

EAT-26 As A Stable Measure Of American College Athletes: Diet, Others Notice, And Calorie Counting In Predicting Eating Health

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Abstract—This study examines the structure and reliability of the Eating Attitudes Test (EAT-26) in a sample of 144 college athletes. The EAT-26 is commonly used to measure eating attitudes but is not intended to diagnose eating disorders. The study aims to confirm if the test's factor structure, which has been stable since its development in 1979, remains consistent in this new group. The results show that the EAT-26 continues to reflect three main factors—Dieting, Others Notice, and Calorie Counting. These factors accounted for most of the variation in responses, with "Dieting" being the most significant at 25%. Other components related to food control and eating behaviors also emerged. These findings support the ongoing reliability and usefulness of the EAT-26 for assessing eating attitudes in healthy populations, especially among college athletes, and provide a solid reference point for future research on eating behaviors.

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Keywords—Eating Attitudes Test, EAT-26, college athletes, college undergraduates, reliability and validity, eating disorders in nonclinical samples

I Introduction

The EAT-26 or Eating Attitudes Test (Gardner and Garfinkel, 1979; Garner, Olmstead, Garfinkel and Bohr, 1982; Janahi, Alkhater, Bucheer, Hashem, Alothman, Alsada, Bucheer, Jandeel, AlJamea, Al Aqaili, Ghazzawi, and Jahrami, 2024; Rogoza, Brytok-Matera and Garner, 2016) has been cited by over 8,000 articles and has since become the main source of psychometric information about eating attitudes measurement. The EAT-26 is designed to screen non-clinical samples through self-reports of eating

attitudes. It is not designed for diagnosing eating disorders because it asks for self-reported attitudes and behaviors, not underlying psychological issues. The EAT-26 has become a highly reliable and valid measure of eating disorder attitudes which are sometimes correlated with psychological symptoms and so are extremely important to detect and understand. The reliability of the EAT-26 over time means that the factor structure from the original test has withstood the test of time, even if eating disordered thinking and behaving has increased slightly since then (Galmiche, Déchelotte, Lambert, and Tavolacci, 2019). Galmiche et al. reported an increase in point prevalence of eating disorders over recent years from 3.5% in 2000–2006 to 7.8% in 2013–2018.

If the EAT-26 shows a similar structure in 2023 as in 1979, 1982, 2016, and 2024, then the continued reliability of the scale is supported. Given the long history of research hoping to have used the EAT-26 reliably and succeeded, the present study is expected to replicate that structure. The second main outcome of this study is to provide evidence for the test's stability over time with reliability coefficients. Structure and stability are the key ingredients of a strong test. The present study looks at 144 college athletes taking the EAT-26 for a check of structure through factor analysis and a check of stability through reliability. A principal components factor analysis will be reported and components with Eigen values greater than 1 considered reliable factors for which concept names can be applied.

Rogoza et al. (2016) found a general factor of eating disorder and three specific factors that are likely to be similar to those found in the present study with a very similar sample. They found Food Awareness about Diet, Social Pressure and Oral Control, and Food Preoccupation in addition to a general EAT-26 measure they called ED. In 2022, Papini, Jung, Cook, Lopez, Ptomey, Herrmann, and Kang even found some stability in the measure comparing obese and normal weight individuals in a

weight loss trial but concluded that the test was only moderately sensitive to non-clinical sample variation. A recent meta-analysis by Janahi, Alkhater, Bucheer, Hashem, Alothman, Alsada, Bucheer, Jandeel, AlJamea, Al Aqailli, Ghazzawi, and Jahrami (2024) found the structure of the EAT-26 to be internally reliable and stable in factor structure.

The main purpose of this research is to test the stability and reliability of the EAT-26. The main goal is to provide a benchmark for studies of eating behavior in healthy college athletes. Understanding a good benchmark against which to compare various environmental conditions that prevail can be a valuable addition to the research base. Socioeconomic status has been shown to be correlated with EAT-26 scores with less resourced students having higher weight and riskier attitudes about eating (Shrestha et al., 2024). Knowing the structure of the EAT-26 among a relatively homogeneous sample, like in the present study, is therefore especially important since social and economic variables will come in to play in future context-rich research. The present study checks the benchmark EAT-26 structure by predicting a three-factor outcome and an overall reliability, as expected from previous research.

II. Method

The present study looks at 144 college athletes taking the EAT-26 for a check of structure through factor analysis and a check of stability through reliability. See Figure 1 which shows chronological age has a mean of 7557.38 days or 20.70 years old. Report review data were de-identified, and the project was approved by the University IRB. Because of de-identification, the present study does not have other demographics about the participants, except for birthdate, which was then transposed into days in order to be more de-identified in the file.

An excel file containing EAT-26 responses was converted to an SPSS file and the resulting record was used as a de-identified database. The EAT 26 scale is a self-reported eating habits assessment tool that includes 26 items for evaluating ED symptoms and concerns. The EAT-26 scale is broken down into three sections: (a) self-reported height and weight to calculate BMI; (b) 26 items rated on a six-point Likert scale to determine how frequently a person engages in specific behaviors (e.g., "always," "usually," "often," "sometimes," and "never"); and (c) five behavioral items rated on a similar six-point Likert scale to determine how frequently a person has engaged in disordered eating behaviors in the previous six months. Responses to questions 1- 25 are scored on a four-point scale, with "always" earning 3 points; "usually" earning 2 points; "often" earning 1 point; and "sometimes," "rarely," and "never" receiving 0 points. Reverse scoring is applied to item 26 before adding items 1-26 to determine the final score.

III. Results and Discussion

Factor Analysis of EAT26

Recall that Garner and Garfinkel (1979) found three subscales in the original EAT26, a Diet Subscale (Questions 1,6,7,10,11,12,14,16,17,22,23,24, and 26); a Bulimia and Food Preoccupancy Subscale (Questions 3,4,9,18,21,and 25); and an Oral Control Subscale (Questions 2,5,8,13,15,19,and 20). The present study supports that structure because similar students from 45 years ago align with those from a sample taken in 2023 in the present study.

Principal components factor analysis was conducted on 144 athletic undergraduates. No participants scored above the threshold for clinical diagnosis, so there were no indications of eating disorders among the group.

The average age was 20 years with most students 19 or 20 years old. Students were of the good health expected of typical college athletes. See Figure 1 for chronological age distribution. The standard deviation is 1.70 years, so most students are within one or two years in age. The oldest student participant is 24.65 years old, but few are aged above 21. In fact, it's young undergraduates because a subgroup of 36% of all students are 19 years old.

As in previous research, the three main factors revealed via a principal components analysis (PCA) were **DiETING**, **Others Notice**, and **Calorie Counting and Sugar**. A total of 8 components were revealed with Eigen values greater than 1. The section that follows describes each contribution to EAT26 scores. Question 9 about vomiting was excluded because there were only zeros as responses indicating that no students chose that behavior. See Figure 2 for the full component matrix and Figure 3 for total variance explained.

The principal component that was discovered accounted for 25% of the total variance in EAT26 and was called **DiETING**. DiETING included questions 1,11,12,14,17,22,23, 24 and 25. Eight of the 10 questions overlapped with the original Garner and Garfinkel DiETING Subscale. See Appendix A for the set of 26 questions in the EAT-26 grouped by the reliable PCA factors revealed.

The second component accounted for 9% of the variance and was called **Others Notice** (questions 5,8,15, and 20). The third component accounted for 8% of the variance and was called **Calorie Counting and Sugar** (questions 6 and 16). The fourth component accounted for 7% of the variance in EAT26 and was called **Too Thin** and was question 13.

The fifth component accounted for 6% of the variance and was called **Carb Avoidance** (questions 5 and 7). The sixth component accounted for 5% of the variance and was represented by a single question, question 26 about **Enjoying Rich Foods**.

The last two components were about control. Component 7, called **Self-control**, accounted for 5% of the variance and was question 19. Question 18 was the 8th component and was called **Food Controls Me**, with 4% of the variance.

A modern benchmark for the EAT-26 in a healthy American collegiate sample shows a similar structure to the many previous studies that have come before. In sum, **Dieting** remains the single most powerful set of questions and centers around the prevailing and long-lasting preoccupation with dieting including questions about fat on the body, eating diet foods, and burning calories to be slimmer. The second most powerful modern component is **Others Notice**. Social cues during meals include taking longer to eat, cutting food into smaller pieces, and having others think one doesn't eat enough. Finally, **Calorie Counting and Sugar** remains an important marker of EAT-26 and includes ideas about counting the calories of food eaten and avoiding foods with sugar. This research shows that it's possible to maintain the reliability of the

EAT-26 over decades of societal change about eating. Whether too much fat or sugar or carbohydrates are depicted as the culprits for poor eating behaviors in popular media, the EAT-26 shows an abiding three-factor structure in a principal components analysis.

The present results reflect a quite healthy attitude about eating even if swayed by popular media to one primary culprit or another from the time it is taken. Plans for increasing these healthy attitudes as touch points are paramount. Touch points revealed by the EAT-26, now, as in 1979, include watching diet, watching other people, and watching calories and sugar. These points should prove most valuable in any public health plans for improvement in eating behaviors. Even as society focuses on different aspects of healthy eating overtime, this survey has a strong psychometric structure. The EAT-26 remains a reliable assessment of eating behaviors and should remain a stalwart in future research.

Figure 1. **Chronological age** has a mean of 7557.38 days or **20.70 years old**.

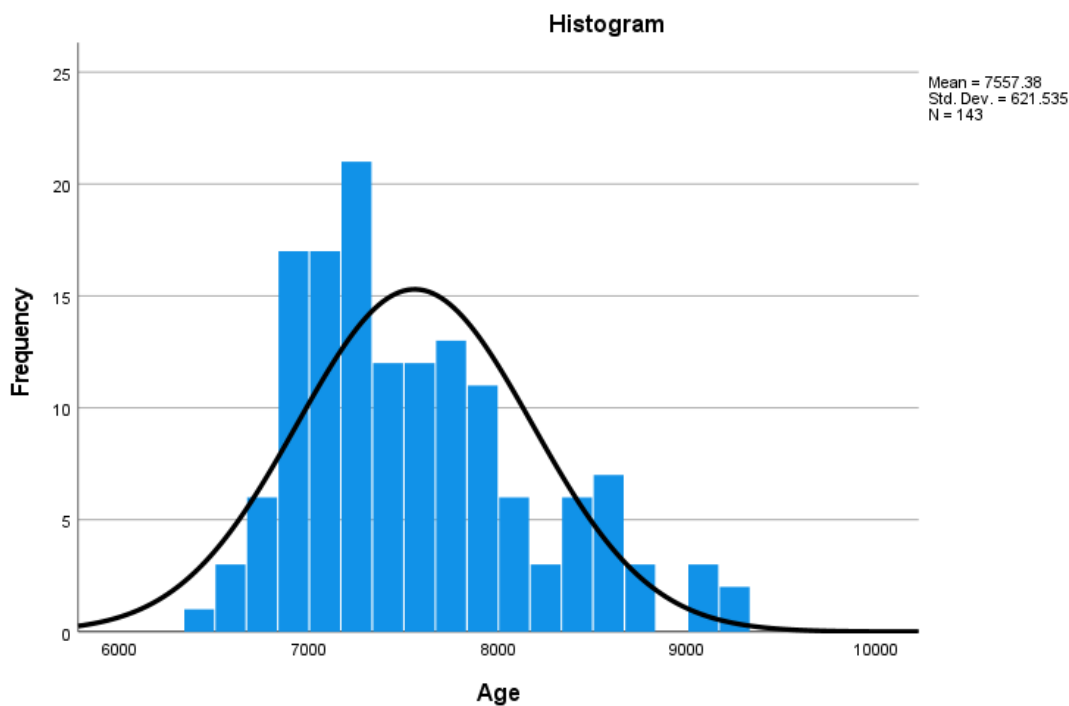


Figure 2. **Component Matrix^a**

	Component							
	1	2	3	4	5	6	7	8
QB1	.616	-.362	-.206	.273	.030	-.057	.010	.055
QB2	.396	-.046	-.221	-.311	.122	-.176	.292	-.036
QB3	.229	-.339	.142	.241	.112	.141	-.510	-.136
QB4	.429	.051	-.421	.025	.235	-.442	-.098	.253
QB5	.393	.415	.023	.068	.470	-.240	-.300	.015
QB6	.344	-.210	.527	.357	-.004	-.121	.117	-.011
QB7	.202	.261	.113	.334	-.711	-.016	.014	-.042
QB8	.231	.535	.104	.182	.416	.374	.278	.022

QB10	.463	-.433	-.381	.359	.141	.137	.076	.065
QB11	.722	-.364	-.267	.100	.073	.061	.047	.009
QB12	.604	-.167	.113	.209	.070	-.088	-.289	-.115
QB13	.195	.249	-.087	.601	.093	.300	.401	.272
QB14	.866	.046	-.083	-.156	.148	-.041	.037	-.122
QB15	.402	.655	.166	.008	.123	.202	-.124	-.086
QB16	.527	-.106	.599	-.001	.079	.170	-.240	-.014
QB17	.590	-.241	.452	-.144	-.190	.052	.053	.162
QB18	.259	-.031	.347	-.355	-.098	-.003	.022	.713
QB19	.078	-.048	.383	.104	.032	-.434	.472	-.439
QB20	.427	.623	.031	.182	-.221	-.240	-.208	-.033
QB21	.534	.218	-.398	.082	-.406	-.079	-.154	.045
QB22	.702	-.083	-.041	-.287	-.023	.210	.180	-.190
QB23	.686	-.070	.336	-.247	.017	.097	.064	-.040
QB24	.761	.033	-.241	.010	-.350	.116	.122	-.052
QB25	.666	.225	-.120	-.475	-.016	-.109	.074	-.043
QB26	-.026	.004	-.289	-.304	-.078	.517	-.161	-.235

Extraction Method: Principal Component Analysis. 8 components extracted.

Figure 3. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.343	25.374	25.374	6.343	25.374	25.374
2	2.234	8.938	34.312	2.234	8.938	34.312
3	2.121	8.483	42.795	2.121	8.483	42.795
4	1.734	6.935	49.729	1.734	6.935	49.729
5	1.457	5.826	55.555	1.457	5.826	55.555
6	1.256	5.023	60.578	1.256	5.023	60.578
7	1.238	4.953	65.531	1.238	4.953	65.531
8	1.030	4.122	69.653	1.030	4.122	69.653
9	.927	3.710	73.362			
10	.863	3.454	76.816			
11	.786	3.146	79.962			
12	.697	2.788	82.750			
13	.667	2.668	85.418			
14	.534	2.135	87.553			
15	.506	2.022	89.576			
16	.462	1.846	91.422			
17	.424	1.694	93.116			
18	.390	1.562	94.678			
19	.377	1.509	96.187			
20	.289	1.156	97.343			
21	.235	.940	98.283			
22	.212	.847	99.130			
23	.121	.486	99.616			
24	.056	.225	99.841			
25	.040	.159	100.000			

Extraction Method: Principal Component Analysis.

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Appendix A

EAT-26 questions grouped by Components discovered through PCA

Dieting component accounts for 25% of the variance in EAT-26 and includes the following questions:

1. Am terrified about being overweight.
11. Am preoccupied with a desire to be thinner.
12. Think about burning up calories when I exercise.
14. Am preoccupied with the thought of having fat on my body.
17. Eat diet foods.
22. Feel uncomfortable after eating sweets.
23. Engage in dieting behavior.
24. Like my stomach to be empty.
25. Have impulse to vomit after meals.

Others Notice component accounts for 9% of the variance in EAT-26 and includes the following questions:

5. Cut my food into small pieces.
8. Feel others would prefer if I ate more.
15. Take longer than others to eat my meals.
20. Feel that others pressure me to eat.

Calorie Counting and Sugar component accounts for 8% of the variance in EAT-26 and includes the following questions:

6. Aware of calorie content of foods that I eat.
16. Avoid foods with sugar in them.

Too Thin component accounts for 7% of the variance in EAT-26 and includes the following question:

13. Other people think I am too thin.

Carb Avoidance component accounts for 6% of the variance in EAT-26 and includes the following questions:

5. Cut my food into small pieces.
7. Particularly avoid food with a high carbohydrate content.

Enjoying Rich Foods component accounts for 5% of the variance in EAT-26 and includes the following question:

26. Enjoy trying new rich foods.

Self-Control component accounts for 5% of the variance in EAT-26 and includes the following question:

19. Display self-control around food.

Food Controls Me component accounts for 4% of the variance in EAT-26 and includes the following question:

18. Feel that food controls my life.