

OPENNESS PERSONALITY TRAIT AS A PROTECTIVE FACTOR FOR CONSUMPTION OF ULTRA PROCESSED FOOD: INSIGHTS FROM VARSITY CRICKET ATHLETES AND NON-ATHLETES' UNIVERSITY STUDENTS

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ABSTRACT

In this study, we looked at the Big Five personality traits, especially openness. The goal of this study was to see if these traits predict UPF intake among varsity cricket players vs non-athlete students. Data was collected from 351 participants. 173 were cricket players (Mean age = 20.42 years, SD = 1.846). The other 178 students were not athletes (Mean age = 20.78 years, SD = 1.679). A cross-sectional study design was used. Participants filled out their basic info, the Big Five Inventory, and a questionnaire on eating processed foods. We analyzed the data using Hierarchical regression test. The results showed that only openness was significant predictor of ultra processed food consumption in both groups. Students with higher openness ate less ultra processed food. Overall, the study suggests that openness consistently protects against ultra processed food consumption. These findings highlight the importance of Personality traits particularly openness while designing plan to reduce ultra processed food intake to promote healthier eating habits in young adults.

Keywords: ultra processed food, openness, varsity cricketer, non-athlete's varsity students.

Introduction

Consuming ultra-processed foods (UPF) has become a major concern in public health because these foods are easy to find and are linked to obesity, metabolic and cardiovascular diseases, and mental health issues (Monteiro et al., 2019; Murthy et al.). University students, both athletes

and non-athletes, are especially at high risk of being addicted UPFs. A reason to this may busy study schedules, peer influences, less nutrition knowledge and limited control over eating habits (McArley, 2025). Cricket players could also experience other challenges as well. Their food choices could be affected by their ability to

maintain their nutritional needs and training needs (Cort et al., 2025). Knowing the variables that have an impact on those categories of eating habits is essential to create methods that support better health and decrease in their dependence on UPFs. Being open to fresh things which is the most noticeable for the big five personality traits is a helpful psychological term that clarify these distinctions (Rani Bhattacharjee & Ramkumar, 2025).

Being interested, innovative and inclined to experiencing new things constitute the characteristics of the personality trait identified as "openness to experience" (Taylor Bunce & Boerger, 2022). People with a significant amount of this type of personality trait are usually willing to exploring new things, admire beauty and creativity and adjust successfully to changes in their style of life. When it comes to our eating patterns this characteristic has significant impact on preferences and level of receptivity to nutrition education (Tsartsapakis & Zafeiroudi, 2024). For example, research reveals that individuals with high willingness to learn prone to experiment with diets made up of plants, try unfamiliar foods and be inclined to health-related information (Clicerì et al., 2018). On the other hand, people who have low openness dimension often stick to familiar, easy to find and easy to cook foods moreover, they mostly resist changing their routine, so they usually stick to unhealthy or less healthy options. Considering ultra-processed foods, being open-minded can be a helpful trait encouraging individuals to move away from relying on unhealthy, heavily processed foods and instead explore healthier options (Gilmartin et al., 2022). The connection among personality traits as well as eating habits is frequently significant for sports especially among professional athletes such as players for cricket. The nutritional content of an athlete's diet has a significant effect on their general efficiency, strength and speed of rehabilitation. According to some research, learners that are active athletes tend to be more mindful of what is good for them compared to students that are not involved in sports (Brauman et al., 2023). Meanwhile, additional study shows that due to ultra-processed foods (UPFs)

frequently available, affordable and circulated between peers, athletes as well are attracted by their attraction (Shannon & Avery, 2025). For cricket to perform at its highest level, that requires both outstanding physical endurance and clever mental abilities, a balance diet is important (Lim et al., 2023). Those with high degree of openness are often easier to pay attention to food choices supported by evidence from science and have more open to exploring foods that are healthier. They might choose to stay away from ultra-processed foods (UPFs) against the recommendations of their peers or their social settings. Meanwhile, non-athlete learners might not feeling as inspired to perform successfully and often go through UPF-filled campus eating areas (Reuben, 2022). These surroundings could affect their food decisions, so remaining flexible is particularly important when it involves selecting healthier foods.

By studying through personality traits and how they influence eating habits everyone can discover a lot regarding nutritional psychology (Brivio et al., 2023). In basic terms, this field examines how our opinions and behaviors affect our eating habits. Past study has shown that personality traits like integrity often encourage individuals to choose healthier decisions regarding their diets. meanwhile, we currently struggle to comprehend how being opened to new experiences as well as playing around with various foods might assist people stay away from highly processed foods (Ilieva et al., 2025). considering the reality which athletes and non-athletes have very distinct way of life, level of stress and health goals, we also do not have a great deal of knowledge on how they compare in this respect (de Faria Coelho-Ravagnani et al., 2024). Finding out this can be useful in everyday life world in terms of developing our educational awareness. Athletics trainers and nutrition coaches, for example, might create strategies according to an athlete's level of openness. Similarly to that, university health services might begin efforts that attract the curiosity of learners and motivate these individuals to give consuming more whole foods.

It looks more essential now than ever to think about the possible effect of getting a flexible

mindset on students eating habits, especially with respect to ultra-processed foods (UPFs). By doing the use of information from psychological sciences and diet the study offered here teaches us the way personality traits could affect our health options. While professional cricket players and non-athlete university learners are contrasted, some interesting variations among each group become apparent. It might be an example of how a person diet can be affected by transparency. In overall, knowing how openness impacts our food decisions especially they tend toward or stay away from highly refined foods may assist individuals create happier lives, enhance our sports performance and protect the health of learners and players.

Literature review

Many studies are focused on how big five personality traits effect on different habits of human beings, likewise the openness to experience is also point of focus and psychologists believe that this personality trait may influence the types of food we choose and also influence our overall eating habits. When considering the university students especially athletes with non-athlete counterparts this trait may or may not be effective because their choice for eating food and nutritional needs can be quite different. For instance, athletes may choose foods that will boost their performance or help them recover, on the other hand, non-athletes may prefer junk food or fast food based on their addiction, convenience or cheap price. So, non-athletes may be more prone to poorer eating habits as compared to athletes. Moreover, in universities students commonly find ultra processed foods (UPFs) due to this easy option students chose to eat this food furthermore, these foods are tasty and cheap. If openness personality trait can influence on food choice, then by understanding how and at what factors it effects we may develop coping strategies to protect university students form eating too much UPFs this may lead to healthier eating habits and better lifestyle (Askari et al., 2020; Monteiro et al., 2018).

Mostly recent literature suggests that Scoring high in Openness personality trait is directly proportional to making healthier food choices, for

example, Keller and Siegrist (2015) in there study found that people who are more open tend to eat more fruits and vegetables hence they are more inclined towards plant based diet as a result they are less likely to eat snacks or ultraprecise foods. Moreover, in a similar study done by Sutin and Terracciano (2016), where the authors discovered that the participants with higher openness personality trait do not prefer to sticking to same diet routines as well as they even not stick to ready to made meals. People with higher openness like to have variety in there eating and diet this variety ultimately helps them to keep away from the UPFs. Both of these studies conclude that higher openness may help staying away from ultra processed foods.

Personality traits can have significant impact on an athletes discipline weather it is for training of the nutritional discipline practiced by the athlete. University cricket player just like other stamina-based sports athletes, require such diet that help them boost their stamina, recovery time and keep their focus on the ground. There are many researches that suggests athletes with higher openness are often more proactive in choosing right nutrition, than those athletes who score lower in openness. For instance, a study by Dohle et al. (2014), shows that athletes who scored higher in Openness personality trait were more proactive while choosing their sport nutrition. These athletes were more inclined towards experimenting with various supplement and they didn't stick to single diet plan but they often try different techniques to have well balanced meal plans according to their personal needs.

On the other hand, non-athletes university students face deferent set of challenges according to their situation. Research indicate that many students depend heavily on Ultra processed foods, due the reasons firstly that they are on tight budget, secondly they don't know how to cook and lastly, the UPFs are easily available everywhere and even more they are common in on-campus. (Steele et al., 2016). However, even for these (non-athletes) students higher openness may be a key factor for making healthier choices instead of relying on easy to find ultra processed foods. For example, De Bruijn et al. (2007) found that students who

scored higher in openness were more likely to choose sustainable and healthier diets, in comparison to the student who had lower openness. The students with lower openness were often found to be resistant to changing their eating habits. This shows that higher openness might be a factor for contributing towards healthier food choices apart from the background of student whether they are athlete or non-athlete.

Recent literature also suggest that gender can affect the food choices or it can have impact on stress handling techniques related to food choices. The fact that female student often feels more stressed about the food choice and may turn to emotional eating more frequently, is backed by many research studies, the studies also suggest that these factors can lead females to rely on ultra processed foods. However, it is worth mentioning that women who have high openness are often keen to find healthier food choices and they try to have more diverse food options. This leads us to conclusion that high openness may also be a factor to cope with the extra pressure women face regarding to food.

In conclusion, the literature presents that higher openness may help people to develop healthier eating habits and avoid Ultra processed foods, regardless of their athletic backgrounds. Similarly, for varsity cricket player, having higher openness may mean adopting better nutritional habits which may significantly improve their recovery and performance. On the other hand, non-athlete students who have higher openness might find it easier to avoid ultra processed foods whether they are easily available on the campus. Recognizing this connection can help us create better, more targeted nutritional advice for both athletes and students in university environments.

Methodology

This study adopted a cross-sectional study design that analyze data from a population at a single point in time.

This study was based on the purposive sampling method and data was collected from the cricket athletes and non-athletes who belonged to the different universities of Lahore. The total number of athletes and non-athletes in Lahore were 353.

The only 101 male cricketers and female cricketers⁷⁴ were falling in age 18-25 years. These cricketers participated in different levels of cricketer's competitions International, National, Inter-varsity and clubs. In contrary to crickets, the data was also collected like from 104 non-athlete's male and 74 non-athletes female from different background to differentiate the level of ultra process food consumption and big five personality traits. The non-athletes (student) were selected randomly. Hence, the total number of participants were 353 (175 Cricketers athletes and 178 non-athletes)

Data was collected from participants using two standardized instruments along with self-reported demographic questionnaire. The finalized tool was divided into the following three sections. The first section of our study consisted of following items such as age, gender, education, level, material, status, family, residence, athletic status (whether they are cricket athletes or non-athletes) whenever, participants claimed to be cricket athletes, further info such as training hours in a day, training days in a week, level of participation, year of experience. The Big Five Inventory-Short Version (BFI-10) is a quick and straightforward way to assess personality traits, developed by Rammstedt and John (2007). It's a shorter version of the original BFI-44, created to save time and prevent fatigue during testing, while still providing reliable results. Because this version has been widely used in studies with student-athletes, it fits well for the group we're working with. In this study, the Cronbach's alpha scores for the different traits were: Extraversion = .812, Agreeableness = .836, Conscientiousness = .808, Neuroticism = .832 and Openness = .744. These numbers show that the tool is both valid and consistent in measuring what it's supposed to (Rammstedt et al., 2023).

A quick and easy method to determine how frequently people consume processed food is to use sQ-HPF it is abbreviated as The Screening Questionnaire for Highly Processed Food Intake. It was developed by Martinez-Perez et al. (2022). It is easy yet reliable method, Cronbach alpha scores for this tool ranges from 0.78 to 0.85 (Pueschel et al., 2025). this tool eliminates the need to use difficult dietary surveys used before in order to

identify eating patterns that were linked to processed foods. This tool is useful for both research purposes and different healthcare settings because both need to access common processed foods. This tool has been successfully tested with young adults and college students. This demonstrates that the tool (sQ-HPF) is a reliable and accurate instrument for calculating the consumption of processed foods.

In this study, we collected data by approaching participants in person. Before starting, we got approval from the institutional ethical review board. All athletes participating were in the middle of their cricket season when we gathered the information. We made sure everyone knew that they could take part voluntarily. The confidentiality of the information was protected and we assured participants that their data wouldn't be shared with anyone else. Their daily lives activities will not be influenced in any way through the data that was obtained for the purpose of research. One by one, the questionnaires were

handed out and participants have been given the freedom to choose the replies that they believed most correctly expressed their thoughts. Furthermore, if they might have any queries or problems, they were given the chance to ask. Each participant finished the questionnaire in approximately ten to fifteen minutes on average. IBM SPSS Statistics version 27.0.1.0 (64-bit) has been used for analyzing the data. We studied basic statistics concepts and applied Hierarchical Multiple Linear Regression (HMLR) to evaluate the predicted ability of different factors with the goal to obtain an improved awareness of the data. Any findings that were listed below the significance requirement of $p < 0.05$ were considered to be statistically significant. We also confirmed all of the basic HMLR hypotheses which include the normal distributions, linear connections, equal variation, absence of multiple linear relationships and independent mistakes before doing the one of the main analyses. All of these assumptions were met.

Results

Table 4.1 (Demographic characteristics for male and female students)

Variable	Category	Athletes		Non athletes	
		<i>f</i>	%	<i>f</i>	%
Status	Male	101	57.7	104	58.4
	Female	74	42.3	74	41.6
Marital status	Single	175	100.0	178	100.0
Residence	Urban	133	76.0	154	86.5
	Rural	42	24.0	24	13.5
Playing level	intervarsity	125	71.4	0	0
	National	50	28.6	0	0
Age		M (20.42)	Sd (1.846)	M (20.78)	Sd (1.679)
Cricket Experience		M (5.86)	Sd (1.362)	M (0.00)	Sd (0.00)

Looking at the demographic details, we see that both athletes and non-athletes are mostly male, with about 58% in each group. Everyone in both groups was single. Most participants lived in cities, although this was a bit higher among non-athletes around 86.5% compared to athletes at 76%. When it comes to sports experience, most of the athletes competed at the intervarsity level (about

71%), while 29% played at the national level. None of the non-athletes reported having any competitive sports experience. The average age was quite similar: athletes were around 20.4 years old, and non-athletes about 20.8. As you might expect, athletes had quite a bit of cricket experience, averaging nearly 6 years, whereas non-athletes had none at all.

Table 4.2: Summary of ANOVA Predicting Big Five Personality Traits for athletes

Model		SS	df	MS	<i>f</i>	<i>p</i>
1	Regression	277.585	1	277.585	18.360	.000 ^c
	Residual	2600.444	172	15.119		
	Total	2878.029	173			
2	Regression	1462.303	6	243.717	28.749	.000 ^d
	Residual	1415.726	167	8.477		
	Total	2878.029	173			

Note SS=Sum of squares, df = degree of freedom, MS = mean square, F = F statistic and *p* = significant.

The ANOVA results indicated that both Model 1 and 2 were statistically significant for predicting the dependent variable. Model 1 was $F = 18.360$, $P = .000$ was showed that the statistically significant portion of the variance in ultra processed food addiction among athletes.

The model 2 which included all BFI traits and gender as predictors was also yielded a significant $F = 28.749$ and $P = .000$ that showed complete model, included BFPTs was statistically significant predicts sleep ultra processed food addiction and explained even a larger amount of variance then model 1.

Table 4.3: Summary of ANOVA Predicting Big Five Personality Traits for Non athletes

Model		SS	df	MS	<i>f</i>	<i>p</i>
1	Regression	2.303	1	2.303	0.112	.739 ^c
	Residual	3628.462	176	20.616		
	Total	3630.764	177			
2	Regression	936.570	6	156.095	9.907	.000 ^c
	Residual	2694.194	171	15.756		
	Total	3630.764	177			

The ANOVA results indicated that Model 1 was not statistically significantly predict the dependent variable, $F = .112$, $P = .739$.

The model 2 which included all BFPTs as predictors yielded a significant $F = 9.907$ and $P = .000$, that showed complete model, included BFPTs statistically significant predicts ultra processed food addiction and explained even a larger amount of variance then model 1.

Table 4.4: Hierarchical Regression for Athletes Students

The results (table 4.4) yield that in model 1 one demographic character gender ($B = 2.559$, $p = .000$) was statistically significant predictors.

In model 2 gender was remain significant ($B = 1.467$, $p = .004$) and among BFPTs only openness to experience was statistically significant ($B = -3.305$, $p = .000$) negatively associated with ultra processed food. Remaining other BFPTs extraversion ($p = .955$), agreeableness ($p = .691$), neuroticism ($p = .175$) and openness ($p = .358$), were not significant predictors the outcome.

Table 4.5: Hierarchical Regression for Non athletes Students

Model		B	Std. Error	Beta	t	p
1	Gender	.231	.691	.025	.334	.739
2	Gender	.638	.615	.070	1.037	.301
	Extraversion	.040	.337	.008	.119	.906
	Agreeableness	-.413	.306	-.091	-1.352	.178
	Conscientiousness	-.425	.312	-.091	-1.362	.175
	Neuroticism	-.032	.339	-.006	-.094	.925
	Openness	-2.870	.388	-.491	-7.398	.000

The results (table 4.5) showed that in model 1 the demographic characteristic gender ($p = .739$) was not statistically significant predictors.

In model 2 remaining same the demographic characteristic gender ($p = .532$), was not statistically significant predictor. among BFPTs only openness was statistically significant ($B = -2.870$, $p = .000$) negatively associated with ultra processed food. Remaining other BFPTs extraversion ($p = .906$), agreeableness ($p = .178$), neuroticism ($p = .925$) and conscientiousness ($p = .175$), were not significant predictors the outcome.

Discussion

The main goal of this study was to look at how the Big Five Personality Traits relate to the amount of ultra-processed food people eat, focusing on

consumption in both groups. People who scored higher in openness tended to eat less ultra-processed foods, meaning they were less dependent on those kinds of foods.

Model		B	Std. Error	Beta	t	p
1	Gender	2.559	.597	.311	4.285	.000
2	Gender	1.467	.496	.178	2.954	.004
	Extraversion	-0.015	0.271	-0.003	-0.056	.955
	Agreeableness	-0.101	.255	-.023	-.398	.691
	Conscientiousness	.282	.289	.054	.975	.331
	Neuroticism	-.188	.270	-.042	-.696	.488
	Openness	-3.305	.286	-.658	-11.538	.000

university-level cricket players and students who don't play sports. From what we know, no previous studies have studied whether personality traits are connected to UPF addiction, especially comparing athletes in cricket to non-athletes. This makes our research pretty new in sports and nutrition psychology. What we found was that, out of all the personality traits, Openness to Experience stood out as the only one greatly linked to UPF

The study found that the amount of ultra processed foods consumed by the athletes in this study particularly varsity cricket players was influenced by both gender and openness. However, while taking into account the personality traits the impact of gender becomes less significant. This suggests that openness have greater impact on food consumption rather than gender. However, on the other hand, for the non-

athletes gender did not significantly predict the eating behavior, nevertheless, the openness was still the significant predictor for the lower consumption of ultra processed foods. In general, these results suggests that higher ones can work as a protective factor against the consumption of ultra processed foods, further more openness can also help people avoid eating unhealthy food regardless of their physical activity background.

The key result that higher openness is directly associated with lower consumption of ultra processed foods is inline with previous research. For example, Keller and Siegrist (2015) found that people with higher openness were more inclined towards fruits and vegetables. Hence, they were consuming more plant-based diet as a result they avoided ultra processed foods. Similarly, Sutin and Terracciano (2016) in there research reported that higher openness was linked with consuming huge variety of foods, it was also negatively associated with ultra processed foods. In another study conducted by Möttus et al. (2012) the authors suggests that openness is generally connected to healthier eating habits even in different cultures. All these studies support the result that the people with Higer openness are more likely to chose healthy food they will most probably avoid unhealthy and ultra processed foods.

The point is also worth mentioning that although different personality traits like conscientiousness and neuroticism have been linked to eating habits in many previous studies, however they did not reach significance in this study. For example previous research by De Bruijn et al. (2007) reported that student with higher conscientiousness were more likely to eat healthier foods and follow healthier dietary plans. Goldberg and Strycker (2002) also found that higher neuroticism was often connected with poorer eating choices. Probably the reason of the insignificance of these traits in our study was because the university students faced a different environment then general population, they are faced by challenges like limited time to eat food during tough schedules of lectures, or the convience to find specific food, they probably incline towards the food easily available on campus all these factors play a huge role in there

eating choices. For students with higher openness, it is more important to try new foods which act as protective barrier against ultra processed foods rather than personality traits like consciousness or neuroticism.

Comparing athletes with their non athletes counterparts help us to understand the differences better for clarification, varsity cricket player usually faces strict training, and they need to meet high-performance standards, which encourages them to stay disciplined on there eating habits, they must choose heather foods. In addition, athletes with higher openness, this kind of structured routine may further motivate them to explore new sports specific nutritional plans. However, for non-athletes, who are not bound to such standards may stick to the food they find most easily on the campus, in case of these students higher openness is only and most important factor that encourages them to try out healthier options even if there is not any external pressure to do so.

Future recommendations

Future research should focus on how openness influences the eating habit of people specially on a larger scale with more diverse background of participants. Future research may include athletes with different sports, and various cultural backgrounds, more over equal consideration should be given to male and female. Or else a longitudinal or experimental research plan could also be adopted for better understanding the factors and their contributions towards eating patterns. It may also be effective to combine self-reported eating habits with more objective ways of measuring the diet.

Conclusion

In conclusion, the findings form this research suggested that openness is a protective factor for the consumption of ultra processed foods in both athletes and non-athletes. The findings indicated that higher Openness is a common factor that helps the students to avoid eating too much ultra processed foods. Openness may encourage the athletes to select the dietary plans that can improve their performances in the sports. In contrast, non-

athletes might be more curious and willing to try healthier food options in everyday student life.

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