Approaches to Learning Questionnaire: Checking Context-specificity

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Abstract

Students' Approaches to Learning (SAL) have been widely assessed using a range of established instruments. In the early phase of the current research conducted in the Democratic Republic of Congo (DR Congo), one of the well-known classical instruments was employed. However, the results indicated concerns regarding its validity and reliability within the Congolese context. This prompted the development of a more contextually appropriate tool. As a result, the Approaches to Learning Questionnaire (ALQ) was specifically designed for use in the DRC. While the ALQ was tailored to reflect local educational realities, its core dimensions remain closely aligned with widely recognized constructs in the broader SAL literature. This conceptual alignment suggests that the ALQ may have broader applicability beyond its original context. To explore this potential, the current study examines the psychometric properties and validity of the ALQ within a Belgian educational setting. By evaluating its structural integrity, reliability, and construct validity, this research aims to assess the ALQ's transferability and its potential as a robust instrument for measuring students' learning approaches across diverse educational environments.

Keywords: students approaches to learning, questionnaire validation, questionnaire reliability, questionnaire validity, cultural validity, studying in group

1. Introduction

Since the work of Marton and Säljö (1976, 1984), Students' Approaches to Learning (SAL) have attracted ample research attention for several decades (Fryer & Vermunt, 2018; Rozgonjuk et al., 2020). SAL describe the way people approach learning tasks in terms of the combination of intentions and strategies (Biggs 1987; Biggs et al., 2001; Marton & Säljö 1976). Although born of phenomenological research, learning approaches were soon explored using questionnaires (Biggs, 1987; Entwistle & Ramsden, 1983). Among the instruments developed to investigate students' approaches to learning at a more general level (Biggs, 1987; Entwistle & Ramsden, 1983), the Approaches to Studying Inventory (ASI) and the Study Process Questionnaire (SPQ) and their revised versions are the most prominent (Biggs, 1987; Dedos & Fouskakis, 2021; Entwistle & Ramsden, 1983; Entwistle et al., 2013; Malinakova, 2022; Pérez-de-Castro, 2020; Smarandache et al., 2022). In general, the mentioned instruments assess SAL in terms of deep, surface and achieving which is also referred to as strategic approach. This specific approach is not included in the revised and shorten version of the SPQ (R-SPQ-2F) (Biggs et al., 2001). In general, students relying on deep approach search for the understanding of the course materials and their strategies are supported by their intrinsic motives while those relying on the surface approach focused on memorization and the extrinsic motives sustain their learning (Entwistle et al., 2013; Parpala et al., 2022).

Numerous studies in Western and non-Western contexts have validated instruments designed to measure SAL (Fryer et al., 2012). However, the assumption of universal applicability embedded in these instruments has been sometimes challenged (Kapinga-Mutatayi et al., 2018; Xie, 2014).

In the Democratic Republic of Congo (DR Congo) for instance, the use of the R-SPQ-2F, originally developed in a Western educational context, revealed limitations in terms of reliability and validity (Kapinga-Mutatayi et al., 2018). The instrument, failed to adequately capture the nuances of student learning behaviors in the Congolese context. This

gap prompted the development of a contextually grounded instrument: the Approaches to Learning Questionnaire (ALQ) (Kapinga-Mutatayi, 2018; Kapinga-Mutatayi et al., 2023).

In addition to integrating the studying in group as a new dimension in SAL, the ALQ assesses both understanding and memorizing intentions within each scale (Kapinga-Mutatayi et al., 2023). In this perspective, the ALQ seems to be aligned with the empirical evidence about a continuum representation of both deep (understanding) and surface (memorization) approaches. In other words, the continuum suggests a variety of combinations of understanding and memorization (Haarala-Muhonen et al., 2017; Kapinga-Mutatayi et al., 2023; Parpala et al., 2022; Vlachopanou et al., 2022). Moreover, the ALQ scales relate to established learning constructs (Kapinga et al., 2023).

Given the psychometric quality of the ALQ, its (di)similarities with existing instruments and its conceptualization of SAL, it was hypothesized that the ALQ might also be relevant beyond its original context. This paper therefore answers an important question: Can a context-specific instrument such as the ALQ retain its relevance when applied in a different setting? This study aims to explore that question by examining the psychometric properties and construct validity of the ALQ in a Belgian context. By reporting on confirmatory factor analysis and internal consistency procedures. we seek to assess the transferability of the ALQ and to contribute to a broader dialogue on the balance between contextual specificity and theoretical generalizability in educational research. This paper introduces an additional empirically validated instrument for the assessment of SAL, with a particular focus on studying in group which appears to be meaningful in both the DR Congo and Belgium. The theoretical section of the paper reviews the concept of SAL. The methodology section details the data collection procedures and the confirmatory factor analysis undertaken. The subsequent sections present and critically discuss the findings, which are then synthesized in a concluding section.

2. Theoretical Background

2.1 Approaches to Learning: Concept and Instruments

The seminal work by Marton and Säljö (1976) investigated not only how students engage with an academic text, but also how they typically learn. They found that students rely on deep and surface approaches (Biggs et al., 2001; Entwistle et al., 2013). Learning approaches were conceptualized as an association of both strategies and intentions (Biggs et al., 2001; Han & Geng, 2023). Since then, researchers have generally described SAL in terms of deep approaches, surface approaches, and strategic approaches (Biggs et al., 2001). Deep learning approaches refer to the search for understanding the underlying meaning of the content, the elaboration of the content and of the structure (Alt & Boniel-Nissim, 2018; Azewara et al., 2021; Hu & Yeo, 2020; Lindblom-Ylänne et al., 2019; Omar, 2021). On the other hand, Surface approach is characterized by a focus on rote memorization and minimal effort, typically driven by the desire to meet assessment requirements without deeper comprehension (Alhammadi, 2021; Chue, 2022; Lindblom-Ylänne et al., 2019; Zilundu et al., 2022). In the same line, there is an agreement on a third group of approaches called achieving or strategic approaches which refer to maximizing grades through organized learning and time management (Biggs et al., 2001; Nieminena et al., 2021). Some researchers refer to this approach as "organized learning" or "effort management" (Haarala-Muhonen et al, 2017; Lindblom-Ylänne et al, 2019).

It seems important to mention that along with these conceptual developments of SAL, there has been a subsequent development of instruments. The most widely used instruments are the Approaches to Studying Inventory (ASI) and the Study Process Questionnaire (SPQ) and their revised versions (Biggs, 1987; Entwistle & Ramsden, 1983). More recently, Kapinga-Mutatayi and colleagues (2023) have developed the Approaches to Learning Questionnaire (ALQ) in the DR Congo. Unlike traditional instruments, the ALQ captures both memorization and understanding intentions and includes studying in group as a specific approach to learning, alongside elaborative studying, studying by testing, and receptive studying.

2.2 Approaches to Learning and Cultural Contexts

SAL has been shown to be influenced directly by personal variables (age, gender, previous approaches, and performance) and indirectly by contextual variables (teaching approaches, teacher, assessment, and course materials) (Fryer & Vermunt, 2018; Rozgonjuk et al., 2020; Sarpon et al., 2020). In fact, students' perceptions mediate the relationship between contextual variables and SAL (Postareff et al., 2018).

The literature characterizes SAL as encompassing both stability and change (Lietz & Matthews, 2010; Zilundu et al., 2022). For example, at the individual level, Postareff et al. (2018) identified strategic approaches as relatively stable, while deep and surface approaches tend to vary significantly. In contrast, Lietz and Matthews (2010) emphasized the stability of SAL when the context, the task perceptions and the assessment demands remain consistent. Zilundu et al. (2022) offered a more balanced perspective, viewing SAL as adaptable and modifiable depending on the task, despite

its potential for stability (Delgado et al., 2018; Zilundu et al., 2022). These findings indicate that variations in SAL are associated with both personal and contextual factors. Moreover, SAL exhibits context-specific characteristics, with notable variations across educational settings and cultural contexts (Zilundu et al., 2022). Its cultural sensitivity has increasingly become a focal point of empirical research.

SAL as a contextual variable has been studied by researchers for decades (Bonsaksen et al., 2017; Bonsaksen et al., 2020; Brown et al., 2017; Zilundu, 2022). Most studies have assessed the learning approaches of students from different cultural backgrounds either by measuring students' scores on the SAL questionnaire and/or by correlating these scores with their academic outcomes (Bonsaksen et al., 2017; Bonsaksen et al., 2020; Brown et al., 2017; Mørk et al., 2024; Zilundu, 2022). In the former line of research, the work of Brown et al. (2017) can be mentioned. They assessed SAL using the ASSIST, a revised version of the ASI. The sample consisted of students from Australia, Hong Kong, Norway and Singapore. A one-way analysis of variance (ANOVA) revealed significant differences in surface approaches between Hong Kong and Norway, and between Australia and Hong Kong. There was also a significant difference in strategic approaches between Australia and all other countries. On the other hand, no significant differences were found between the four countries in terms of deep approaches. These findings suggest that while deep approaches to learning appear relatively stable across cultural contexts, surface and strategic approaches demonstrate notable variability, underscoring the influence of contextual and cultural factors on students' approaches to learning.

Regarding the relationships between SAL and students' grade point averages (GPA), Bonsaksen et al.'s (2020) study with samples from the four countries mentioned above found that low scores on deep approaches and high scores on strategic approaches were associated with higher GPA within the Hong Kong sample. Within the same group, high scores on strategic and low scores on surface approaches were associated with higher GPA. Conversely, no relationship was found between SAL scores and students' GPA when considering the total sample, when considering samples from Australia, and when comparing samples from Australia and Singapore. However, it should also be mentioned that three years earlier, Bonsaksen et al. (2017) found an association between 5 of the 13 ASSIST dimensions and students' GPA when considering the samples from the four countries as a whole.

Furthermore, Bonsaksen and colleagues (2017) examined the factor structure of the ASSIST questionnaire using samples from Australia, Hong Kong, Norway, and Singapore. Their analysis largely supported the original three-factor model of the instrument. However, a deviation was observed in the Hong Kong sample, where certain subscales associated with the strategic approach (e.g. Interest in ideas and Use of evidence) loaded more strongly onto the deep approach factor. This finding suggests that the traditional three-factor structure may not be fully applicable in this context, lending support to prior studies advocating for a two-factor model of the ASSIST. In a similar line of research, Leung et al. (2008) cross-culturally validated the Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) with samples from Hong Kong (representing an Eastern context) and Australia (representing a Western context). Using confirmatory factor analysis, they found that the same two-factor structure—comprising deep and surface approaches—was supported across both cultural groups. These results suggest that students from differing cultural backgrounds may exhibit similar underlying learning approaches.

Variation and stability across cultural contexts were also found in the study of the factor structure of ASSIST across cultural samples from the same countries (Bonsaksen et al., 2019). Bonsaksen et al. (2019) confirmed the 3-factor structure of the questionnaire, while they also noticed quite a difference between the structure emerging from the Australian and Hong Kong samples.

Differences between cultures were also noticed in studies concerning relationships between SAL and performance (Bonsaksen et al., 2020). Bonsaksen et al (2020) examined the ASSIST scores of students from the four countries mentioned above and their grade point averages (GPA). The results showed that low scores on deep approaches and high scores on strategic approaches were associated with high GPA within the Hong Kong group, while high scores on strategic approaches and lower scores on surface approaches were associated with higher GPA. However, between the Australian and Singaporean samples, as well as when considering the total sample, no relationship was found between SAL and their GPA. Conversely, Bonsaksen et al (2017), considering the sample from the four countries together, indicated that students' scores on 5 out of 13 ASSIST dimensions were associated with their GPA**.** This suggests that SAL, as well as its relationships with learning outcomes, can vary across contexts.

From the studies mentioned here, it can be seen that students' scores on SAL dimensions, the factor structure of the questionnaire assessing SAL, as well as the relationships between SAL and students' performance can vary across cultural contexts (Fryer et al., 2012; Kapinga et al., 2017; Richardson, 2004). Similarly, researchers have come across an intermediate approach to learning (combination of memorization and understanding) that is particularly prevalent among Asian students. This approach has been used to explain the so-called "Chinese paradox," wherein students

appear to adopt surface strategies such as rote memorization while still achieving high academic performance (Fryer & Vermunt, 2018; Parpala et al., 2022; Zilundu et al., 2022). Indeed, Asian students rely on both understanding and memorization either simultaneously or sequentially, which may explain why they outperform Western students in international assessments (Kember, 2016).

Such a combination has not been explicitly considered in traditional instruments, despite empirical evidence and recalls from researchers for such an instrument (Fryer et al., 2012; Kapinga-Mutatayi et al., 2018; Tan, 2011). In order to fill the gap, Tan developed an understanding and memorizing scale when developing the Malaysian version of the SPQ (Tan, 2011). In the same vein and more recently, Kapinga -Mutatayi and colleagues (2023) constructed Approaches to Learning Questionnaire (ALQ) in a DR Congo context (Kapinga-Mutatayi, 2018; Kapinga-Mutatayi et al., 2023). The ALQ captures both understanding and memorizing intentions. In addition, the questionnaire includes studying in group as a specific dimension among others (elaborative studying, studying by testing, and receptive studying). The ALQ was first piloted and then validated in a Congolese context (Kapinga-Mutatayi, 2018; Kapinga-Mutatayi et al., 2023). From this perspective, the questionnaire could be considered as a context-specific instrument. However, such a hypothesis needs to be confirmed with samples from non-Congolese contexts. The present paper focuses on the use of the ALQ with a large Belgian sample from the Université Catholique de Louvain/ Louvain -la-Neuve (UCL/LLN). In other words, the current paper examines the stability of the factor structure of the ALQ in a new cultural context. To this end, the following questions will be answered: ‘Are the ALQ scales reliable in a Belgian context?’, ‘What structure underlies the ALQ-based data in the Belgian context?’.

3. Method

3.1 Overall Design

Data were collected from a sample of Belgian students. To validate the Approaches to Learning Questionnaire (ALQ) in this context, confirmatory factor analysis (CFA) was conducted to assess both its validity and reliability. Validity refers to the extent to which the questionnaire accurately measures the constructs it is intended to assess, while reliability pertains to the consistency of the instrument under similar conditions (Field, 2009; Herrmann et al., 2017). In this perspective, internal consistency was evaluated using Cronbach’s alpha (via SPSS), and model fit was assessed using indices derived from the AMOS software.

3.2 ALQ Adaptation: Pilot Study

The ALQ was originally developed in the Democratic Republic of Congo (DR Congo), a French-speaking context similar to Louvain-la-Neuve (LLN). However, cultural nuances may affect the interpretation of certain terms. To ensure the instrument’s relevance and clarity for Belgian students, it was piloted using cognitive interviews (Bryman, 2012). A sample consisting of six first-year Master’s students in Educational Sciences and two members of a research team from LLN were recruited to complete the ALQ. Upon completion, participants were asked to provide feedback on their general understanding of the questionnaire, how long it took them to complete it, and on the difficulties, they encountered during the process, including any terms they found confusing or potentially ambiguous. Several team members identified terms that might not carry the same meaning in the new context. A meeting was then held to discuss the feedback and propose revisions. Based on these discussions, and on the suggestions from an expert, some items were revised (Willis, 2004; Willis & Artino Jr., 2013). For example, ‘ainé scientifique’ (scientific elder) was changed to ‘collègues de classe supérieure '(colleagues from a higher class).

3.3 Instrument

The ALQ, as adapted during the pilot study, was used to collect data. The ALQ was initially constructed in 2018 in a Congolese context (Kapinga-Mutatayi, 2018). A total of 23 items make up the four scales of the ALQ: studying in group (SG) (N=10, α=.94), elaborative studying (ES) (N=5, α=.88), studying by testing (ST) (N=5, α=.86) and receptive studying (RS) (N=3, α=.82). All items are in French, the official language of DR Congo (The French version of the entire questionnaire can be provided by the authors upon request.). The answers are given in a 5-point Likert format, ranging from 1 (this item never applies to me) to 5 (this item always applies to me).

The table 1 presents a sample of items.

Table 1. ALQ scales and Sample of items

Scales	Items
Studying in group	To understand the content, we meet each other and solve exercises
ElaborativeStudying	To understand and memorize, I synthesize materials
Studying by testing	To make sure that I memorized well the content, someone asks me questions
ReceptiveStudying	To understand and memorize, I simply read materials

The Approaches to Learning Questionnaire (ALQ) was developed through empirical research and analysis of student discourse in the DR Congo. It comprises four theoretically grounded dimensions: Studying in Group, Elaborative Studying, Studying by Testing and Receptive Studying (Kapinga-Mutatayi, 2018; Kapinga-Mutatayi et al., 2023).

Unlike existing instruments, the ALQ integrates both the intention to understand and to memorize within individual items and examines Studying in Groups as a distinct approach to learning. Studying in Group reflects collaborative and student-centered learning, and introduces a social dimension to SAL (Azewara et al., 2021; Wijaya et al., 2022). Elaborative Studying emphasizes cognitive strategies such as summarizing and synthesizing content to construct broader understanding. This dimension is aligned closely with the traditional deep approaches learning (Schweder et al., 2019). Studying by Testing refers to student assessment of their own knowledge to support understanding and/or memorizing. This dimension encompasses metacognitive strategies, notably the testing effect and self-assessment processes (Jensen et al., 2020; Wijaya et al., 2022). Receptive Studying, on the other hand, is characterized by simple reading for understanding, memorizing or for a combination of both, which helps students gain a general idea or recall what they have already learned. Receptive Studying denotes more passive learning behaviors, which are typically associated with surface approaches (Kapinga et al., 2023; Parpala et al., 2022).

3.4 Participants

A total of 440 students from the Faculty of Psychology and Educational Sciences at UCLouvain (Louvain-la-Neuve) voluntarily completed the online questionnaire after receiving an invitation via email. To reduce the influence of outliers, questionnaires completed in less than 10 minutes were excluded (Field, 2009). This screening resulted in a reduced sample of 370 students. Furthermore, only fully completed questionnaires were included in the current analysis (listwise deletion) (Field, 2009). Thus, the final sample (N = 366) comprised 314 females (85.8%), 51 males (13.9%), and one participant who did not specify their gender. Participants' ages ranged from 17 to 52 years, with a mean age of 19.71 years.

3.5 Procedure

Three members of the research team met with first year psychology students during a research methods class. The aims of the research and the procedures for completing the online questionnaire were explained to the students during the information session. The questionnaire was considered part of the practical work in the methodology course and was worth 0.5 points. The link to the online questionnaire was sent to the students' email addresses. Their answers were stored in the Qualtrics program, which supports online questionnaires. Some background questions were also included (name, gender, age, field of study in secondary school, grade of secondary school in general, year of study).

3.6 Data Analysis

The pilot study established the structure of the Approaches to Learning Questionnaire (ALQ) (Kapinga-Mutatayi, 2018). To evaluate its validity, a confirmatory factor analysis (CFA) was conducted through AMOS 2024 software (Field, 2009). Due to the sensitivity of CFA to missing values, cases with missing data were removed, reducing the sample size from N = 370 to N = 366. Two competing models were tested to determine the optimal structure (Field, 2009; Jackson et al., 2009; Tavakol & Dennick, 2011): a unidimensional model, grouping all 23 items into a single factor—based on observed correlations between ALQ dimensions—motivated by observed correlations between ALQ dimensions—and a four-factor model, reflecting four distinct scales: studying in groups, studying by testing, elaborative studying, and receptive studying (Kapinga-Mutatayi, 2018).

Model fit was evaluated using a two-index strategy, integrating the Standardized Root Mean Square Residual (SRMR) and the Comparative Fit Index (CFI) to minimize Type I and Type II errors (Hu & Bentler, 1999). Additionally, maximum likelihood (ML) estimation was employed, following established recommendations (Biggs et al., 2001). A good model fit was defined by CFI values above 0.95 and SRMR values below 0.08 (Hu & Bentler, 1999).

In a confirmatory framework, modifications may be necessary to enhance model fit (Jackson et al., 2009; Tavakol & Dennick, 2011). To refine the model, results were examined against theoretical expectations and statistical indicators, including factor loadings, residual covariances, and modification indices generated by AMOS (Hu & Bentler, 1999). The final CFA model provided scores reflecting these statistics and correlations between scales.

Once the model demonstrated adequate fit, internal consistency was assessed using Cronbach's alpha. Values above 0.70 indicated scale reliability (Field, 2009; Tavakol & Dennick, 2011). Given that responses were collected using Likert-type items ranging from 1 (never agree) to 5 (totally agree), scale descriptives—including means and standard deviations—were calculated using SPSS 21.

4. Results

4.1 Confirmatory Factor Analysis: Goodness of Fit Test

Two models were tested, as previously mentioned. The first, a unidimensional model, grouped all items into a single factor based on observed correlations. The second, a four-factor model, reflected the structure of the ALQ (Kapinga-Mutatayi, 2018). To evaluate goodness of fit, the Standardized Root Mean Square Residual (SRMR) and the Comparative Fit Index (CFI) were calculated (Hu & Bentler, 1999). The results of these analyses are presented in Table 2.

Table 2. Adjustment of data to models

Models	SRMR	CFI	Conclusion
1 factor model	.18	.46	Poor
4 factor model	.08	.88	Acceptable

The indices of the first 1-factor model (SRMR = .18 and CFI = .46) show that the model is poor and cannot describe the data on the basis of the convention (SRMR < .08 and CFI > .95) (Hu & Bentler, 1999). The second model had an SRMR of .08, which is above but close to the recommended cut-off value (SRMR< .08 and CFI > .95) (Hu & Bentler, 1999), on the other hand, the CFI of .88 is below the conventional cut-off value (Hu & Bentler, 1999; Marsh et al., 2004). Therefore, the 4-factor model is considered as an acceptable model, which needs to be revised to improve, while the first one is rejected.

It seems essential to mention that modifications are made in a confirmatory perspective (Kenny, 2012) and also through the consideration of AMOS suggestions in relation to residual covariances and factor loadings and through the consideration of theories (Hu & Bentler, 1999). In this respect, two items Appr28 (To make sure I've memorized well, someone asks me questions) and Appr45 (To make sure I've understood and memorized well, someone asks me questions), belonging to learning by testing, have low factor loading values and high value in terms of standardized residual covariances (>8) between both items and also between each of them and the other items (Brown, 2015).

These two items were dropped. The revised model showed improved fit indices. This can be seen in Table 3.

Table 3. Adjustment after revision of the 4-factors model

Model	SRMR	CFI	Conclusion
4 factor model	.04	.95	Perfect

Table 3 shows that the goodness of fit has improved significantly (SRMR= .04 et CFI= .95). It can therefore be concluded that the 4-factor model provides a good fit according to convention (SRMR < .08 and CFI > .95) (Hu & Bentler, 1999). Moreover, all loadings and estimations are significantly positive. All the CRs values are below the minimum value of 2.58 (Brown, 2015; Cortina, 2002). However, only the covariances between studying in group and studying by testing on the one hand and between elaborative studying and studying by testing on the other hand were found to be significant.

The following figure shows the final model resulting from the CFA.

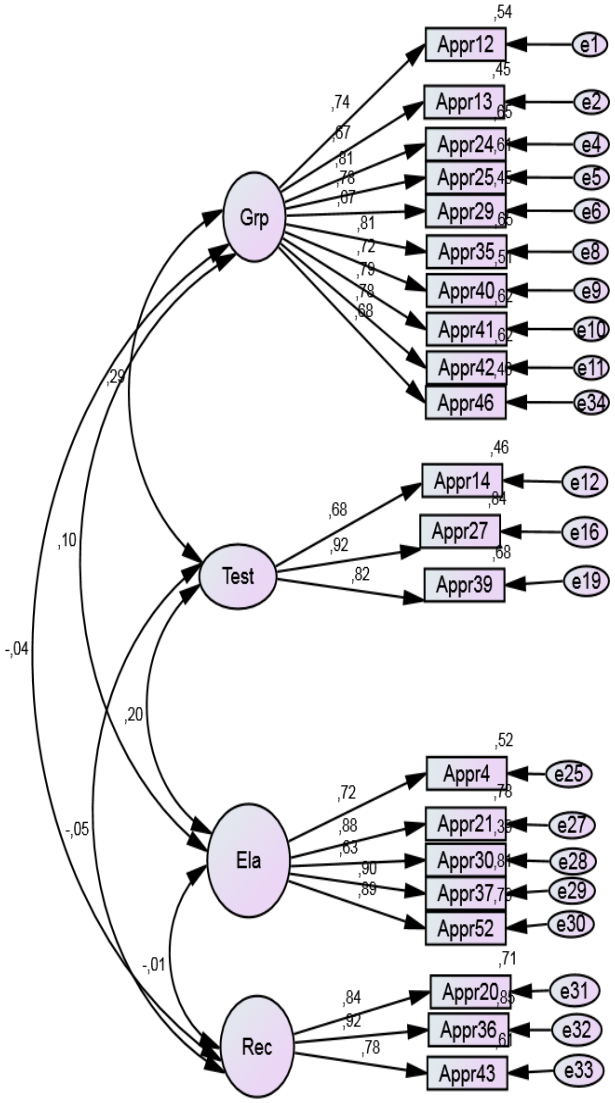

Figure 1. Confirmatory model ALQ

Note. Grp = Studying in group. Test = Studying by testing. Ela = Elaborative studying. Rec = Receptive studying

Overall, the ALQ in the context of the LLN, represents a four-factor questionnaire measuring studying in group (10 items), elaborative studying (5 items), studying by testing (3 items), and receptive studying (3 items).

4.2 Internal Consistency of Scales and Descriptive Statistics

The internal consistency of the revised scales was assessed by the means of the Cronbach alpha coefficient. Table 4 displays the descriptive statistics (Means, Std. Deviation and number of items) and the alpha of Cronbach's values.

Table 4. Means, StD Deviation and alpha of Cronbach coefficient

Scales	Means	Std. Deviation (SD)	α	Items (N)
Studying in group	26.90	9.88	.92	10
Elaborative Studying	19.08	5.04	.90	5
Studying by testing	10.27	3.42	.84	3
Receptive Studying	9.37	3.48	.88	3

The results in Table 4 show Cronbach's alpha values above the conventional .70 for all four scales (Field, 2009). The ALQ is therefore a reliable and robust instrument for assessing SAL in the Belgian context (Field, 2009; Tavakol & Dennick, 2011).

The mean scores suggest that students highly rely on studying in a group and on elaborative studying. They engage less in studying by testing and receptive studying approaches.

5. Discussion

5.1 Relations between Scales

The results of the study confirmed that the ALQ is a valid and reliable instrument for assessing SAL in the context of LLN that differs in multiple respects from the original. It seems essential to mention that the ALQ uses significant educational concepts to conceptualize SAL (Kapinga-Mutatayi et al., 2023). Despite their specificities, the three dimensions (studying in groups, elaborative studying and studying by testing) seem to be associated with the traditional deep and strategic approaches to learning (Kapinga-Mutatayi et al., 2023) while the receptive studying was somewhat associated with traditional surface approaches (Kapinga-Mutatayi et al., 2023).

In the same line, positive covariances can be seen between the three (studying in group, elaborative and studying by testing) and the negative covariances between Receptive Studying and each of the other three factors, as shown in Figure 1. Similar results were found during the ALQ validation study in Kinshasa (Kapinga-Mutatayi et al., 2023). So, the findings suggest specific characteristics of the ALQ dimensions, particularly Receptive Studying. In fact, this dimension requires less effort from students, which may not apply to all students to the same extent. Therefore, it is essential to further analyze the relationships between the ALQ dimensions using cluster analysis for instance.

5.2 Reliability and Validity

The Cronbach's alpha values of the ALQ scales (Studying in a Group: α = .94; Studying by Testing: α = .88; Elaborative Studying: α = .87; and Receptive Studying: α = .79) confirmed that the ALQ is a reliable instrument in the context of Louvain-la-Neuve. These values are very close to those resulting from the ALQ validation in Kinshasa. In fact, the Cronbach's alpha values found were .92, .90, .84 and .88, respectively relating to Studying in group, Studying by testing, Elaborative Studying and Receptive Studying (Kapinga-Mutatayi et al., 2023). Therefore, the ALQ can be used to assess SAL in the Louvain-la-Neuve context.

To test the validity of the ALQ, confirmatory factor analysis was used to test both a single-factor model and a four-factor model (Studying in groups, Studying by testing, Elaborative Studying and Receptive Studying). The former was based on item correlations, while the latter was based on the original ALQ structure obtained from the pilot study (Kapinga-Mutatayi, 2018). The unidimensional model appeared to be a poor fit (SRMR = .18 and CFI = .46), whereas the four-factor model appeared to be a perfect fit (SRMR = .04 and CFI = .95) after two items were deleted from the Studying by Testing scale. These two items (1. To make sure I've memorized well, someone asks me questions; 2. To make sure I've understood and memorized well, someone asks me questions) had low factor loading values and high standardized residual covariances (>8). These items were also deleted during the Kinshasa validation study for the same reasons (Kapinga-Mutatayi et al., 2023).

In fact, compared to the remaining three items, the two items in question involved testing knowledge via a third party, whereas the remaining items related only to an individual or self-testing. Nevertheless, deleting items increases the validity of the scales during confirmatory analysis. Several researchers rely on this process for a variety of reasons. For instance, Fryer et al. (2012) removed four items when validating the Study Process Questionnaire (SPQ), whereas Bliuc et al. (2011) deleted ten items from the same tool. Therefore, it is worth noting that the CFA results confirm that the ALQ is a valid 21-item instrument.

These findings are in connection with studies that have assessed the validity of other instruments measuring SAL. Parpala et al., (2013) have assessed the validation of the modified Experiences of Teaching and Learning Questionnaire (ETLQ) using data from 2,710 British and 2,509 Finnish students. They analyzed data using exploratory structural equation modelling (ESEM) and transformation analysis. The results showed that the structures were highly similar in both contexts. However, it is important to highlight that this is not always the case in the validation process (Hermann et al, 2016; Kapinga Mutatayi et al., 2018). Some researchers came across a change to the instrument's original structure, which was unexpected. For instance, Utriainen et al., (2018) excluded a subscale (Intention to Understand) when adapting the modified version of ETLQ deep approach scale. Asikainen et al., (2014) removed the surface approach scale from the same tool to increase its validity. So, for a variety of reasons, challenges may arise during the validation process of instruments. From another point of view, it should be noted that the assessment of the internal structure of the survey provides only limited evidence of validity. Therefore, other types of validity assessment are needed (e.g. content validity of items or criterion validity, convergent and or discriminant) (Abell et al., 2009).

6. Conclusion

The current study validated the Approaches to Learning Questionnaire (ALQ) within the context of Louvain-la-Neuve (LLN), confirming its reliability and validity for assessing Students' Approaches to Learning (SAL) in the Belgian setting. This research contributes to the integration of teaching and learning concepts into the SAL framework. As previously noted, the ALQ introduces a novel perspective by evaluating Studying in Group as a distinct learning approach. Its uniqueness lies in the integration of learning strategies and intentions—specifically, the combination of understanding and memorization intentions within each item (Kapinga-Mutatayi, 2018; Kapinga-Mutatayi et al., 2023).

Although some adaptations were necessary when transitioning the ALQ from the Kinshasa context to LLN, these modifications did not compromise its psychometric properties. Despite minor wording changes, the ALQ maintained its original structure—comprising four factors and 21 items—in both contexts. Additionally, problematic items were removed in both settings. This consistency across two culturally distinct environments supports the ALQ's cross-cultural and factorial validity, as well as its portability (Leung et al., 2008; Parpala et al., 2013). However, it is important to acknowledge that the similarities between the two contexts may have influenced the results. Both samples were drawn from psychology faculties, within French-speaking environments, and focused on a statistics course. These shared characteristics may limit the generalizability of the findings.

To address this, future research should include more diverse student populations—such as those from the social sciences, natural sciences, and medical fields—and examine their approaches to learning in relation to courses like mathematics. Moreover, translating the ALQ into additional languages will facilitate its validation and application across a wider range of cultural contexts. Future studies could also explore correlations between ALQ scores and students' general learning outcomes, grade point averages (GPA), or academic performance in various subjects. Given the established link between SAL and students' perceptions of their learning environments, these relationships warrant further investigation in both the Kinshasa and LLN contexts.

Theoretically, the findings suggest that collaborative learning practices should be more explicitly integrated into conceptual framework of SAL. From a practical standpoint, the newly validated instrument offers educators and researchers a reliable tool for identifying SAL Furthermore, the cross-cultural applicability of the instrument emphasizes its potential for use in diverse educational systems.

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8. Conflict of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

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