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Factors of academic stress: Do they impact English academic performance?

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ABSTRACT

This study investigated the college students' level of academic performance and determined the impact of academic stress on their English academic performance. This employed a descriptive-exploratory research design with Exploratory Factor Analysis (EFA) and correlation analysis (Pearson r) as main analyses using statistical software. The result suggested that the students (N=250) have a moderate level of stress. Likewise, seven factors were generated through EFA but were reduced to four factors using parallel analysis, the factors are perceived personal stress, classroom stress, performance stress, and time management stress. In the correlation analysis, it was found out that perceived personal stress, classroom stress, and performance stress are significantly correlated except for time management stress. Moreover, these factors were found to have no significant relationship with the English grades of the students. With this result, it is concluded that despite having a moderate level of academic stress, students were able to manage them by using a plethora of coping mechanisms available. The institutions should offer prevention and intervention services that directly address the academic stress of the students to ensure academic success.

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1. INTRODUCTION

Stress is defined as a condition in which a person's potentials are threatened to be exceeded [1]. When the individual's resources to cope with their circumstance are exhausted due to a mix of internal and external pressures, stress results. Stress can disrupt a student's learning and memory, and as a result, it has the potential to harm academic performance.

It is a typical occurrence for students to communicate with their surroundings, whether individually or in groups, and for these constant contacts with the environment to influence their academic performance in some way. Academic stress among students has been a hot topic among students for some years. This is a topic that academics and other researchers are deeply concerned about. Some people believe that stress is harmful and that they will go to great lengths to avoid it. However, Yates [2] believed that the correct amount of stress is an important part in anyone's life who wants to remain vibrant. Stress is managed rather than avoided. Likewise, Ivancevich and Matteson [3] indicated that stress does not always lead to a drop in performance. They claimed that there is a certain amount of stress that may be tolerated in order to achieve good results. An ideal degree of stress can improve one's abilities, lead to peak efficiency, provide happiness, a sense of well-being and accomplishment, as well as other success rewards. However, too much stress can

lead to physical and mental health issues, lower self-esteem, and negatively impact pupils' academic performance [4].

Aafreen, Priya, and Gayathri [4] discovered that when people are anxious, their bodies immediately believe they are being attacked and go into "fight or flight" mode, releasing a complex combination of hormones and chemicals including adrenaline, cortisol, and norepinephrine to prepare them for physical action. This results in a variety of reactions, including blood being directed to muscles and unneeded body activities, such as digestion, being turned off.

Some stressors exist both inside and beyond the school environment, causing stress. Stress is a common concern for most students in their academic lives because it might affect their academic performance. Students undoubtedly endure stress as a result of circumstances such as academic commitments and duties, financial challenges, poor time management skills, and so on. According to Pariat, *et al*. [5], academic stress is a tangible product of a transaction between a student's cognitive evaluation and environmental stressors or expectations associated with academic contexts. Anxiety, inefficient time management, a lack of rewarding extracurricular activities, financial troubles, sleep deprivation, social activities, and other variables that students perceive as risks to their academic success are among the possible stressors [6]. The study of Shaikh, *et al*. [7] found that academics and examinations are the most common sources of stress for pupils. Wilks [8] warned that if a student fails to manage successfully one's academic stress, substantial psychosocial and mental health implications could follow.

For the majority of teenagers, school is the best time of their lives. Depression, anxiety, and stress may all cause problems on these formative years. Students are likely to face a variety of pressures that will put their capacity to cope to the test, including adjusting to a new environment, balancing a high task, making new friends, growing more independent, and dealing with a variety of other challenges.

According to Gbollie and Keamu [9], students' academic performance varies at different levels because they are driven by motivation. Students are equipped with varied abilities because they came from various institutions that provide distinct training. Hence, students' academic performance varies at different levels because they are driven by motivation. Some pupils excel academically, while others struggle, and still others are ordinary. Some schools are ahead of the curve, while others lag far behind, resulting in major differences in student academic performance. Academic performance refers to a student's, teacher's, or institution's achievement of an educational goal over a period of time. College students face numerous challenges in order to attain their best academic results. To have a successful college career, one must do more than just study hard.

This study investigated the level of academic stress of college students in a university and its impact on their academic performance. Ajzen's Theory of Planned Behavior illustrates that actions are projected proximally from one's intentions to participate in the behavior. These intentions are then predicted from three other characteristics known as: i) Perceived behavioral control described as the subjective capacity to easily act; ii) Attitudes or evaluations of the valence of behavior; and iii) Subjective norms or perceived social pressure to carry out the action or to abstain from acting out the behavior [10]. More so, Shadi, *et al*. [11] highlighted that the theoretical structures of this theory have been shown to be able to predict intention and, as a result, behavior. The primary motivation for engaging in a particular activity is to do so, which might increase students' stress levels in the classroom and have an impact on their English academic performance. The attitude toward the behavior and the mental norms linked with that activity determine an individual's behavioral intention. To put it another way, an individual's conduct is influenced by his or her attitude toward the behavior, which influences one's willingness to engage in specific behaviors.

2. RESEARCH METHOD

This study employed a descriptive-exploratory research design. This research design described the results of the factors generated using the Exploratory Factor Analysis (EFA) and explored whether the factors were correlated and significantly impacted the English academic performance of the college students. EFA was used in this study as a statistical tool to categorize the fewer number of factors which can be explained by the correlation among the set of consistent variables. Likewise, the overall objective of the EFA was data summarization and data reduction. Its central aim was to systematically simplify several interrelated measures and describe the data using the generated fewer dimensions than the original variables. This was an effective technique to extract maximum common variance from all the variables and put them into a common score. Factor loadings measured the degree of relationship between indicators and their factors. Besides, correlation analysis (Pearson r) was used to test if the factors have correlation, or if factors were significantly correlated.

The instrument used was the Academic Stress Inventory (ASI) which was adapted from the Questionnaire of Academic Stress (QAS) of Garcia-Ros, Perez-Gonzalez, and Tomas [12]. The QAS focused

on investigating the students' everyday stressors in the context of the school, such as those pressures they get from schoolwork, worries about school achievement, difficulties with peers at school, conflicts with teachers and parents, and concerns about the future and their effects on adolescents' well-being. The QAS was comprised of thirty items related to different potentially stress-producing situations at the college level. The ASI was sent to college students (N=250) of this university using an online platform. Student's responses revealed their stress level in the different school situations on a Likert-type scale with five response options (1="Very low" to 5="Very high"). Moreover, they also shared their grade percentage average (GPA) in all their major subjects to be used to determine the influence of academic stress on the English academic performance of the students. The data through an online platform was generated and analyzed using statistical software.

To identify if the data was already adequate for factor analysis, Kaiser Meyer Olkin (KMO) was used. This measure varied between 0 and 1, and the values closer to 1 were better. A value of .6 was a suggested minimum. Moreover, to identify if the variables had acceptable correlations between each other, data were treated through Bartlett's Test of Sphericity for Factor Analysis to be recommended suitably.

Using exploratory analysis with the principal component extraction method, seven factors were generated; however, seven factors seemed too many, so the parallel analysis was conducted to determine if the number of factors can further be reduced from seven. With parallel analysis, four factors were retained from the previous seven generated factors.

3. RESULTS AND DISCUSSION

The results of the computation of the data using factor and parallel analyses and the factors generated through these statistical tools are presented here. Likewise, the level of academic stress among college students and the result of the correlation analysis were presented and comprehensively discussed, respectively.

3.1. Factors of academic stress among college students

To measure whether it is acceptable to proceed to factor analysis, data were first treated using the Kaiser Meyer Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. In KMO, high values should be close to 1.0 but not less than 0.50 to identify whether factor analysis may be useful with the data. Through this test, it was identified that the sampling of this study was adequate for further analysis with a 0.857 result.

Furthermore, for variables to be reduced to a smaller number of components, there should be adequate correlations between variables. In this study, data were tested through Bartlett's Test of Sphericity which should have resulted in less than 0.05 for factor analysis to be recommended suitably. More so, the suitability of the data for structure detection is shown in Table 1. Meanwhile, the eigenvalues and percent variance explained based on the Kaiser criterion are presented in Table 2. Moreover, the scree plot as in Figure 1 is shown to further support the result of the analysis.

The eigenvalues and percentage variance using Kaiser-criterion and reinforced by the scree plot show that there are seven generated factors. Notice that the number of factors generated was significantly many; hence, further analysis was conducted. To finally get the factors essential for the succeeding analyses, the parallel analysis was used to reduce the seven generated factors. The result of the parallel analysis is shown in Table 3. It shows that there are four factors of stress to be retained to be used in the correlation analysis.

Table 1. KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy		.857
Bartlett's test of sphericity	Approx. Chi-Square	3040.382
	Df	435
	Sig.	.000

Table 2. Eigenvalues and percent variance explained based on the Kaiser-criterion

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative (%)	Total	% of variance	Cumulative (%)
1	8.471	28.237	28.237	8.471	28.237	28.237
2	2.370	7.901	36.138	2.370	7.901	36.138
3	2.000	6.665	42.803	2.000	6.665	42.803
4	1.790	5.965	48.768	1.790	5.965	48.768
5	1.334	4.446	53.214	1.334	4.446	53.214
6	1.123	3.743	56.957	1.123	3.743	56.957
7	1.020	3.401	60.358	1.020	3.401	60.358
8	.934	3.114	63.473			
9	.899	2.996	66.468			
10	.820	2.733	69.202			
11	.798	2.661	71.863			
12	.745	2.484	74.347			
13	.712	2.372	76.719			
14	.660	2.200	78.919			
15	.628	2.093	81.011			
16	.604	2.013	83.024			
17	.579	1.929	84.953			
18	.509	1.698	86.651			
19	.498	1.661	88.312			
20	.457	1.523	89.835			
21	.412	1.373	91.207			
22	.380	1.267	92.474			
23	.371	1.238	93.711			
24	.336	1.120	94.832			
25	.313	1.044	95.876			
26	.308	1.025	96.901			
27	.276	.919	97.820			
28	.243	.808	98.628			
29	.213	.709	99.337			
30	.199	.663	100.000			

Extraction method: Principal component analysis.

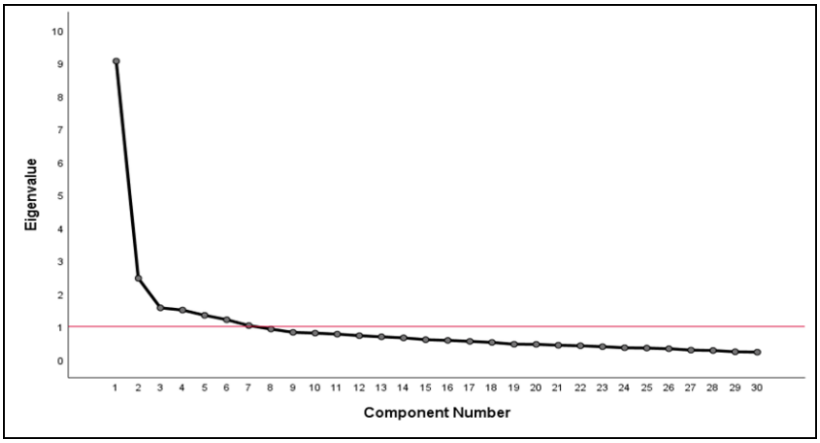

Figure 1. The scree plot result of the 30 indicators of ASI

The basis for retaining the four factors of stress based on the parallel analysis was the eigenvalues generated. If the eigenvalues generated using EFA are significantly greater than the eigenvalues produced using the parallel analysis, then that component is retained. It was evident in Table 3 that factors 1-4 have greater eigenvalues using EFA than the result using the parallel analysis. Meanwhile, the eigenvalues of factors 5-7 using EFA were smaller compared to the values in the parallel analysis. Thus, the first four factors were retained and were used in the succeeding analyses, such as the correlation analysis and regression analysis. These four factors explain 48.867% of the total variance in the data.

Table 3. The four factors generated using the parallel analysis

Parallel analysis			Component	Eigenvalue	Parallel analysis
Principal components					
Specifications for this run:			1	8.471	1.798549
Ncases	250				
Nvars	30		2	2.370	1.685693
Ndatsets	100				
Percent	95		3	2.000	1.592211
Random data eigenvalues					
Root	Means	Prcntyle	4	1.790	1.516107
1. 000000	1.704413	1.798549			
2. 000000	1.608355	1.685693	5	1.334	1.451280
3. 000000	1.529370	1.592211			
4. 000000	1.462114	1.516107	6	1.123	1.399023
5. 000000	1.405280	1.451280			
6. 000000	1.350618	1.399023	7	1.020	1.302606
7. 000000	1.302922	1.348091			
8. 000000	1.258218	1.302606			
9. 000000	1.211977	1.249867			
10. 000000	1.171233	1.205787			
11. 000000	1.128299	1.164894			
12. 000000	1.089578	1.117337			
13. 000000	1.052832	1.083927			
14. 000000	1.017718	1.053896			
15. 000000	0.982103	1.014670			

Table 4 shows the component matrix of the unrotated factor loadings of the four-factor solutions using parallel analysis. Likewise, Table 5 shows the component matrix of the rotated factor loadings of the four-factor solution. The discussion of each of the four factors of stress is shown in Table 5, namely: perceived personal stress, classroom stress, performance stress, and time management stress.

Table 4. Component matrix of the unrotated factor loadings of the four-factor solution

	Component matrix			
Indicators	Factor 1: Perceived personal stress	Factor 2: Classroom stress	Factor 3: Performance stress	Factor 4: Time management stress
X1	.294	.566	.085	.361
X2	.368	.251	.239	.614
X3	.425	-.085	.143	.648
X4	.444	-.315	-.133	.362
X5	.321	.644	.245	-.162
X6	.399	.533	.388	-.103
X7	.490	-.272	.096	-.047
X8	.554	.122	-.054	.151
X9	.663	.073	.003	.221
X10	.466	-.232	-.014	.246
X11	.513	-.262	.539	-.094
X12	.490	-.298	.544	.010
X13	.511	-.409	-.148	.133
X14	.551	.143	-.038	-.076
X15	.517	.363	-.382	-.090
X16	.571	.295	-.214	.124
X17	.528	.018	-.239	.168
X18	.423	.114	-.212	-.125
X19	.539	.280	-.244	-.206
X20	.582	.031	-.147	-.333
X21	.554	-.243	.184	-.160
X22	.613	.051	-.134	-.078
X23	.552	-.393	-.187	-.013
X24	.663	.117	-.274	-.079
X25	.665	-.182	-.039	-.154
X26	.656	-.066	-.251	.158
X27	.627	-.152	.280	-.203
X28	.586	-.140	-.309	-.292
X29	.502	.225	.447	-.217
X30	.607	-.127	.301	-.218

Extraction method: Principal component analysis

Table 5. Component matrix of the rotated factor loadings of the four-factor solution

	Indicators	Component			
		Factor 1	Factor 2	Factor 3	Factor 4
X24	Doing things well in all the subjects in the course	.728			
X28	The fact that my parents keep reminding and following up about my studies (e.g., whether I do my homework and activities, my grades.)	.684			
X26	Making leisure time and academic work compatible	.663			
X15	Obtaining high grades in different subjects	.661			
X19	Finishing the course on time	.636			
X20	Family pressure to obtain good grades	.634			
X25	Family discussion and conflicts caused by my studies	.622			
X22	Keeping up with the academic activities and task	.621			
X16	Future academic and professional perspective	.605			
X17	Choosing subjects in the coming course (e. g. making sure to pass the prerequisite subjects)	.548			
X23	My relationship with my classmates	.542			
X14	Too much responsibility to fulfill my obligations	.534			
X8	Doing a task that involves looking for information and writing	.508			
X18	Getting or keeping a scholarship grant	.494			
X11	Problems or conflicts with teachers		.756		
X12	Problems or conflicts with classmates		.734		
X27	Teachers' pressure about my work and behavior		.711		
X30	The fact that my classmates think I'm not a good student		.698		
X21	Lack of support from my teachers		.642		
X7	Competition among classmates		.543		
X29	Doing poorly on an exam		.532		
X13	Being able to attend all the classes		.472		
X3	Class participation (e.g., asking the question)			.777	
X2	Presentations of work in class			.714	
X9	The task of studying (e.g., meeting established schedules, level of effort)			.588	
X4	Dealing with the teacher outside of class (e.g., in homeroom, office visits)			.559	
X10	Working with classmates on tasks in class			.487	
X5	Academic overload (having too many exams and tasks to do)				.721
X6	Lack of time to fulfill all the activities we are asked to do				.687
X1	Taking exams				.548

Extraction method: Principal component analysis; Rotation method: Promax with Kaiser normalization.

3.1.1. Perceived personal stress

When an individual acknowledges that their resources are no longer sufficient to meet the obligations, they experience stress. As a result, it might be regarded as a perceived disparity between the demands of daily life and the students' ability to respond [13]. In this study, perceived personal stress included doing well in all the subjects in the course, constant monitoring of parents regarding their studies, making leisure time and academic work compatible, obtaining high grades in different subjects, and finishing the course on time.

Furthermore, Heinen, Bullinger, and Kocalevent [13] by highlighting that among personal resources, optimism, and self-efficacy have all been studied as potential stress buffers. In both the general population and students, higher levels of optimism were linked to lower levels of felt personal stress. In other words, students are influenced if they are harassed at home by family or any of their friendly ties. Individuals that suffer high levels of stress require more social support and resources, such as interpersonal support. As stated by Akman [14] that parents did not provide emotional support to students who were under a lot of stress. This revealed that a positive family relationship could provide social support and resources to help students cope with their difficulties [15].

Stressed people are less likely to apply cognitive reappraisal procedures and positively evaluate their surroundings because they are focused with their worries [15]. Jeon, Kwon, and Choi [15] further noted that if this is the case, professional assistance may not be available to the pupils. Perceived personal stress, in particular, was found to limit the protective factors' favorable impact on students' response to their academic work. According to Jain and Singhai [16], students are routinely acclimated in a way that makes them fearful of enduring various problems because the focus is solely on academics rather than the mental evolution of a go-getter. As a result, positive reinforcements should be offered to pupils in order to drive them in their academic pursuits. Dimitrov [17] also emphasized that the students' welfare should be given top priority, with food, exercise, employment, and recreation being some of the areas to concentrate on.

3.1.2. Classroom stress

The second factor identified is classroom stress. The teachers' apprehension on students' performance, their support, and their affection all lead to mutual trust in teacher-student relations; thus, increasing the student's commitment to the school [14], [18]. Previous researcher [14] posited that a healthy classroom relationship can lead to academic and behavioral development, while a hostile classroom environment can lower students' interest in school and their academic performance [14], [19]. Akman [14] further noted that classroom stress is caused by both failure and disappointed expectations.

As a result, if problems or conflicts arise in the classroom, such as those between teachers and students, there will be enough anxiety to cause classroom stress. A contrasting setting might produce a poor classroom atmosphere because learning is built on mutual trust [14]. Lätsch [20] emphasized that classroom competition raises challenges; yet, these issues may lead to school-based prevention and intervention techniques that help pupils do better in school.

3.1.3. Performance stress

Kosir [21] highlighted that a breakdown of the equilibrium between the cognitive-emotional-environmental system and external influences is defined as stress. These external circumstances also contributed to the cognitive and emotional system's equilibrium, depending on an individual's performance capacity (e.g., coping resources) at the time. Students became overwhelmed by internal or external forces as a result of the interruption, producing further performance stress.

It's worth noting that students are aware of their teacher interactions and conversations even after class. Office visits or impromptu meetings in the school lobby or off-campus were examples of these occurrences. These experiences, which were once distressing, are now potentially dangerous because they call into question one's daily assumptions and preconceptions [22]. Lätsch [20] highlighted Lazarus and Folkman [23] notion that small and insignificant happenings in everyday life might induce stress. If this is the case, teachers should recognize that students are caught up in their everyday struggles and be more attentive to their feelings. These annoyances were characterized as dynamic processes (transactions) that have an impact on a conscientious, emotional, and active person [20].

3.1.4. Time management stress

As previously stated, one source of stress for students was the amount of time they spent on learning exercises and assignments [20]. They become agitated and anxious when they believe they do not have enough time to complete all of their activities. Several events in a person's life resulted in negative feelings such as anger, irritation, and anxiousness, which exacerbated stress [16]. Juggling all of one's obligations, from academics to extracurricular activities, is one of these events that may overwhelm students, resulting in a difficult existence. Heavy academic workloads, little study time while continually racing to meet another deadline, and taking and preparing for tests are all reasons why students are anxious about their time management skills [16], [24], [25]. These can elicit a sense of threat [26], and as a result, will be perceived as stressful by the students.

According to Malach-Pines and Keinan [27], stress is the awareness of inconsistency between external burdens (stressors) and a person's ability to meet particular obligations. Part of what teachers should do is focus on allowing pupils to take care of their own welfare and well-being [17]. As a result, if students can effectively manage their time and avoid procrastination, there will be sufficient time for leisure activities.

3.2. Students' level of academic stress

To determine the level of academic stress of college students, the mean, reflected in Table 6. As revealed in Table 6, the students' level of academic stress is within a moderate level. This result was corroborated with the result of previous studies [12], [28]. Both studies revealed that almost all of their respondents have experienced a moderate level of stress. Academic stress is a serious issue that requires attention. Stress has been linked to a variety of factors, including age, degree pursued, GPA, perceptions of English language competence, academic (exam preparation), family and class pressure, grade competitions, and problem-solving skills among others [24], [25], [29]. Furthermore, it has been linked to schizophrenia, depression, suicide, and a variety of maladaptive behaviors such as delinquency and crime [30].

If a student cannot properly manage with academic stress, substantial psychosocial and mental health implications may result [31]. Methods or other coping strategies for stress must be widely accessible among students in order to minimize the negative impact of stress on students' learning and performance.

Table 6. Level of academic stress

Factor	Mean	Level of stress
Perceived personal stress	3.1594	Moderate
Classroom stress	2.8895	Moderate
Performance stress	3.1432	Moderate
Time management stress	3.8360	High
Overall	3.2570	Moderate

Cut off point: 1.00–1.79 (Very low); 1.80–2.59 (Low);
2.60–3.39 (Moderate) 3.40–4.19 (High); 4.20–5.00 (Very high)

3.3. Correlation analysis of the factors and English grades

The result of the correlation analysis using Pearson r between and among the four factors of stress include: perceived personal stress; classroom stress; performance stress; and time management stress are provided in Table 7. As revealed in Table 7, perceived personal stress was significantly correlated with classroom stress ($r=0.520$, $p<0.01$) and performance stress ($r=0.437$, $p<0.01$). Moreover, classroom stress was significantly correlated with performance stress ($r=0.342$, $p<0.01$). This result signified that as the level of one of these three factors increase, there is a significant corresponding increase in the levels of the other two factors. However, time management stress was not significantly correlated with the other three factors.

On the other hand, grades in English were not significantly correlated with the four dimensions of academic stress. This showed that an increase or a decrease in the levels of these factors does not necessarily imply an increase or decrease in their grades in English. As shown and discussed earlier, students had a moderate level of academic stress and since the academic stress did not significantly impact their grades in English, this could mean that students had ways to cope with the various academic stress. These stress experiences were modulated in a dynamic process by appraisal and coping, wherein individuals who perceive stress examined and used their presently available coping resources [13], [23]. Therefore, coping mechanisms in stress might be the reason behind a moderate level of academic stress and the non-significant relationship between academic stress and English performance.

Table 7. Result of the correlation analysis of the factors and the English grades

	Factor 1	Factor 2	Factor 3	Factor 4	Grades
F1	1				
F2	.520**	1			
F3	.437**	.342**	1		
F4	-.014	-.104	.014	1	
Grades	-.036	-.089	.033	.044	1

**Significant at 1% level

4. CONCLUSION

Students in college were shown to experience a moderate degree of academic stress, which was influenced by four factors: perceived personal stress, classroom stress, performance stress, and time management stress. The students' stress experiences were regulated through coping mechanisms that they used to manage their academic stress and move towards carrying out their responsibilities despite the existence of these stressors, which recounts people's ability to exert self-control.

As implication of these findings, institutions should implement institution-based prevention and intervention initiatives to reduce students' academic stress, which may help them perform better in school. Teachers, for example, should recognize that students are engrossed in their daily struggles, be more attentive to their sentiments, and allow students to attend to their own welfare and well-being, allowing them to balance academic and recreational activities.

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