

Development and Validation of Perceived Academic Stress Scale for Adolescent Students (PASSAS)

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This study was undertaken to develop a valid and reliable instrument for assessing perception of academic stress among adolescent students. Employing an emic-etic framework, the resultant Perceived Academic Stress Scale for Adolescent Students (PASSAS) measures five constructs of academic stress: academic workload, parental expectations, grade concern, institution's environment and exam pressure. Instrument items were generated from an extensive literature review in consultation with educationists holding PhD in education and clinical psychologists. The initial item pool ($N = 50$) was reduced to 41, following content-validity assessment (CVR, I-CVI). A study ($N = 200$) from four randomly selected higher-secondary schools in Rahim Yar Khan was used for dimension reduction. Principal component analysis (PCA; varimax rotation) and PLS-SEM (Smart PLS 4) were used to establish Construct Validity and Internal Consistency of the scale. The scree plot supported a five-factor model. The final 19-item PASSAS demonstrated strong internal consistency ($CR = .794-.846$), convergent validity ($AVE = .524-.574$), and discriminant validity ($HTMT < .90$). The Internal Consistency of PASSAS was determined through Composite Reliability. External Consistency was determined through test-retest method. The resulting value of $r = .80$ shows high level of External Consistency. AVE for each construct was greater than .50 which established Convergent Validity. Discriminant Validity was established with HTMT and Fornell-Larcker Criterion. The values generated met all the criteria. The final developed instrument consists of 19 items. The results regarding reliability and validity confirm that PASSAS is a valid and reliable instrument for assessing perception of academic stress among adolescent students.

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Academic stress is one of the most serious challenges being faced by adolescent students not only in Pakistan but all over the world. It is created because of the constant demands and pressures that are now a part of the education process (Pérez-Jorge et al., 2025; Zhang et al., 2022). These pressures stem from both the society as well as from self-expectations of the students and contribute to psychological burnout. There is a significant negative impact of academic stress on the overall well-being of students especially the adolescents. As noted by Barbayannis et al. (2022) and Wang and Fan (2023) these negative effects pose a range of physical and psychological challenges.

The research proves that academic stress serious issue plaguing adolescent students. Before any intervention or employing any preventive strategy to combat this phenomenon, it is imperative that effective measurement tool be used that can that can efficiently measure academic stress to meet both research as well as intervention purposes. This article intends to contribute to the existing research by presenting the development and validation of a scale tailored to measure academic stress among adolescent students. We aim to provide a reliable instrument that facilitates an in depth understanding of the varied dimensions of academic stress experienced by adolescent students.

Background

Studies show that academic stress is a universal phenomenon which affects students at almost every level of education (Sudershan et al., 2025) and Pakistani students are also no exception. The indicators and effects of academic stress are deeply shaped by cultural and societal circumstances. In Pakistan, adolescent students face multiple challenges that compound their academic pressures (Khalid & Mahmood, 2022). These challenges arise not only from the demanding curriculum but also from societal expectations which are heavily influenced by family structure and cultural norms (Gondal et al., 2025; Sudershan et al., 2025). Academic success is often closely tied to honour of the family and has lasting impact on the future livelihood, thus intensifying the psychological burden of the adolescent students. In order to counter this problem it is essential to first identify the academic stressors and assess the levels of academic stress among students. This purpose is achieved with the help of reliable and valid tools that can measure academic stress. Over the years the researchers have worked on assessing the academic stress using a number of scales developed by various experts.

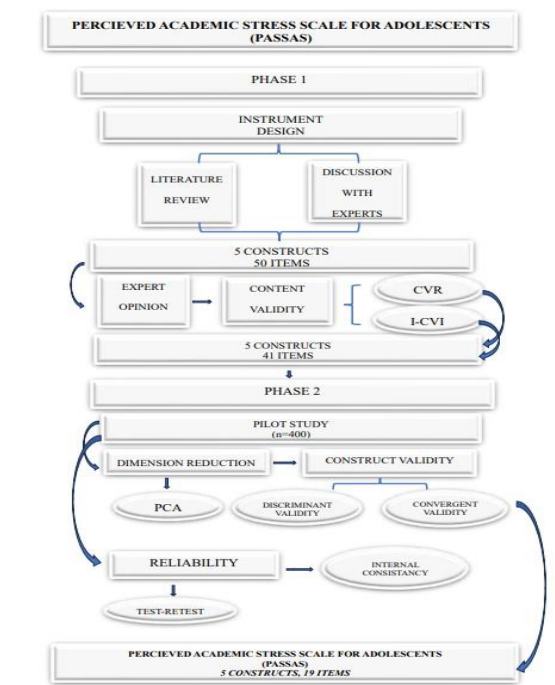
A review of the available literature show that most of the researchers, who have worked on the phenomenon of academic stress, have focused on the university students or the undergraduate students and adolescent students have not been focused upon that much (Khan & Gondal, 2023). Some renowned scales are Scale for Assessing Academic Stress (Sinha et al., 2007), Perceptions of Academic Stress (Bedewy & Gabriel, 2015), Perceived Stress Scale (Cohen et al., 1983), Student Life Stress Inventory (Gadzella et al., 1998), Lakaev Academic Stress Response Scale (Lakaev, 2009) and Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995). These stress scales are, however, not age specific. There are some stress scales that measure academic stress specifically among adolescents such as Academic Stress Questionnaire (Abouserie, 1994), Academic Expectation Stress Inventory (Ang & Huan, 2006), Educational Stress Scale for Adolescents (Sun et al., 2011). These scales are, however, developed and validated in the context of Western countries. In case of Asian countries; Educational Stress Scale for Adolescents was developed in China (Sun et al., 2011) while Manual of student Stress Inventory (Arip et al., 2015) was developed in Malaysia. The wording and phrasing of the items reflects culturally specific stressors (e.g., Western classroom dynamics, teacher autonomy, or parental independence) that do not fully capture the *emic elements* of Pakistani schooling, such as extensive reliance on private tuition, bilingual education system, combining English and Urdu mediums, social comparison within extended kinship networks etc. At the same time, an *etic lens* is needed to align Pakistani findings with global frameworks on adolescent stress and educational well-being. A review of regional literature reveals a notable research gap. While studies have examined university students' stress (Khan & Gondal, 2023), research focusing on adolescents in grades 8–10 remains scarce. The Pakistani studies either use instruments that are un validated or at best have content validity or are adapted versions of the tools that are basically developed to measure academic stress among adults. As a result, educators and psychologists don't have access to a standardized, reliable tool to identify and address academic stress in this critical developmental stage (Asmat et al., 2025; Mughal et al., 2023). A review of literature shows a lack of reliable and valid tools for measuring academic stress among adolescents especially in Pakistani context.

To address this gap, this study opted for an emic–etic framework that combines culturally specific insights with universal constructs, as discussed by Iliescu et al. (2024). This framework ensures that local stress factors (e.g. parental comparison, peer competition, and the role of private tutoring) are represented and at the same time the tool remains compatible with international constructs of academic stress.

Method

The study was undertaken to develop a valid and reliable instrument for measuring academic stress among adolescent students. The study was conducted in two phases as outlined by [Stein et al. \(2007\)](#). In the first phase instrument was designed and in the second phase judgmental evidence established. [Figure 1](#) shows the process that was followed for the development of Perceived Academic Stress Scale for Adolescent Students (PASSAS).

Figure 1: *Instrumentation Process for Development and Validation of Perceived Academic Stress Scale for Adolescent Students (PASSAS)*



First Phase: Instrument Design

Item Generation and Construct Identification

To identify relevant constructs and generate the initial item pool, a structured literature review was conducted. Studies that focused on academic stress among adolescent students, were peer reviewed, and the articles that provided empirical or psychometric information for item development were included. On the other hand, studies which focused on non-academic stress, had clinical populations, or were unavailable in full text were excluded. Review of the literature shows

that academic stress is a complex psychological phenomenon which arises from diverse factors that collectively contribute to the challenges experienced by students during adolescence. [Gondal et al. \(2025\)](#) identified numerous key stressors such as ever increasing workload, increased demands for revising lessons, the anxiety related to attendance, the pressure of examinations, and the persistent quest for higher grades/ scores. These stressors emphasize the multidimensional nature of academic stress as well as its inescapable influence on students' well-being. [Barbayannis et al. \(2022\)](#) found that the influence of parental/familial expectations, time management, and the peer competition further add to the adverse effects of academic stress. [Kristensen et al. \(2023\)](#) underscored the role of teachers' expectations, the intense pressure to perform exceptionally well in final examinations for the sake of securing promising future prospects. These findings are also corroborated by [Gondal et al. \(2025\)](#). These diverse stressors underscore the multi-layered nature of academic stress and emphasize the need for a comprehensive understanding of the phenomenon so that targeted interventions can be carried out to mitigate its impact on students' psychological as well as physical well-being.

Following review of the existing literature, five constructs; Exam Pressure, Academic Workload, Grade Concern, School Environment and Parental Expectations were refined. A total of 50 items were developed to measure these constructs. [Table 1](#) shows the detail of constructs and number of items used for each construct. Explicit inclusion criteria for item selection involved cultural relevance, age appropriateness, clarity, and empirical support in the literature.

Table 1: *Constructs, Indicators and number of Items Perceived Academic Stress Scale for Adolescent Students (PASSAS)*

Construct	Indicator	k
Exam pressure	Exam anxiety	5
	Physical symptoms	5
Academic Workload	Tests/ homework	4
	Tuition Academy/ extra coaching	4
	Syllabus	4
Grade Concern	Academic performance	3
	Future expectations	3
	Low self-esteem due to grades	2
Institution Environment	Peer relationship/ Competition	4
	Teachers' behaviour	5
Parental Expectations	Positive enforcement	3
	Comparison with others	3
	Disappointment	3
	Anger	2

An initial pool of 50 items was drafted in English and translated into Urdu using the back-translation method. Items were rated on a 5-point Likert scale (1 = *Strongly Disagree* to 5 = *Strongly Agree*).

Establishing Content & Face Validity

In order to establish the Content and Face validity, the Perceived Academic Stress Scale for Adolescent Students (PASSAS) was shared with a panel of 10 experts: 3 clinical psychologists (MS/PhD), 6 educationists holding PhD degrees in Education and affiliated with renowned universities of Pakistan, and 1 school principal. Their expertise in adolescent development, psychometric evaluation, and academic stress research made them well-suited to review the initial item pool and assess the content validity of the instrument. From the ratings of experts, Content Validity Ratio (CVR) was calculated and interpreted in line with the criteria suggested by [Lawshe \(1975\)](#). Since the number of experts was 10 therefore items that had $CVR \geq .62$ were retained. The experts were also requested to rate the items of the scale on the basis of their relevancy. Their responses were quantified and the resulting values were used to calculate I-CVI. Given the number of experts ($n = 10$), following Lynn's Criteria, the items that had $I-CVI < .78$ were eliminated ([Polit & Beck, 2006](#)). This reduced the number of the items of PASSAS to 46. The items were also rephrased and improved in line with the suggestions of the experts.

Second Phase: Establishing Judgmental Evidence

In second phase of the study reliability and construct validity of PASSAS was established with the help of a pilot study and test-retest method.

Pilot Study

Pilot Study was conducted for dimension reduction and for establishing Construct Validity as well as Internal Reliability of PASSAS. This study was cross-sectional survey research. the study made use of quantitative methods.

Sampling Procedure and Sample. For the pilot study phase, a stratified random sampling method was employed to ensure representative inclusion of Pakistani adolescent students from both male and female higher secondary schools in Rahim Yar Khan. Two boys' and two girls' schools were randomly selected from the

population of higher secondary schools within the city to capture gender-based variations and a balanced sample. In each selected school, all students enrolled in grades 8 through 10 participated, making the sampling frame comprehensive for the target adolescent age range of 12 to 18 years. The mean age of the participants was 15 years (55% girls & 45% boys). This approach ensured inclusivity and minimized selection bias within the local context. Participants were thoroughly briefed about the study objectives, confidentiality, and voluntary nature of participation. Parental consent and participant assent were obtained before data collection, adhering to ethical research standards

The Pilot study was carried out by the researcher with the help of the staff of the sample selected schools. The participants were asked to rate each statement of PASSAS, on the 5 Likert scale with the options; completely disagree, agree undecided, agree, completely agree. They were also asked their opinion regarding the relevancy of the items of the scale as well as ease of understanding so that Face Validity of the scale could also be established from the point of view of the students. The statements of the scale were further modified and simplified after considering the opinion of the participants. The responses were coded from 1-5 with 1 representing *completely disagree* leading up to 5 which represented *completely agree*.

Data Analysis

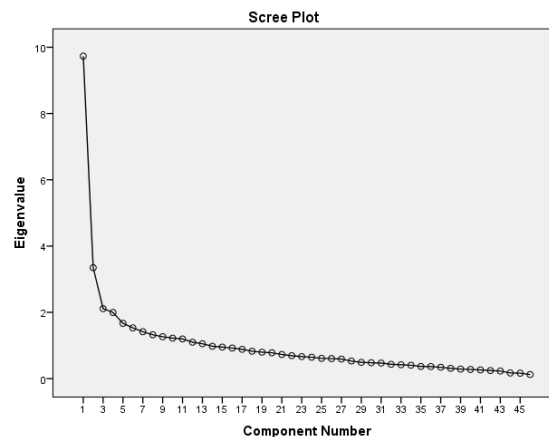
The data was analysed in two steps. In the first step factor analysis was performed with the help of SPSS 23 for dimension reduction and for confirming the constructs. In the second step, SmartPLS4 was used for determining Convergent and Discriminant Validity of PASSAS.

Dimension Reduction. Before carrying out PCA for dimension reduction, Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity were performed to assess the suitability of the data for running factor analysis. The closer the value of KMO to 1, the more ideal it is considered. The threshold for this test is $KMO > .60$ (Shrestha, 2021). The Bartlett's Test of Sphericity is used to ascertain if the observed variables are correlated or not since the underlying assumption for factor analysis is that the variables should be correlated to some extent. A significant correlation among the variables in the data set is suggested when the significance level of Bartlett's test is less than 0.05 (Shrestha, 2021). The values of KMO and Bartlett's test (Table 2) shows that the data was suitable for factor analysis.

Table 2: *KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.81
	Approx. Chi-Square	3036.08
Bartlett's Test of Sphericity	<i>df</i>	1035
	Sig.	.000

Once the suitability of the data for factor analysis was proved, Principal Component Analysis with Varimax rotation was run in SPSS23. Since the scale consisted of 5 factors, therefore, number of factors was kept fixed to 5. According to [Taberdoost \(2016\)](#), items that have eigenvalues of 1 and factor loading $\geq .40$ can be considered for further analysis.

Figure 2: *Scree Plot Displaying Eigenvalues for the Initial 46-Item Version of PASSAS*

The scree plot ([Figure 2](#)) depicts the eigenvalues for each component. A steep drop occurs after the first few components, and the curve flattens after the fifth component. This 'elbow' shows that five factors account for most of the variance in the data. Guided by [Chen et al. \(2025\)](#). Recommendation and the eigenvalue > 1 rule, five components were retained. These components align closely with the constructs of PASSAS. Keeping this in view, the items that showed factor loadings of .40 or above .40 were retained for further analysis.

Constructs and Items

The results of factor analysis clearly identified five constructs for PASSAS. The items loaded separately on each construct. The items showing factor loading $\geq .40$ were retained in line with the benchmark

set by [Boateng et al. \(2018\)](#). This data was then analysed for Construct Validity and Reliability with the help of SmartPLS4. The detail of analysis is given below.

Academic Workload. The first construct of PASSAS was Academic Workload. This construct measured the perception of the students regarding Academic Work load with the help of 11 statements each showing a separate indicator. All 11 items had factor loading of above .40 and were thus retained. [Table 3](#) and [Figure 3](#) show the items and factor loadings of these items for this construct were above the threshold and that all the items loaded on only one construct.

Figure 3: Factor loadings for items of Academic Workload

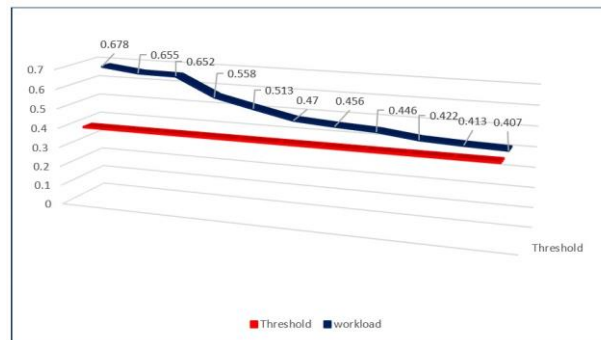
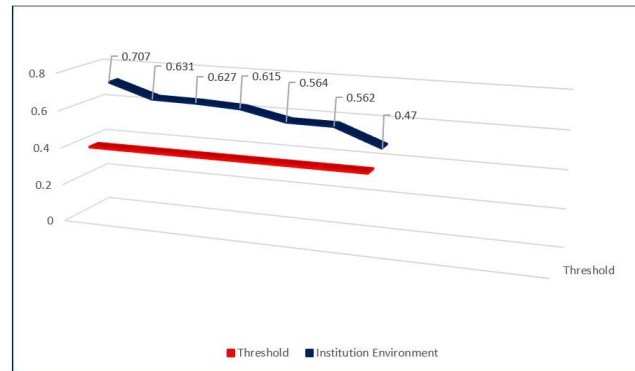


Table 3: Indicators and Factor Loadings for Academic Workload

Indicators	Component				
	1	2	3	4	5
WKL1 number of tests	.687				
WKL2 assignments/ homework	.655				
WKL3 extra coaching and time management	.652				
WKL4 lengthy syllabus	.558				
WKL5 tough syllabus	.513				
WKL6 extra coaching and tiredness	.470				
WKL7 content being taught in academy	.456				
WKL8 boring lessons	.446				
WKL9 too much classwork	.422				
WKL10 too many tests in tuition academy	.413				
WKL11 amount of homework	.407				

Institution's Environment. The second construct of PASSAS pertained to the institutional environment.

Figure 4: *Factor loadings for Items of Institution's Environment*



To gauge students' perceptions of this construct, a set of 9 items was employed. Notably, the factor loadings for 7 out of these 9 items surpassed the established threshold, as illustrated in Figure 4 and detailed in Table 4. Consequently, these 7 items were retained for further analysis.

Table 4: *Indicators and Factor Loadings for Institution's Environment*

Indicators	Component				
	1	2	3	4	5
IE1 teacher guidance		.707			
IE2 teacher encouragement		.631			
IE3 teacher appreciation		.627			
IE4 peer relationship		.615			
IE5 classroom's environment		.564			
IE6 fair treatment by the teacher		.562			
IE7 peer competition		.470			

Parental Expectations. Third construct of PASSAS was parental expectations. 10 items were used to measure that construct. Out of these, 8 items showed factor loadings $> .04$ and were thus retained for further analysis (Figure 5 & Table 5).

Figure 5: Factor loadings for Items of Parental Expectations

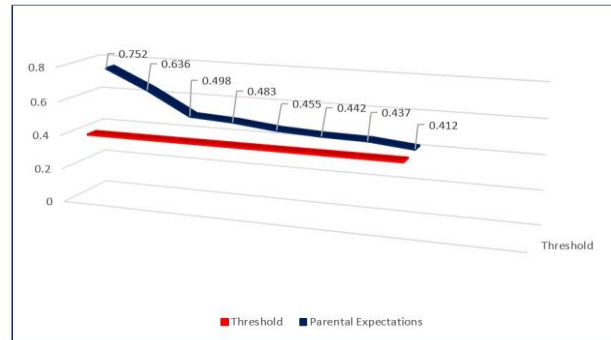


Table 5: Indicators and Factor Loadings for Parental Expectation

Indicators	Component				
	1	2	3	4	5
Parental Expectations					
PE1 Parent Encouragement			.752		
PE2 praise/ gifts on good grades			.636		
PE3 Parent's anger on low grades			.498		
PE4 fear of punishment			.483		
PE comparison with class fellows			.455		
PE6 comparison with others			.442		
PE7 parents' disappointment			.437		
PE8 parents' expectations			.412		

Grade Concerns. The fourth construct of PASSAS was grade concern and it included 8 items. Since all items met the threshold for factor loadings, therefore, all items were retained for further analysis (Figure 6 and Table 6)

Figure 6: Factor Loadings for Items of Grade Concern

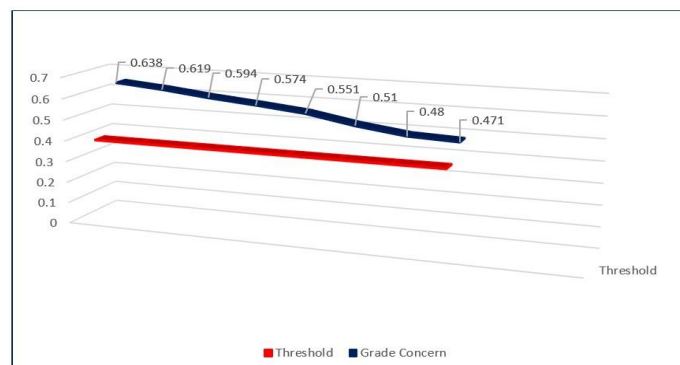
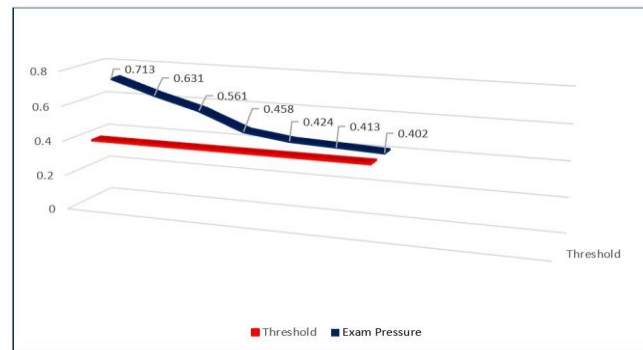


Table 6: *Indicators and Factor Loadings for Grade Concern*

Indicators	Component				
	1	2	3	4	5
GRC1 class performance				.638	
GRC2 concern about future				.619	
GRC3 exam performance				.594	
GRC4 humiliation because of grades				.574	
GRC5 worry about paper marking				.551	
GRC6 self-esteem due to exam performance				.510	
GRC7 concern about peer competition				.480	
GRC8 self-esteem due to class performance				.471	

Exam Pressure. The fifth construct of PASSAS related to Exam Pressure. 7 items were used to measure this construct. All items met the criteria and were retained for further analysis (Figure 7 and Table 7).

Figure 7: *Factor Loadings for Items of Exam Pressure*Table 7: *Indicators and Factor Loadings for Exam Pressure*

Indicators	Component				
	1	2	3	4	5
EP1 shaking hands during tests/ exams				.713	
EP2 difficulty in answering questions verbally				.631	
EP3 sweaty hands while answering				.561	
EP4 forgetfulness during exams				.458	
EP5 pressure while attempting papers				.424	
EP6 dry mouth/ empty mindedness				.413	
EP7 pressure while preparing paper/test				.402	

Construct Validity and Reliability

Construct validity refers to the extent to which an instrument gauges the concept or the construct that it was designed to measure. It has two components; Convergent validity and discriminant validity. Convergent validity checks that the constructs of the instrument that are supposed to have a relationship actually have a relationship. It focuses on how well the items converge together to measure a construct. Discriminant validity on the other hand, checks that the constructs of the instrument that are not supposed to have any relationship actually aren't related. Reliability refers to the consistency of the scores obtained from administering a test is referred to as reliability. The Internal Reliability measures the consistency of scores/results across items within an instrument/test. Once the reliability and construct validity of an instrument is established, the researchers can use this instrument with full confidence without worrying about the credibility and consistency of the said instrument.

In order to check for Reliability and Construct Validity of the instrument, the data refined through PCA, was analysed using SmartPLS4. Table 8 shows the relevant criteria.

Table 8: *PLS-SEM: Criteria for Establishing Reliability and Validity*

Category		Index	Criterion	Reference
Reliability	Internal Consistency Reliability	Composite Reliability (CR)	CR: .60-.90	(Hair et al., 2019)
	Indicator Reliability	Outer Loading	Outer Loading > .07 (suggested) Outer Loading: .04-.07 (Acceptable with some conditions)	(Hair et al., 2019)
Validity	Convergent Validity	Average Variance Extracted (AVE) HTMT	AVE > .50 HTMT: .85	(Hair et al., 2019) (Hair et al., 2019)
	Discriminant Validity	Fornell-Larker Criterion	Each latent variable's square root of AVE should be greater than its correlation with another latent variable.	(Hair et al., 2019)

Establishing Reliability. Composite reliability (CR) was used to determine reliability of the constructs of PASSAS. As opposed to Cronbach's Alpha which assumes equal reliability of all items that are used to measure a construct, the CR takes into account the fact that different items of a construct have different outer loadings (Haji-Othman & Yusuff, 2022). Composite Reliability is considered to be better measure of Internal Consistency as compared to Cronbach's Alpha (Hair et al., 2019).

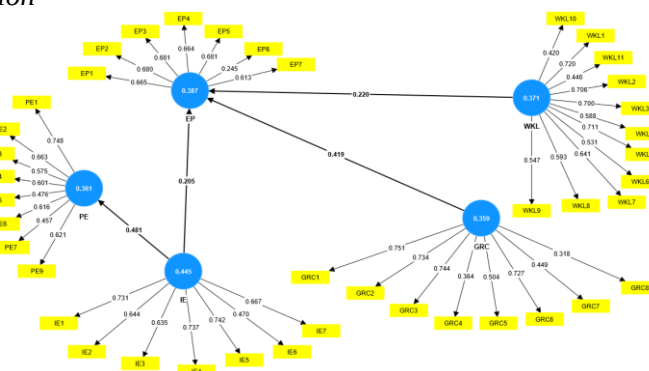
Establishing Construct Validity. The convergent validity of PASSAS was established by making use of Average Variance Extracted (AVE). The mean value of the squared loadings of the items that measure a given construct is defined as AVE (Haji-Othman & Yusuff, 2022). The premise is that if the Average Variance Extracted of a construct is greater than .50 then it shows that all the items of the construct converge together well to measure the said construct.

Table 8 shows the criteria that were used for establishing reliability and validity through PLS-SEM.

PLS-SEM: Perceived Academic Stress Scale for Adolescent Students (PASSAS)

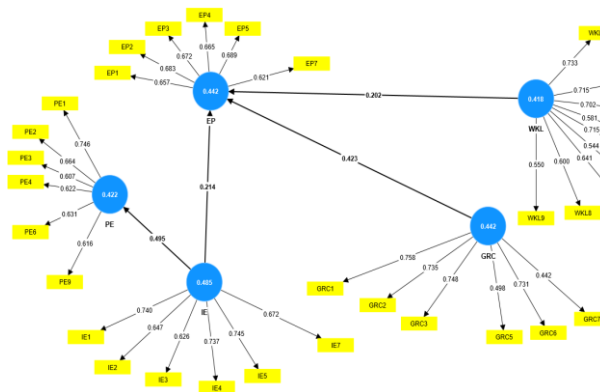
The structural equation model for PASSAS is displayed in Figure 8. Before going any further, the outer loadings of each item were considered. As shown in the figure 8, the values of AVE for the constructs were found out to be less than .05. Moreover the outer loadings of a few items didn't meet the criteria of .40. In order to improve these values, the items with factor loadings < .50 were deleted. These included EP6, PE5, PE7, IE6, GRC4, GRC7, GRC8, WKL10 and WKL11.

Figure 8: SEM with Indicators and Constructs of PASSAS: First Calculation



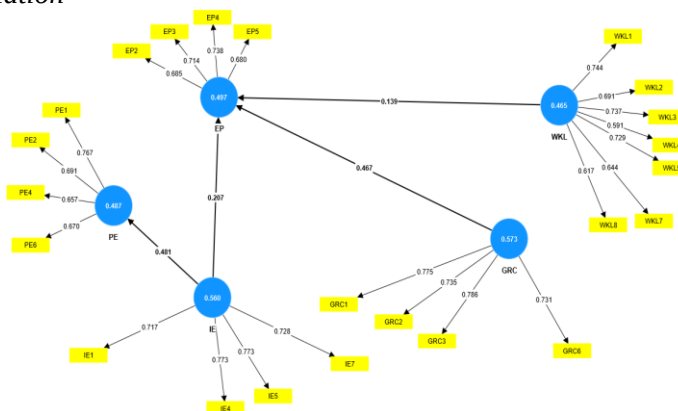
The analysis was run again after deleting the items with low factor loadings. As shown in Figure 9, the factor loadings improved but the values of AVE for the constructs didn't improve. In such conditions, the researcher needs to eliminate the items that have outer loadings between the range of .40 - .70 given that such deletion results in higher Average Variance Extracted and Composite Reliability values (Hair et al., 2019).

Figure 9: SEM with indicators and constructs of PASSAS: Second Calculation



Since the values of AVE for each construct were still below the required threshold, again the items with lowest factor loadings from each construct were deleted. These included IE3, IE2, GRC5, WKL6, WKL9, EP7, EP1, PE3 and PE9. As a result the AVE values for two constructs i.e. IE & GRC crossed the threshold of .05 but the rest were still below the required criterion (Figure 10).

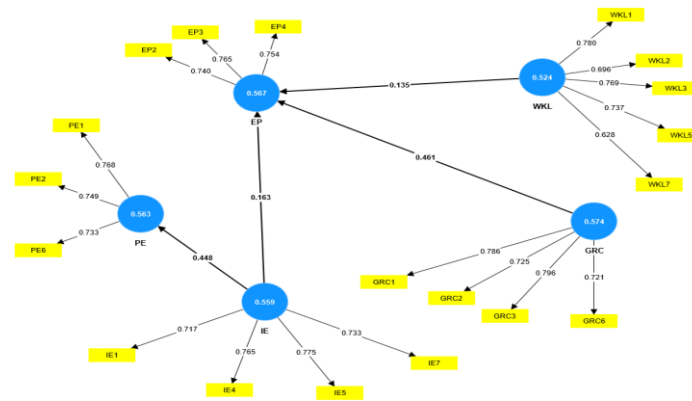
Figure 10: SEM with Indicators and Constructs of PASSAS: Third Calculation



After deleting more items with lowest factor loadings, the analysis was performed yet again.

As demonstrated by Figure 11, not only did the factor loadings improve but the AVE for every construct also met the required criterion of .05.

Figure 11: SEM with Indicators and Constructs of PASSAS: Final Calculation



Results

Construct Reliability and Convergent Validity of PASSAS

The construct reliability of the scale was established by the outer loadings of the items which according to the criteria mentioned in Table 3, should be greater than .07 but outer loadings of .04 - .07 are also acceptable if the values of CR and AVE for that particular construct meet the required criteria ($CR > .70$ & $AVE > .50$).

Table 9: Outer Loadings, Composite Reliability and Average Variance Extracted for PASSAS

Construct	Item	Outer Loading	CR	AVE
EP	EP2	.740	.797	.567
	EP3	.765		
	EP4	.754		
GRC	GRC1	.786	.843	.574
	GRC2	.725		
	GRC3	.796		
	GRC6	.721		
IE	IE1	.717	.835	.559

Continued...

Construct	Item	Outer Loading	CR	AVE
PE	IE4	.765	.794	.563
	IE5	.775		
	IE7	.733		
	PE1	.768		
	PE2	.749		
	PE6	.733		
WKL	WKL1	.780	.846	.524
	WKL2	.696		
	WKL3	.769		
	WKL5	.737		
	WKL7	.628		

The Convergent Validity is determined when the value for AVE > .50. A summary of the outer loadings, Composite Reliability and Average Variance Extracted for final version of PASSAS is shown in [Table 9](#). The Internal Consistency and Convergent Validity of PASSAS were established as per the criteria mentioned in [Table 8](#). All the items have outer loadings > .70 except two items (WKL2 & WKL7), however, the CR and AVE for Work Load (WKL) have met the criterion as specified by [Hair et al. \(2019\)](#) and removing these two items didn't improve AVE or CR too much, so these two items were retained as they fell in the range of .40 - .70 and as such were acceptable as per the bench mark set by [Hair et al. \(2019\)](#).

Discriminant Validity

Discriminant validity of PASSAS was determined using HTMT and Fornell-Larcker Criterion. As per [Hair et al. \(2019\)](#), the value of HTMT for each construct should not be more than .90 while the Fornell-Larcker Criterion requires that the value for square-root of AVE of a given construct should be greater than the values of the correlation of that construct with all other constructs. As shown in Tables 10 and 11, the constructs of PASSAS are distinct from each other and meet the requirements of HTMT (HTMT < .90) and Fornell-Larcker Criterion, hence establishing the Discriminant Validity of the scale.

Table 10: *Heterotrait - Monotrait (HTMT) Criterion*

	EP	GRC	IE	PE	WKL
EP					
GRC	.82				
IE	.56	.40			
PE	.49	.45	.64		
WKL	.59	.53	.78	.63	

Table 11: *Fornell-Larker Criterion*

	EP	GRC	IE	PE	WKL
EP	.75				
GRC	.57	.76			
IE	.38	.30	.75		
PE	.33	.32	.45	.75	
WKL	.43	.42	.60	.43	.72

External Consistency. External Reliability assesses the consistency of scores when a test/ instrument is administered over time. Test-retest method was used for determining external consistency of PASSAS. The 19-item final scale was used to collect data from a group of 50 students. The scale was again administered to the same group of students after a fortnight. The scores from both data sets were correlated and the Pearson's Correlation Co-efficient was calculated. The value $r = .80$ interpreted in line with [Cohen \(1988\)](#) showed a high level of reliability.

Conclusion

This study was undertaken with the primary objective of developing and validating an instrument to assess the perception of academic stress among adolescent students. Originally, a set of 50 items was identified that measured five constructs: Academic Workload, Exam Pressure, Grade Concern, Institution's Environment, and Parental Expectations. After further refinement through Principal Component Analysis (PCA) and Partial Least Squares Structural Equation Modeling (PLS-SEM) the number of items was reduced to 19. Careful consideration was given to two constructs: Exam Pressure and Parental Expectations, each consisting of three items. Although they have a slightly smaller number of items, these constructs were retained because three well-constructed items are sufficient to effectively measure a construct provided, they possess strong psychometric properties as noted by [Garg et al. \(2022\)](#). These constructs met the

criteria for Outer Loadings and showed satisfactory Composite Reliability and Average Variance Extracted hence proving their internal consistency as well as construct validity.

An effort was made to keep the scale concise, focusing on usability and respondent convenience rather than utter length since the tool is intended to assess perception of students regarding academic stress and is not to be used for clinical purposes. The efficient nature of PASSAS facilitates ease of use and accelerates the data collection process. This characteristic also aligns with the preferences of respondents who favor scales with fewer statements/questions.

Although the study established the validity and reliability of the tool, however, the five constructs with 19 items may not comprehensively capture the entirety of the phenomenon i.e. academic stress among adolescent students. Future research may focus on exploring additional dimensions and stressors to further improve the scale's comprehensiveness. Secondly, the study's participants are limited to one city ($n = 200$) which might introduce a potential geographical bias. The generalizability of findings could be strengthened by a more extensive and diverse sample, including adolescents from various cities. This would strengthen and deepen the understanding of academic stress in different contexts. In spite of these limitations, the strong psychometric properties of PASSAS establish it as a valuable tool for researchers, educationists and teachers who are interested in exploring and managing academic stress among adolescent students.

References

- Abouserie, R. (1994). Sources and levels of stress in relation to locus of control and self-esteem in university students. *Educational Psychology*, 14(3), 323-330. <https://doi.org/10.1080/0144341940140306>
- Ang, R. P., & Huan, V. S. (2006). Academic Expectations Stress Inventory. *Educational and Psychological Measurement*, 66(3), 522-539. <https://doi.org/10.1177/0013164405282461>
- Arip, M. A. S. M., Kamaruzaman, D., Roslan, A., & Rahman, A. (2015). Development, validity and reliability of student stress inventory (SSI). *Science International*, 27(2), 1631-1638.
- Asmat, N., Avais, M., Tariq, S., Waheed, A., & Afifa. (2025). Academic stress and suicidal ideation among Pakistani college students: Mediating role of perceived stress and moderating effects of resilience and impulsivity. *Asian Social Science and Arts Journal*, 36, Article 1055. <https://assajournal.com/index.php/36/article/view/1055>

- Barbayannis, G., Bandari, M., Zheng, X., Baquerizo, H., Pecor, K. W., & Ming, X. (2022). Academic stress and mental well-being in college students: Correlations, affected groups, and COVID-19. *Frontiers in Psychology, 13*, 886344. <https://doi.org/10.3389/fpsyg.2022.886344>
- Bedewy, D., & Gabriel, A. (2015). Examining perceptions of academic stress and its sources among university students: The Perception of Academic Stress Scale. *Health Psychology Open, 2*(2), 1-9. <https://doi.org/10.1177/2055102915596714>
- Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quinonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health, 6*, 149. <https://doi.org/10.3389/fpubh.2018.00149>
- Chen, C., D'hondt, R., Vens, C., & Van den Noortgate, W. (2025). Factor retention in exploratory multidimensional item response theory. *Educational and Psychological Measurement, 85*(4), 672-695. <https://doi.org/10.1177/00131644241306680>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Routledge.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385-396. <https://doi.org/10.2307/2136404>
- Gadzella, B. M., Masten, W. G., & Stacks, J. (1998). Students' stress and their learning strategies, test anxiety, and attributions. *College Student Journal, 32*(3), 416-422.
- Gondal, H. M., Afzal, R., Masood, A., Moeen-Ud-Din, M. B., Ahmed, A., & Iqbal, U. (2025). Causes of academic stress and coping strategies among undergraduate medical students in Pakistan. *Journal of the College of Physicians and Surgeons Pakistan, 35*(2), 174-179. <https://doi.org/10.29271/jcpsp.2025.02.174>
- Garg, N., Sharma, N., & Burgess, J. (2022). Three-item loneliness scale: Exploring the psychometric properties in the Indian context. *Asian Journal of Psychiatry, 80*, 103323. <https://doi.org/10.1016/j.ajp.2022.103323>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2-24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Haji-Othman, Y., & Yusuff, M. S. S. (2022). Assessing reliability and validity of attitude construct using partial least squares structural equation modeling (PLS-SEM). *International Journal of Academic Research in Business & Social Sciences, 12*(5), 1-13. <https://doi.org/10.6007/ijarbss/v12-i5/13289>
- Iliescu, D., Greiff, S., & Dutu, R. (2024). The emic-etic divide in test development and adaptation. *European Journal of Psychological Assessment, 40*(2), 97-100. <https://doi.org/10.1027/1015-5759/a000823>

- Khalid, S., & Mahmood, N. (2022). Parental expectations and academic pressure among Pakistani adolescents. *Pakistan Journal of Education*, 39(1), 85-101.
- Khan, T. S., & Gondal, M. B. (2023). A study of the relationship between academic stress and the academic achievement of students at the formal operational stage. *International Journal of Education Economics and Development*, 14(4), 511-523. <https://doi.org/10.1504/IJEED.2023.134219>
- Kristensen, S. M., Larsen, T., Urke, H. B., & Danielsen, A. G. (2023). Academic stress, academic self-efficacy, and psychological distress: A moderated mediation of within-person effects. *Journal of Youth and Adolescence*, 52(7), 1512-1529. <https://doi.org/10.1007/s10964-023-01770-1>
- Lakaev, N. (2009). Validation of an Australian academic stress questionnaire. *Australian Journal of Guidance & Counselling*, 19(1), 56-70. <https://doi.org/10.1375/ajgc.19.1.56>
- Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28(4), 563-575. <https://doi.org/10.1111/j.1744-6570.1975.tb01393.x>
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour research and therapy*, 33(3), 335-343. <https://doi.org/10.1037/t01004-000>
- Mughal, M. Y., Saira, & Islam, M. U. (2023). Exploring perceived parental anxiety and students' academic stress at the secondary school level in Gujrat: A diagnostic study. *Journal of Asian Development Studies*, 12(3), 1671-1679. <https://doi.org/10.62345/jads.2023.12.3.134>
- Pérez-Jorge, D., Boutaba-Alehyan, M., González-Contreras, A. I., & Pérez-Pérez, I. (2025). Examining the effects of academic stress on student well-being in higher education. *Humanities and Social Sciences Communications*, 12(1), 1-13. <https://doi.org/10.1057/s41599-025-04698-y>
- Polit, D. F., & Beck, C. T. (2006). The content validity index: Are you sure you know what's being reported? Critique and recommendations. *Research in Nursing & Health*, 29(5), 489-497. <https://doi.org/10.1002/nur.20147>
- Shrestha, N. (2021). Factor analysis as a tool for survey analysis. *American Journal of Applied Mathematics and Statistics*, 9(1), 4-11. <https://doi.org/10.12691/ajams-9-1-2>
- Sinha, U. K., Sharma, V., & Nepal, M. K. (2007). Development of a scale for assessing academic stress: A preliminary report. *Journal of Institute of Medicine*, 23, 1-6. <https://doi.org/10.59779/jiomnepal.165>
- Stein, K., Sargent, J. T., & Rafaels, N. (2007). Intervention research. *Nursing Research*, 56(1), 54-62. <https://doi.org/10.1097/00006199-200701000-00007>
- Sudershan, A., Rehman, S., Manzoor, T., Shaban, B., Sultan, S., Pushap, A. C., Sudershan, S., Bashir, M., & Malik, S. A. (2025). Depression, anxiety,

- and stress among college students: A Kashmir-based epidemiological study. *Frontiers in Psychiatry*, 16, 1633452.
- Sun, J., Dunne, M. P., Hou, X., & Xu, A. (2011). Educational Stress Scale for Adolescents. *Journal of Psych educational Assessment*, 29(6), 534-546. <https://doi.org/10.1177/0734282910394976>
- Taherdoost, H. (2016). Validity and reliability of the research instrument: How to test the validation of a questionnaire/survey in a research. *International Journal of Academic Research in Management*, 5(3), 28-36. <https://doi.org/10.2139/ssrn.3205040>
- Wang, H., & Fan, X. (2023). Academic stress and sleep quality among Chinese adolescents: Chain mediating effects of anxiety and school burnout. *International Journal of Environmental Research and Public Health*, 20(3), 2219. <https://doi.org/10.3390/ijerph20032219>
- Zhang, X., Gao, F., Kang, Z., Zhou, H., Zhang, J., Li, J., Yan, J., Wang, J., Liu, H., Wu, Q., & Liu, B. (2022). Perceived academic stress and depression: The mediation role of mobile phone addiction and sleep quality. *Frontiers in Public Health*, 10, 760387. <https://doi.org/10.3389/fpubh.2022.760387>

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