	2	3	3	3		0.75	Average CV
PsyCh2	3	3	3	3	3	3	3	3	3		1	Average CV
PsyCh3	3	3	2	3	3	3	3	3	3		0.75	Average CV
PsyCh4	3	3	3	3	3	3	3	3	3		1	Average CV
PsyCh5	3	3	3	3	3	3	3	3	3		1	Average CV
PsyCh6	2	3	3	3	3	3	3	3	3		0.75	Average CV
										8-Total		
										S-CVI/AV		

First, the researcher screened ten relevant items for the questionnaire. Then according to the above table, the expert judgment ultimately validated six items on the psychological challenges. The expert judgment process was crucial in improving the questionnaire. Careful reviewing and

providing feedback, the experts identified only six specific items that were especially relevant and successfully indicated the psychological challenges under their investigation.

Table 2: The experts' Judgment on support services

S-CVI/= 0.70 (Ave)

(Sum of proportion relevance rating) (Number of experts)

Item Description	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 8	Number of Agreemen	I-CVI	Interpretation
SUPSR 1	3	2	3	3	3	2	3	3	3		0.75	Average CV
SUPSR 2	3	3	3	3	3	3	3	3	3		1	Average CV
SUPSR 3	3	3	2	3	3	3	3	3	3		0.75	Average CV
SUPSR 4	3	3	3	3	3	3	3	3	3		1	Average CV
SUPSR 5	3	3	3	3	3	3	3	3	3		1	Average CV
SUPSR 6	2	3	3	3	3	3	3	3	3		0.75	Average CV
SUPSR 7	3	2	3	3	3	2	3	3	3		0.75	Average CV
SUPSR 8	3	3	3	3	3	3	3	3	3		1	Average CV
SUPSR 9	3	3	2	3	3	3	3	3	3		0.75	Average CV
										8-		
										Total		
										S-CVI/AV		

Subsequently, as the above table indicated the researcher screened twelve relevant items for the support services variable questionnaire. Then, based on the above table, the expert judgment ultimately validated nine items for the support services. The expert judgment process was crucial in improving the questionnaire. Careful reviewing and providing feedback, the experts ultimately approved six specific items that were especially relevant to the support services under their investigation.

2.4. Translation

The translation of the items has two phases; forward and backward translation. The translation was made by experienced and professional language experts. This includes translating the items from the English version to Afan Oromo, the English version to Amharic which is called forward translation. The second phase is translating from the local language to the English version. This is because of making sure that the translated items are directly related to the original items. The relevant items which were prepared by the author and the expert ready to translated to Afan Oromo and Amharic language.

2.5. The Piloting Phases

The piloting process of the piloting consists of three sequential phases: the initial pre-piloting phase, during piloting phase, and the post-piloting phase. Purpose of the piloting: the purpose of this piloting is to develop psychometric measurement tools for psychological challenges and support services for special secondary boarding schools in ONRS. This study of piloting can be defined as a 'small study to test research protocols, data collection instruments, sample recruitment strategies, and other research techniques in preparation for a larger study. The purpose of this pilot study is to check the clarity of the items and conduction the protocol of the administration, which means the researcher preferred to allow the students to fill out the questionnaire at their dormitory after giving them clarification on the questionnaire. The respondents preferred to fill out the questionnaire at their dorm because they needed to take time and fill it appropriately. A pilot study is one of the important stages in a research project and is conducted to identify potential problem areas and deficiencies in the research instruments and protocol prior to implementation during the full study (Zailinawati Abu Hassan FRACGP, Peter Schattner MMed & Klinik Keluarga, 2006).

The place of piloting and target group were the students from Ambo Special Secondary Boarding School in ONRS. It serves the students from grades 9 -12. The respondents were randomly selected from each class, five respondents from each class. The total number of respondents was 35. From the selected respondents 25 students clearly and appropriately filled out the questionnaire and 10 of them missed some items which was very important. Therefore, I dropped them from the analysis.

3. Major finding

The major findings of key observations regarding positive aspects encountered during the administration of the questionnaire, as well as concerns related to the piloted instrument. One significant positive aspect identified in the administration procedure is the students were willing to actively participate in filling out the questionnaire. They indicated a strong motivation to improve the academic and psychological challenges they encountered at boarding school. However, students expressed dissatisfaction with getting help for psychological challenges and limited support services. Moreover, there exists a considerable limitation on religious practices outside the boarding school environment at church or mosque. Factors such as homesickness,

stress, academic demands, and stringent school regulations contribute to a challenging environment. As a result, these factors may lead to psychological difficulties among the students.

Administration Procedures: The document provides a comprehensive overview of the administrative procedures related to the questionnaire, specifically highlighting the challenges the students faced in boarding school settings. It includes the formulation of a detailed protocol for the distribution, completion, and collection of the questionnaires, while also addressing critical factors such as confidentiality. I informed the participants about the study's objectives and clarified any questions they had. The questionnaire was given to the students to be filled in their dormitory settings, this is because of allowing them sufficient time to engage with the questions and respond using the designated scale. Additionally, I considered logistical factors, including the timing and location of the administration, to ensure a smooth process and to create a comfortable atmosphere for respondents to provide their insights.

Item Clarity: To begin with, the researcher examines the clarity of the items within the questionnaire. This includes a detailed review of each question to ensure that it is clear and unambiguous after the pre-piloting test has been conducted. To collect feedback on participants' understanding of the questions, the researcher might perform informal interviews or organize focus groups with a limited number of participants. This stage is vital, as ambiguous items can lead to misunderstandings, which may ultimately compromise the integrity of the study's findings.

Rating Points of the Questionnaire: The process of establishing the rating points for the questionnaire involves selecting the Likert scale as the preferred scale type, which comprises five response options: 5 strongly agree, 4 agree, 3 neutral, 2 disagree, and 1 strongly disagree. The selection of these rating points is crucial, as it can profoundly affect respondents' perceptions and their responses to the survey items. Therefore, meticulous attention is devoted to ensuring that the scale is congruent with the research objectives and effectively reflects the attitudes or behaviors of the participants.

Social Desirability of Items: The phenomenon of social desirability bias was evident in both the pilot and main studies, as participants tended to provide responses that they perceived as more socially acceptable, rather than reflecting their authentic feelings or behaviors. To address this issue, the researcher utilized triangulation methods, conducting interviews with both students and teachers. This process revealed that one specific sub-scale, pertaining to the social desirability

items, was excluded from the analysis. Consequently, the researcher aimed to ensure that the data collected accurately represented the participants' genuine responses.

Post-Piloting Phase

3.1. Reliability Analysis

The reliability of the internal consistency of the scales was found using Cronbach's alpha coefficient and split half. To this end, the subscales and overall coefficients of reliability obtained with the original developed scale and the one obtained in this study were systematically compared and analyzed. (Peterson, 1994) indicated a reliability of 0.7 Cronbach's alpha is an acceptable coefficient.

Table 3. Reliability indexes of Cronbach's Alpha and Guttman Split-Half Coefficient on psychological challenges

Reliability Statistics

Cronbach's Alpha	Part 1	Value	.710
		N of Items	3[a]
	Part 2	Value	.598
		N of Items	3[b]
	Total N of Items		6
Correlation Between Forms			.544
Spearman-Brown Coefficient	Equal Length		.715
	Unequal Length		.715
Guttman Split-Half Coefficient			.712

a. The items are: PsyCh3, PsyCh4, PsyCh1.
b. The items are: PsyCh2, PsyCh5, PsyCh6.

The analysis indicated in the above table is that the assessment of psychological challenges reveals a strong internal consistency of reliability reflected in a Cronbach's alpha of .710. This result implies that the items inside the table the reliability statistics make across. The split-half reliability score of .712 supports this conclusion indicating that both results of the scale consistently assess the same construct.

Table 4: Reliability indexes of Cronbach's alpha and Guttman Split-Half Coefficient coefficient of support services

Reliability Statistics

Cronbach's Alpha	Part 1	Value	.710
		N of Items	5[a]
	Part 2	Value	.562
		N of Items	4[b]
	Total N of Items		9
Correlation Between Forms			.484
Spearman-Brown Coefficient	Equal Length		.743
	Unequal Length		.745
Guttman Split-Half Coefficient			.712

a. The items are: SUPSR1, SUPSR2, SUPSR3, SUPSR4, SUPSR5.
b. The items are: SUPSR5, SUPSR6, SUPSR7, SUPSR8, SUPSR9.

Table 4 shows that the analysis of a Cronbach's alpha of .710 on support services shows that the items in this part of the survey are consistent with each other. This means that the questions are moderately related and likely measure the same idea. A Split-Half Coefficient of 0.712 of support services indicates that the two groups of questions in this part are moderately consistent with each other, suggesting they measure similar things.

As displayed above in the Tables above, the internal consistency and split-half measure for each of the six components of the psychological challenges assessment devices were generated. The computed Cronbach's alpha values of the reliability coefficient revealed a statistically significant and acceptable level of reliability across each of the six components of the psychological challenges assessment device (PCAD). The magnitude of the internal consistency coefficients ranged from .658 to .710. Hence all of the factors were scores >0.5 Cronbach alpha coefficient, and all the components of the psychological challenges assessment device (PCAD) possess intra-factor reliability and adequate level of reliability in utilizing the instrument in the context of the psychological challenges. Based on the theoretical assumption of reliability several scholars stated that the closer Cronbach's alpha coefficient to 1.0 is the greater the internal consistency of the items in the scale (Kazykhankyzy & Alagözlü, 2019). Furthermore, George and Mallery provided the rules of thumb e. i., if the value of alpha is >0.9 = Excellent, >0.8 =Good, >0.7 = Acceptable, >0.6 = Questionable, >0.5 =Poor, and <0.5 = Unacceptable. From this theoretical assumption, it is possible to conclude that all the factor of the psychological challenges assessment device has an acceptable (ranging from .710 to .712) Cronbach alpha and 0.710 to

.712 split-half reliability coefficient. This implies that all six components of the psychological challenges assessment device had adequate sound for the usability of the instrument into the context it was adapted and created.

The post-pilot study conducted on the psychological challenges faced by students in special boarding schools, as well as the analysis of available help services, reveals significant insights into the mental health landscape within these educational environments. The research highlights on psychological issues, including homesickness, academic pressure, Emotional and Psychological States, and difficulty in adjusting to new school, which are prevalent among students (Khusumadewi et al., n.d.). In addition, the study evaluates the effectiveness of existing support services, such as professional counseling services and teacher peer support programs and extracurricular activities. In this section, the study was conducted both quantitative and qualitative method. The findings underscore the necessity for enhanced mental health resources and appropriate interventions to better support the emotional well-being of boarding school students, ultimately nurturing a more conducive learning atmosphere.

Next, in collaboration with the school directors and I and 4 staff members from each boarding school, they gave the questionnaire for the students to fill out at their respective boarding schools. The participants completed the questionnaire which was prepared in English. During the administration of the instruments, participants were briefed about the purpose of the research and the confidentiality of the information they provided. Participants were given a briefing to enable them fill out the questionnaire as per the instructions. All students from the three boarding schools completed the questionnaire in the allocated hours. It took an estimated of two hours for a student to complete the questionnaire. Finally, the researcher and assistant researchers appreciated and thanked students for their willingness to fill out the questionnaire and me and the staff members of the school gave the questionnaire to the students.

3.2. Factor analysis

3.2.1. Assumptions of Exploratory Factor Analysis

Multivariate normality of data was examined for psychological challenges and support services scale before the data were processed. KMO and Bartlett's Test were also examined for the construct to check the measure of how suited the data were for Factor Analysis. The test measures sampling adequacy for each variable in the model and for the complete model. KMO returns

values between 0 and 1 for all the constructs measured. A rule of thumb for interpreting the statistic: KMO values between 0.8 and 1 indicate the sampling is adequate. A minimum acceptable score for this test is 0.5 (Nkansah, 2011). The KMO results for the items factor analyzed show a sampling adequacy was reached with a significant level. Accordingly, KMO results for psychological challenges and support services measure was .789 and the KMO result for the support servixes was 7.76. Further, the Homoscedasticity Plot: was checked using a scatter plot and the result shows that the amount of distance from the line to the dot did not marginally increase at it moves up the line (Nkansah, 2011). This suggests that the data are homoscedastic. It also means the average distribution of scores of the independent, mediating and dependent variables in the different scales is approximately normal.

Results from Exploratory Factor Analysis of the Psychological challenges and support services Scale (PCSSS)

Table 5: KMO and Bartlett's Test on Psychological Challenge

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.789
Bartlett's Test of Sphericity	Approx. Chi-Square	820.694
	Df	105
	Sig	<.001

Table 6. KMO and Bartlett's Test on Support Services

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.776
Bartlett's Test of Sphericity	Approx. Chi-Square	505.222
	Df	36
	Sig.	.000

The result of KMO and Bartlett's Test was found to be .789 which shows that sampling adequacy has reached at a significant level. The following table depicts the result of exploratory factor analysis showing extracted factor structures.

In connection with this qualitative research question, two groups of participants have been recognized. The first group is formed by teaching staff and students, and the second group is represented by the head and the vice. They reported that they provide support services to students

from teachers and peers to help them adjust to school challenges. However, they noted that professional school guidance and counseling services are not available to support students in dealing with psychological challenges related to school adjustment. All participants mentioned that students handle problems on their own, with teachers, or sometimes with school administrators to avoid burdening others and themselves. They also engage in extracurricular activities like outdoor exercise. Participants generally stated that they do not have access to professional school counseling or therapy to address their psychological difficulties, as indicated by t1, t2, t3, t4, and A1, A2, A5, A7, indicated.

3.2.2. Convergence of Agreement

The convergence to the agreement with the expert judgment evaluates the questionnaires professionally and they evaluate the relevant items and reject the items which seem trivial or which was not valid and relevant. All the experts agreed on six items on psychological challenges and nine items on support services. We all agreed on the items which are relevant and address the challenges of the boarding school and the support services which implemented in boarding school environment.

Table 7: Likert scale analysis through Exploratory and Confirmatory Factor Analysis

Pattern Matrix[a]

	Factor				
	1	2	3	4	5
I wish I had stayed with my family and learned at the nearby school.	.649				
I feel homesickness when I am in bed at this new school.	.637				
Sometimes, I find myself overwhelmed by feelings of isolation and a strong desire to be with my family.	.467				
I could not sleep in the absence of my parents' attachment for the last 12 months.	.402				
I miss my family and it is challenging for me to focus on my academic task.	.551				
I am offered the provision of tutoring and study groups in the class.		.674			
I am offered in an academic counseling to be successful and excel in my studies.		.574			
I have the opportunity to access guidance and counseling services in this school.		.545			
I blame my parents for facing such challenges			.998		
Teachers give me support when I feel homesickness in the school.				.676	
My school counselling and guidance office supports me.				.355	
Having a discussion about any problem with friends is very easy.					

It is difficult to get help form the school counseling and guidance office.	
I and my friends get the Access to healthcare facilities and medical professionals to address our health needs.	.837
I have got the opportunities to participate in extracurricular activities like; sports, arts, clubs, and the like.	.585

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

3.2.3. Factor Structures

A factor structure (FS) is the correlational relationship between a numbers of variables that are said to measure a particular construct (Brooks et al., 2006). The psychometric analysis does not allow us to support the original uncorrelated structure of the psychological challenges and support services according to the newly opened government boarding school context. Therefore, despite a great improvement and sound psychometric properties are observed when factors are allowed to correlate. In FS conspicuously identified the components of psychological challenges and support services. Thus the items which is identified above means, it keeps its psychometric properties, it has sound psychometric properties. This means that, an instrument which is reliable, valid and an instrument with its factor structure is clearly articulated. Therefore, all analysis of this study is depend on the psychometric analysis.

Two basic forms of factor analysis were conducted. Exploratory Factor Analysis (EFA) was conducted to explore the existence of the factor structures for psychological challenges and support services. Exploratory Factor Analysis with Varimax Rotation1was used to extract the factor solutions. Its ultimate goal was to come up with a pattern matrix where acceptable values of KMO, factor loadings, and factor correlation matrix, etc. are satisfied. Varmax Rotation with Kaisar Normalization, and Maximum Likelihood Estimation (MLE) and an absolute value of the standardized factor loading of greater than 0.4 was set to run the analysis. Maximum Likelihood Estimation helps to estimate parameters for a model and specify explicitly of the expected relations between the factors and the endogenous variables. Varimax rotation as a statistical technique in the factor analysis helped to clarify the relationship among factors, simplifies the loadings of items by removing the middle ground and more specifically identifying the factor upon which data load. The following table indicates the Varmax Rotation with Kaisar Normalization, and Maximum Likelihood Estimation loading.

Table 8: Results from exploratory factor analysis of Psychological challenges and support services

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
PsyCh1	.733				
PsyCh2	.754				
PsyCh3	.698				
PsyCh4					.808
PsyCh5					
PsyCh6	.643				
SUPSR1		.732			
SUPSR2		.644			
SUPSR3		.662			
SUPSR4			.807		
SUPSR5			.754		
SUPSR6				.529	
SUPSR7					
SUPSR8				.812	
SUPSR9		.514			

Extraction Method: Principal Component Analysis. (PsyCh=Psychological Challenges, SUPSR=Support Services.)
Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations.

The Scale has two components special boarding school psychological challenges and support services. The Exploratory Factor Analysis resulted in five interpretable factor structures. The psychological challenge component of the students' construct was split into two factors. Thus, additional factors are created from the original factor (Informal helping). The items were thematically synthesized and named to represent. The psychological challenges have two components adolescents' homesickness and emotional psychological stress. The Exploratory Factor Analysis resulted in two interpretable factor structures. The psychological challenges and support services construct were split into two factors.

3.2.4. Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was conducted in order to confirm the factors identified through the Exploratory Factor Analysis. CFA confirmed the internal cohesiveness and structure

of the instruments and provided evidence that the measures have construct validity. Further, it tested the hypothesized measurement model and confirmed the generalizability of the model-structural equation modeling for the main study.

Table 9: Indipendance model RMR, GFI

Model	**X^2**	**RMR**	**GFI**	**AGFI**	**PGFI**	**RMSEA**
Default model		.224	.848	.646	.364	.167
Saturated model		.000	1.000			
Independence model	85.025	.320	.742	.639	.530	.182

Four model fit indices were used to test the general model adjustment. In order to assess the fitness of the model to the data, most researchers recommend the five Model indices namely Model Chi-Square (CMIN), The (Adjusted) Goodness of Fit (AGFI), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), and The Root Mean Square Error of Approximation-RMSEA (Byrne, 2013). CMIN/DF should be < 5, while AGFI, GFI, and CFI should be > .9 and RMSEA should be < .08 (Demir, 2022). According to (Hair et al., 2012), if any 3-4 of the Goodness-of-Fit indices are within the threshold, then the fitness of the entire model is regarded as acceptable.

The measurement model illustrated in Figure 1 includes six items selected from a total of fifteen items related to psychological challenges. Each of these items was chosen due to its significant contribution to the psychological challenges faced by adolescents in boarding schools, as evidenced by their high loading coefficients exceeding 0.4. Consequently, these six items serve as indicators for the latent factors of psychological challenges, specifically identified as homesickness and emotional anxiety which represent the first and second factors, respectively.

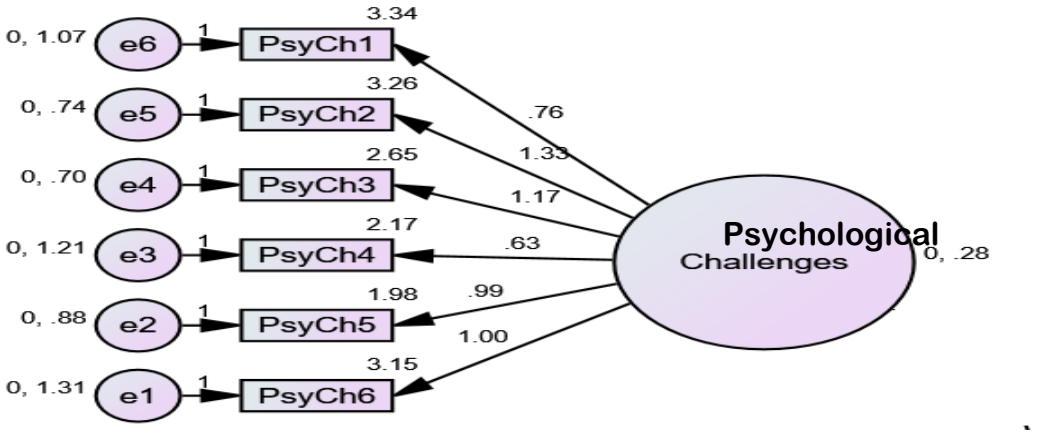

Figure 1: Structural model for CFA on psychological challenges

The measurement model presented in Figure 2 features nine items chosen from a comprehensive set of fifteen items related to support services. Each item was selected due to its considerable role in enhancing the support services provided by ONRS special secondary boarding schools, as evidenced by their loading coefficients, which surpass 0.4. Therefore, these nine items are recognized as indicators of the latent factors, with the factors identified in the order of school counselor, extracurricular activities, and teacher peer support as the first, second, and third factors, respectively.

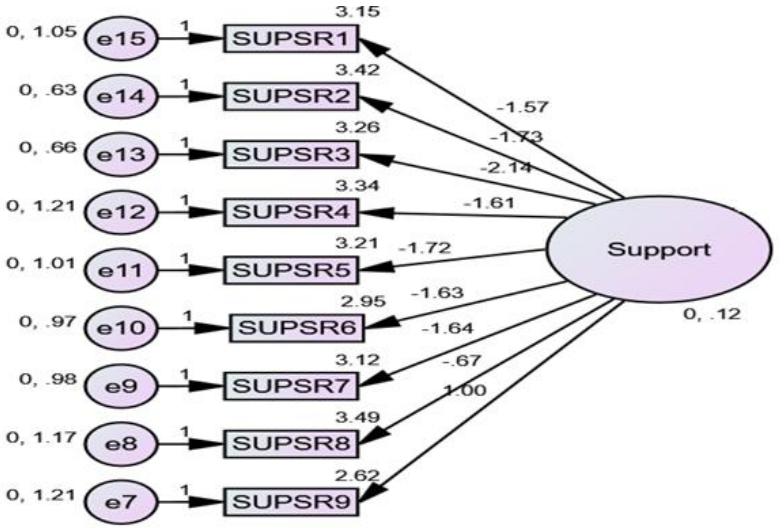

Figure 2: Structural model for CFA on support services

4. Discussion

This study examined the psychometric properties of psychological challenges and support services in a sample of special secondary boarding schools of ONRS in Ethiopia. The validation of the tool within the context of Ethiopian government special boarding schools is crucial for enhancing the support provided to students, teachers, and researchers. This process will significantly contribute to the advancement of educational practices aimed at promoting the psychological well-being of students and improving the overall experience for those attending boarding schools in Ethiopia. Different researchers have used the psychometric tools by adopting and validating them in their own contexts (Weiner et al., 2017); and Olana and Tefera, 2021). As a result, the findings of this research will likely encourage the adoption of the scale in a special boarding school setting.

The researcher engaged in this area of research has indicated that the psychological challenge exhibits an internal consistency coefficient of 0.710, falling within the widely recognized acceptable range of 0.6 to 0.9 for measures of internal consistency. (Olana & Tefera, 2021; Paiva et al., 2014).The internal consistency level of the support services is measured at 0.712, a figure that is considered acceptable within the context of this type of assessment. This research evaluated the original Cronbach's alpha value of the item against this level, which also resides within the acceptable limits. Other studies focused on the adoption and validation of items have yielded similar results. The internal consistency results were reported. The findings of this study suggest that the psychometric measurement demonstrates strong reliability coefficients across various sample data collected from respondents representing students from socio-culturally diverse population, as incorporated by the present research. Consequently, the reliability of the psychometric measurement items has proven to be effective for application in psychological challenges and support services within the boarding school context.

The result of this study indicated that the psychometric measurement items have good construct validity, which was tested in terms of convergent and discriminant validity tests. The evaluation of convergent validity for the psychometric measurement items associated with challenges faced in boarding schools indicated a notable positive correlation ($r = 0.50^{**}$, $p < 0.00$). This outcome substantiates the assertion that these measurement items exhibit good convergent validity. Additionally, a validation study by Belay & Tefera, (2022) reported a similar finding, with a

correlation of r = 0.782** (p < 0.01) between psychological challenges and the satisfaction of boarding students, a result that was replicated in the present research. The positive outcomes of constructive validity tests conducted across multiple studies affirm the appropriateness of the revised adjustment scale for use with students from different socio-cultural backgrounds, aimed at evaluating the quality of marital relationships among adolescents enrolled in special secondary boarding schools.

The results obtained from the current exploratory factor analysis substantiate the identification of two core factors within the scale, consistent with the earlier proposed model by (Desbalo et al., 2024). Furthermore, this two-factor configuration of the psychometric assessment tool has been affirmed in various other studies. (Dawkins et al., 2013; and Devon et al., 2007). Moreover, this confirmatory factor study analysis result (Chi−square = 98.153, DF = 60; x2DF = 1.670, GFI = 0.814, AGFI = 0.646, and RMSEA = 0.182) confirmed satisfactory model fitness to the sample data with all the goodness of fit indices at acceptable values. As a result, the exploratory factor analysis (EFA) has confirmed that the two identified factors are consistent with the data from the current sample. Additionally, confirmatory factor analysis has shown that the model, which includes two correlated components, exhibits a favorable statistical fit with the data from previous studies on adoption and validation (Devon et al., 2007; Isanejad et al., 2012). These findings suggest that the assessment of marital relationship quality can be effectively applied in contexts beyond the original development environment, utilizing sample data collected through adoption and validation from respondents hailing students from different socio-cultural backgrounds.

5. Conclusion and Recommendations

The findings from the present study on psychological challenges and support services, along with the validation results, emphasize the scale's commendable psychometric properties, particularly regarding reliability and both content and construct validity. This affirms the scale's capability to consistently measure the underlying latent construct among participants whose academic status is the focus of the research. Furthermore, the satisfactory loadings of the psychological challenges and support services items to their respective subscales psychological challenges and support services validate the originally proposed factor structure. In light of these results, it is suggested that educational researchers, stakeholders, and the OEB secondary boarding school context employ the psychological challenges and support services scale to assess adolescents'

psychological wellbeing and support services. The exploratory factor analysis indicated that all items had significant coefficients which are greater than 0.5, justifying their inclusion in the scale. Additionally, the validation process utilized data from boarding school students in the Oromia National Regional State (ONRS), highlighting the need for future researchers to test the scale in other government and private boarding schools to find out its reliability and validity in those boarding school environments.

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