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Research Paper

Psychological Correlates of Ultra-Processed Food Consumption: Examining Executive Functioning and Gut–Brain Axis Indicators in Young Indian Adults

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ABSTRACT

The rising intake of ultra-processed foods (UPFs) has generated apprehensions about their possible impacts on physical and mental health. Recent evidence indicates that dietary patterns may affect cognitive performance and gastrointestinal health via pathways linked to the gut–brain axis. This study investigated the correlation between ultra-processed food intake, executive performance, and gastrointestinal symptoms associated with the gut-brain axis in young Indian people. A quantitative cross-sectional correlational design was utilised. Data were gathered from 200 participants aged 18 to 30 years via an online survey. Consumption of ultra-processed foods was evaluated using the NOVA-UPF Screener (validated for India), gastrointestinal symptoms were quantified via the Gastrointestinal Symptom Rating Scale (GSRS), and executive functioning was measured through the self-report version of the Adult Executive Functioning Inventory (ADEXI). Descriptive statistics, Pearson correlation analysis, and regression analysis were performed utilising SPSS. The results revealed substantial correlations between the consumption of ultra-processed foods and the intensity of gastrointestinal symptoms, alongside connections between gastrointestinal symptoms and challenges in executive functioning. Increased consumption of ultra-processed foods (UPF) shown a correlation with diminished executive functioning results, reinforcing theoretical frameworks that connect nutritional quality, gastrointestinal health, and cognitive processes. These findings augment the expanding corpus of research on diet-brain interactions and underscore the possible psychological ramifications of eating habits in young people. The research underscores the need of evaluating food habits in comprehending cognitive and mental health. Additional investigation is necessary to examine causative processes and longitudinal impacts across varied populations.

Keywords: *Ultra-Processed Foods, Executive Functioning, Gut-Brain Axis, Gastrointestinal Symptoms, Young Adults, Dietary Habits, Cognitive Health*

Over recent decades, global dietary patterns have undergone a significant transformation, marked by a sharp increase in the consumption of ultra-processed foods (UPFs). These foods, typically manufactured using industrial processes and containing artificial additives, preservatives, and minimal whole-food ingredients, have

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become a dominant component of modern diets. Factors such as urbanisation, globalisation, and lifestyle demands have contributed to their widespread accessibility and convenience. While these developments have improved food availability, growing concerns have emerged regarding the potential consequences of UPF consumption on both physical and psychological health.

A substantial body of research has linked high intake of ultra-processed foods with adverse physiological outcomes, particularly systemic inflammation. Elevated levels of inflammatory biomarkers, such as C-reactive protein (CRP), have been consistently observed among individuals consuming diets high in UPFs (Lane et al., 2022; Lopes et al., 2019). Similar associations have been reported in adolescent populations, suggesting that dietary patterns characterised by processed food consumption may contribute to early inflammatory responses (dos Santos Martins et al., 2022). Evidence from studies employing the dietary inflammatory index further indicates that diets rich in refined sugars, preservatives, and industrial ingredients promote pro-inflammatory states associated with chronic disease risk (Marx et al., 2021; Hart et al., 2021).

Inflammation has increasingly been recognised as a key biological mechanism linking lifestyle factors to mental and neurological functioning. Neuroinflammatory models propose that persistent low-grade inflammation can disrupt neurotransmitter metabolism, impair neuroplasticity, and influence cognitive processes (Berk et al., 2013). Consequently, dietary patterns characterised by high consumption of ultra-processed foods may indirectly affect psychological functioning through inflammatory pathways. This growing body of evidence has contributed to the emergence of nutritional psychiatry, a field that examines the relationship between diet and mental health outcomes.

In addition to systemic inflammation, the gastrointestinal system represents another critical pathway through which ultra-processed foods may influence psychological functioning. The human gut microbiome, consisting of trillions of microorganisms, plays a vital role in digestion, immune regulation, metabolic processes, and neural communication. However, components commonly found in ultra-processed foods, including emulsifiers, artificial sweeteners, and synthetic additives, have been shown to disrupt microbial balance, leading to gut dysbiosis (Miclotte & Van de Wiele, 2020). Such disruptions may compromise intestinal integrity and trigger inflammatory responses within the gastrointestinal tract (Whelan et al., 2024).

Emerging research further suggests that excessive consumption of ultra-processed foods can alter the composition and diversity of gut microbiota, contributing to gastrointestinal dysfunction and metabolic disturbances (Rondinella et al., 2025; Spiller et al., 2025; Singh et al., 2025). Increased intestinal permeability may allow inflammatory mediators to enter systemic circulation, potentially affecting brain function and behaviour. These findings highlight the importance of examining diet-related changes in gut health as a pathway influencing psychological outcomes.

The gut–brain axis provides a comprehensive framework for understanding these interactions. This bidirectional communication system integrates neural, endocrine, immune, and metabolic pathways, enabling continuous interaction between the gastrointestinal system and the central nervous system. Alterations in gut microbiota have been associated with changes in neurotransmitter production, immune signalling, and neural functioning relevant

to cognition and emotional regulation (Kandpal et al., 2022; Mitrea et al., 2022). Empirical evidence suggests that microbial imbalances may influence mood, cognitive performance, and behavioural outcomes (Almeida et al., 2020), as well as reward processing, eating behaviours, and decision-making processes (Guo & Xiong, 2024; Diotaiuti et al., 2025).

The relationship between ultra-processed food consumption and brain functioning has also been explored within the field of nutritional neuroscience. Dietary advanced glycation end-products (AGEs), commonly produced during high-temperature food processing, have been associated with increased oxidative stress, neuroinflammation, and cognitive impairment (D'Cunha et al., 2022). Higher consumption of ultra-processed foods has been linked to poorer mental health outcomes, including depressive symptoms and psychological distress (Lane et al., 2022), as well as structural and functional brain changes observed in neuroimaging studies (Bhave et al., 2024). Longitudinal evidence further indicates that sustained intake of ultra-processed foods may contribute to cognitive decline over time (Gomes Goncalves et al., 2023), alongside alterations in neurotrophic factors associated with cognitive functioning (Poursalehi et al., 2024).

Despite growing research in this domain, relatively limited attention has been given to executive functioning, a set of higher-order cognitive processes including working memory, inhibitory control, cognitive flexibility, and goal-directed behaviour. Emerging evidence suggests that gut microbiota composition may influence cognitive processes such as working memory and attention (Zhao et al., 2022; Kossowska et al., 2024). Intervention-based studies indicate that modulation of gut microbiota through synbiotics may enhance attention and inhibitory control (Salimi et al., 2024), while animal research highlights the impact of diet-induced microbial changes on cognitive flexibility and stress responses (González et al., 2024). Additionally, certain compounds present in processed foods, such as acrylamide, have been associated with neurotoxic effects mediated through the gut–brain axis (Cai et al., 2025).

Although these findings collectively suggest that ultra-processed foods may influence cognitive and psychological functioning through interconnected mechanisms involving inflammation, gut microbiota, and neural processes, significant gaps remain in the literature. Much of the existing research has focused on clinical or ageing populations, with comparatively limited attention to young adults. Furthermore, studies examining dietary patterns, gut–brain axis mechanisms, and cognitive outcomes simultaneously remain scarce. There is also a lack of research in non-Western contexts, particularly in countries such as India, where rapid dietary transitions and increasing consumption of ultra-processed foods are evident.

Young adulthood represents a critical developmental period characterised by ongoing maturation of executive functions and increased autonomy in lifestyle behaviours, including dietary choices. Understanding the psychological and cognitive implications of dietary patterns during this stage is therefore essential.

Accordingly, the present study aims to examine the relationship between ultra-processed food consumption, executive functioning, and gut–brain axis-related psychological indicators among young Indian adults. It is hypothesised that higher consumption of ultra-processed foods will be associated with increased gastrointestinal symptoms and poorer

executive functioning, as well as significant associations with psychological indicators linked to the gut–brain axis.

Objectives

The objective of the study was to examine the association between ultra-processed food consumption and executive functioning to understand gut–brain axis–related psychological indicators among young Indian adults.

Hypotheses

- **H1:** Higher ultra-processed food consumption will be associated with increased gastrointestinal symptoms and poorer executive functioning among adults.
- **H2:** Ultra-processed food consumption will be significantly associated with gut–brain axis–related psychological indicators among young Indian adults.

METHODOLOGY

Research Design

The present study employed a quantitative, cross-sectional correlational design to examine the relationship between ultra-processed food (UPF) consumption, executive functioning, and gut–brain axis-related psychological indicators among young Indian adults. A correlational approach was considered appropriate, as the study aimed to explore associations between variables without experimental manipulation. The cross-sectional design enabled the assessment of these relationships within a defined population at a single point in time.

This design is widely used in behavioural nutrition and psychological research examining lifestyle–cognition relationships. The independent variable in the study was ultra-processed food consumption, while the dependent variables included gastrointestinal symptoms and executive functioning outcomes. Standardised psychometric instruments were used to ensure reliable and valid data collection for statistical analysis.

Study Variables

1. **Independent Variable:** Ultra processed food consumption (UPF Total score).
2. **Dependent Variables:** Gastrointestinal symptoms (GSRS Total scores) and Executive Functioning difficulties (ADEXI Total score).

Participants

The study sample consisted of 200 young Indian adults aged between 18 and 30 years. This age group was selected due to its relevance in dietary autonomy and ongoing development of executive functioning. Participants were recruited using convenience sampling through online platforms and social media.

Inclusion criteria required participants to:

- Be between 18 to 30 yrs of age
- Be residents of India
- Have proficiency in English
- Provide informed consent voluntarily

Incomplete or partially filled responses were excluded during data screening to ensure data quality. Although convenience sampling limits generalisability, it is appropriate for exploratory studies examining associations between variables.

Measures

Data were collected using three standardised self-report instruments assessing ultra-processed food consumption, gastrointestinal symptoms, and executive functioning.

1. **Ultra-Processed Food Consumption**: Ultra-processed food intake was assessed using the NOVA-UPF Screener (India-validated version) (Ghosh-Jerath et al., 2025). The instrument consists of 25 items measuring the frequency of consumption of commonly consumed ultra-processed foods. Responses are aggregated to generate a total UPF consumption score, with higher scores indicating greater intake. The tool has demonstrated adequate reliability and construct validity in Indian populations.
2. **Gastrointestinal Symptoms**: Gastrointestinal symptoms were assessed using the Gastrointestinal Symptom Rating Scale (GSRS) (Svedlund et al., 1988). The scale comprises 15 items measuring symptoms such as diarrhoea, constipation, indigestion, and reflux. Participants rated symptom severity using a Likert-type scale. Higher scores reflect greater gastrointestinal discomfort. The GSRS is widely used and has established reliability and validity (Revicki et al.,1998).
3. **Executive Functioning**: Executive functioning was measured using the Adult Executive Functioning Inventory (ADEXI) (Holst & Thorell, 2018). The instrument consists of 14 items assessing key domains such as working memory and inhibitory control. Participants reported their everyday cognitive functioning using a rating scale, with higher scores indicating greater executive functioning difficulties. The ADEXI has demonstrated strong psychometric properties and is suitable for survey-based research.

Procedure

Data were collected using an online survey administered through Google Forms (Çakır et al.,2025). Participants were first presented with an informed consent form outlining the purpose of the study, voluntary participation, and confidentiality assurances.

Participants completed four sections:

1. Demographic details
2. NOVA-UPF Screener
3. GSRS
4. ADEXI

The survey required approximately 8–10 minutes to complete. All responses were recorded and exported to MsExcell for analysis. Data were screened for completeness, duplicate entries, and inconsistencies prior to analysis.

Data Preparation and Statistical Analysis

Data were initially organised and cleaned using Microsoft Excel before being analysed using IBM SPSS Statistics. Variables were coded according to standard scoring procedures for each instrument. The dataset was examined for missing values, outliers, and data entry errors.

Descriptive statistics (means, standard deviations, minimum and maximum values) were calculated to summarise the sample characteristics and study variables. Pearson product–moment correlation analysis was conducted to examine relationships between UPF consumption, gastrointestinal symptoms, and executive functioning variables.

To further explore predictive relationships, multiple linear regression analysis was conducted with executive functioning (ADEXI Total) as the dependent variable and UPF consumption and gastrointestinal symptoms as predictors. Assumptions of regression, including normality, linearity, homoscedasticity, and multicollinearity, were assessed using histograms, P–P plots, residual scatterplots, and variance inflation factor (VIF) values. All assumptions were satisfactorily met.
Statistical significance was set at $p < .05$ for all analyses (Ryder et al., 2025).

Ethical Considerations

The research conformed to the ethical principles of psychological research.Participation was voluntary and based on informed consent. Participant anonymity was maintained, and no personally identifiable information was collected. Data were used solely for academic purposes and stored securely (Pramesona et al.,2025).

RESULTS

Data from 200 participants were analysed using IBM SPSS Statistics. The dataset was screened for completeness and accuracy prior to analysis. No missing values were identified, as all survey items were mandatory. Therefore, all responses were retained for statistical analysis.

Descriptive statistics were computed for demographic and primary study variables, including ultra-processed food consumption (UPF Total), gastrointestinal symptoms (GSRS Total), working memory, inhibition, and overall executive functioning (ADEXI Total). Normality assumptions were assessed using histograms and normal probability plots, which indicated that the data were approximately normally distributed.

1. Descriptive Statistics

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	200	19	31	23.70	3.067
UPF_TOTAL	200	3	25	16.88	5.876
GSRS_TOTAL	200	15	97	57.16	20.688
WM_TOTAL	200	21	35	27.79	2.307
INHIBITION_TOTAL	200	9	22	16.38	2.721
ADEXI_TOTAL	200	30	53	44.17	3.773
Valid N (listwise)	200				

Table 1 shows the sample size, minimum and maximum scores, the mean and the standard
The mean age of participants was 23.70 years (SD = 3.07), with an age range of 19 to 30 years. The mean UPF consumption score was 16.88 (SD = 5.88), indicating moderate intake levels within the sample. The mean gastrointestinal symptom score (GSRS Total) was 57.16 (SD = 20.69), reflecting variability in digestive health experiences.

For executive functioning, the mean working memory score was 27.79 (SD = 2.31), and the mean inhibition score was 16.38 (SD = 2.72). The overall ADEXI Total mean score was 44.17 (SD = 3.77), indicating moderate levels of executive functioning difficulties.

2. Correlation Analysis

Table 2: Correlation Analysis

Correlations						
		UPF_TOTAL	GSRS_TOTAL	WM_TOTAL	INHIBITION_TOTAL	ADEXI_TOTAL
UPF_TOTAL	Pearson Correlation	1	.720**	.282**	.510**	.541**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	200	200	200	200	200
GSRS_TOTAL	Pearson Correlation	.720**	1	.274**	.676**	.655**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	200	200	200	200	200
WM_TOTAL	Pearson Correlation	.282**	.274**	1	.121	.698**
	Sig. (2-tailed)	.000	.000		.089	.000
	N	200	200	200	200	200
INHIBITION_TOTAL	Pearson Correlation	.510**	.676**	.121	1	.795**
	Sig. (2-tailed)	.000	.000	.089		.000
	N	200	200	200	200	200
ADEXI_TOTAL	Pearson Correlation	.541**	.655**	.698**	.795**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	200	200	200	200	200

The level of correlation is significant at 0.01 (2-tailed).
Significance level: $p < .01$

Pearson product–moment correlation analysis was conducted to examine relationships among the study variables (Table 2).

A strong positive correlation was observed between UPF consumption and gastrointestinal symptoms ($r = .72$, $p < .01$), indicating that higher intake of ultra-processed foods was associated with increased gastrointestinal distress.

UPF consumption was also positively correlated with executive functioning difficulties (ADEXI Total) ($r = .54$, $p < .01$), suggesting that greater consumption was associated with poorer executive functioning.

Gastrointestinal symptoms demonstrated a strong positive correlation with executive functioning difficulties ($r = .66$, $p < .01$), indicating that individuals with higher gastrointestinal distress reported greater cognitive difficulties.

Regarding specific executive domains, working memory showed moderate correlations with UPF consumption ($r = .28$, $p < .01$) and gastrointestinal symptoms ($r = .27$, $p < .01$).

Inhibition difficulties were more strongly correlated with UPF consumption ($r = .51$, $p < .01$) and gastrointestinal symptoms ($r = .67$, $p < .01$).

Additionally, strong correlations were observed between working memory and overall executive functioning ($r = .70$, $p < .01$), as well as inhibition and overall executive functioning ($r = .80$, $p < .01$), indicating that these subcomponents significantly contribute to global executive functioning scores.

3. Multiple Regression Analysis

Table 3: Multiple Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	36.858	.645		57.170	.000	35.587	38.129					
	UPF_TOTAL	.092	.049	.143	1.865	.064	-.005	.189	.541	.132	.100	.482	2.074
	GSRS_TOTAL	.101	.014	.552	7.180	.000	.073	.128	.655	.455	.383	.482	2.074

a. Dependent Variable: ADEXI_TOTAL

A multiple linear regression analysis was conducted to examine whether UPF consumption and gastrointestinal symptoms predicted executive functioning difficulties.

The overall regression model was statistically significant, $F(2, 197) = 77.07$, $p < .001$, explaining 43.9% of the variance in executive functioning difficulties ($R^2 = .439$, adjusted $R^2 = .433$). The model demonstrated a strong fit ($R = .663$).

Gastrointestinal symptoms emerged as a significant predictor of executive functioning difficulties ($\beta = .552$, $p < .001$), indicating that higher levels of gastrointestinal distress were associated with greater executive dysfunction.

In contrast, UPF consumption did not significantly predict executive functioning difficulties when gastrointestinal symptoms were included in the model ($\beta = .143$, $p = .064$), although the relationship remained positive. This suggests that the impact of UPF consumption on executive functioning may be mediated through gastrointestinal health.

4. Assumption Testing

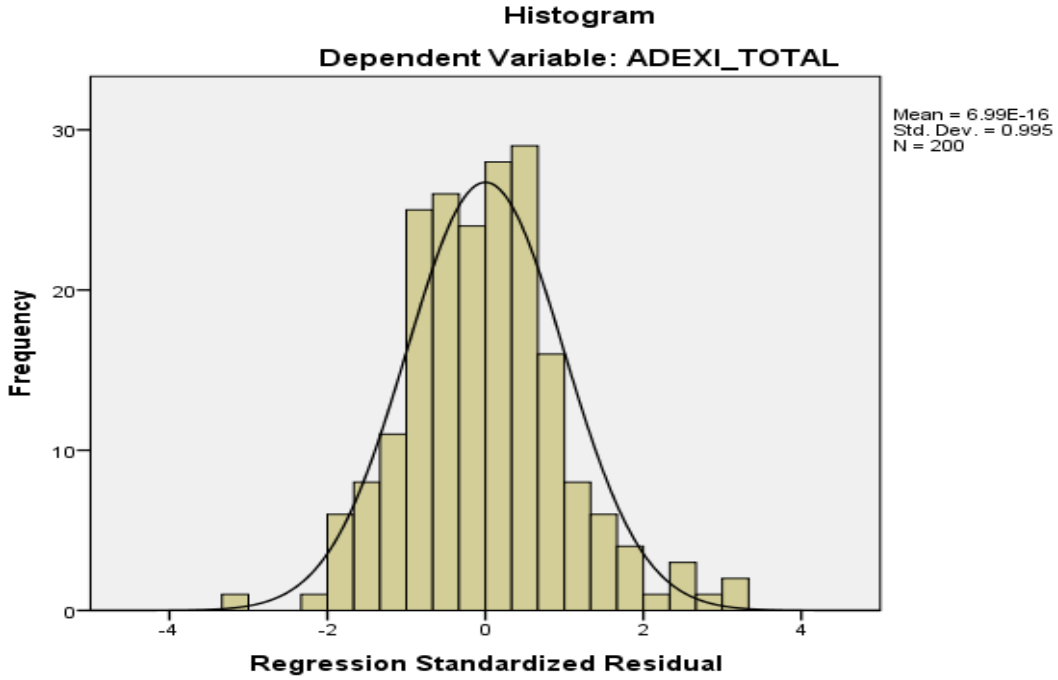

Figure 1: Histogram of ADEXI Total Visual inspection of histograms indicated that executive functioning scores were approximately normally distributed. The normal probability (P–P) plot showed that residuals closely followed the diagonal line, supporting the assumption of normality.

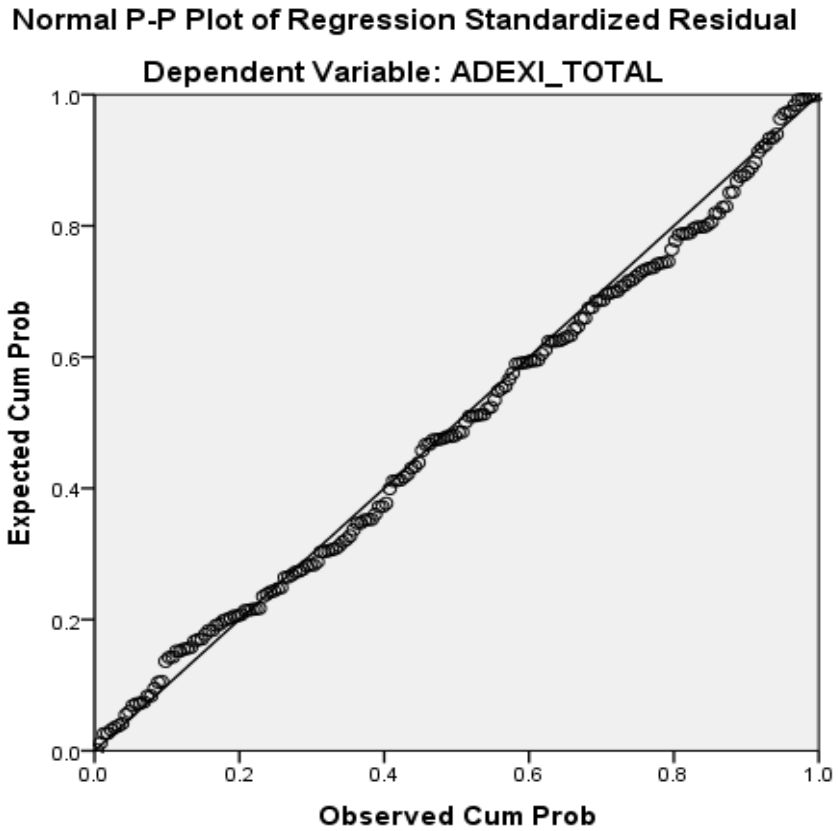

Figure 2: Normal Probability-Probability Plot of Regression Standardised Residuals

Scatterplot analysis of standardised residuals indicated no clear patterns, suggesting that assumptions of linearity and homoscedasticity were met. Multicollinearity diagnostics showed acceptable tolerance and VIF values, indicating no multicollinearity concerns.

Overall, the results indicate significant associations between ultra-processed food consumption, gastrointestinal health, and executive functioning. Higher consumption of ultra-processed foods was associated with increased gastrointestinal symptoms and greater executive functioning difficulties.

However, regression analysis revealed that gastrointestinal symptoms were the stronger predictor of executive functioning deficits. These findings suggest that the relationship between ultra-processed food consumption and cognitive functioning may operate indirectly through gut-related mechanisms, supporting the role of the gut–brain axis in psychological functioning.

DISCUSSION

The present study examined the relationship between ultra-processed food (UPF) consumption, gastrointestinal symptoms, and executive functioning among young Indian adults, with a particular focus on gut–brain axis mechanisms. The findings contribute to the growing body of research in nutritional psychiatry by demonstrating that dietary patterns are meaningfully associated with both physiological and cognitive outcomes.

Overview of Findings

The results revealed significant positive associations between UPF consumption, gastrointestinal symptom severity, and executive functioning difficulties. Individuals reporting higher consumption of ultra-processed foods also reported greater gastrointestinal distress and poorer executive functioning. Importantly, regression analysis indicated that gastrointestinal symptoms emerged as a significant predictor of executive dysfunction, whereas the direct effect of UPF consumption was reduced when gastrointestinal health was accounted for. This suggests that gastrointestinal functioning may play a mediating role in the relationship between diet and cognition.

These findings support the central hypothesis that increased consumption of ultra-processed foods is associated with poorer gastrointestinal health, which in turn is linked to deficits in executive functioning. The results align with theoretical frameworks emphasising the role of the gut–brain axis in shaping cognitive processes.

Ultra-Processed Food Consumption and Gastrointestinal Health

The observed association between UPF consumption and gastrointestinal symptoms is consistent with existing literature highlighting the adverse effects of highly processed diets on digestive health. Ultra-processed foods are typically high in refined sugars, unhealthy fats, additives, and preservatives, all of which can disrupt gut microbiota composition and compromise intestinal integrity. Such disruptions may lead to increased intestinal permeability, inflammation, and gastrointestinal discomfort.

The present findings reinforce the notion that dietary patterns, rather than isolated nutrients, play a critical role in gastrointestinal functioning. In contemporary food environments, where convenience foods are widely accessible, frequent consumption of ultra-processed products may contribute to chronic digestive disturbances. This has important implications

for public health, particularly among young adults who are more likely to rely on such dietary options.

Gastrointestinal Symptoms and Executive Functioning

A key contribution of this study lies in identifying a significant relationship between gastrointestinal symptoms and executive functioning difficulties. Executive functions—including working memory, inhibitory control, and cognitive flexibility—are essential for goal-directed behaviour, decision-making, and self-regulation.

The findings suggest that individuals experiencing greater gastrointestinal distress are more likely to report impairments in these cognitive domains. This relationship can be understood within the framework of the gut–brain axis, which posits bidirectional communication between the gastrointestinal system and the central nervous system. Alterations in gut microbiota, inflammatory responses, and neurochemical signalling may influence brain function and cognitive processes.

Additionally, persistent gastrointestinal discomfort may indirectly affect cognition through increased fatigue, reduced concentration, and psychological distress. These factors may cumulatively contribute to diminished executive performance. The results therefore provide empirical support for the hypothesis that gastrointestinal health is closely linked to higher-order cognitive functioning.

Ultra-Processed Foods and Executive Functioning

Although UPF consumption was positively associated with executive functioning difficulties at the correlational level, its predictive value diminished when gastrointestinal symptoms were included in the regression model. This finding suggests that the relationship between diet and cognition may not be direct but instead operates through intermediary physiological processes, particularly gastrointestinal health.

This interpretation aligns with theoretical perspectives that emphasise the mediating role of the gut–brain axis in linking dietary patterns to psychological outcomes. Diets high in ultra-processed foods may contribute to metabolic dysregulation, inflammation, and microbiota imbalance, which in turn influence cognitive functioning.

The findings highlight the importance of considering indirect pathways when examining the psychological effects of diet. Rather than viewing UPF consumption as an isolated determinant of cognitive performance, it is more accurately conceptualised as part of a broader biopsychosocial system involving gastrointestinal and neurobiological mechanisms.

Implications for the Gut–Brain Axis

The results of this study provide further empirical support for the gut–brain axis as a key mechanism underlying the relationship between diet and cognition. The observed associations between UPF consumption, gastrointestinal symptoms, and executive functioning suggest that disruptions in gut health may have downstream effects on cognitive processes.

The gut microbiome plays a critical role in neurotransmitter production, immune regulation, and neural signalling pathways. Alterations in these processes may influence mood, cognition, and behavioural regulation. By demonstrating that gastrointestinal symptoms

significantly predict executive functioning difficulties, the present study underscores the relevance of gut health in understanding cognitive outcomes.

These findings also have implications for mental health research. Executive dysfunction is associated with a range of psychological conditions, including mood disorders and attentional difficulties. Understanding the role of dietary and gastrointestinal factors may contribute to more integrative approaches to mental health assessment and intervention.

Practical Implications

A number of practical implications can be made out of the findings of this study. First, they highlight the importance of dietary awareness in promoting both physical and cognitive health. Reducing the consumption of ultra-processed foods and increasing the intake of nutrient-dense, whole foods may support gastrointestinal functioning and, in turn, cognitive performance.

Second, the results suggest the need for greater integration between nutritional science and psychology. Interventions aimed at improving cognitive functioning and mental well-being may benefit from incorporating dietary and gut health considerations.

Finally, these findings are particularly relevant for young adults, who often rely on convenient, processed foods due to lifestyle demands. Increasing awareness about the potential cognitive and physiological consequences of dietary habits may encourage healthier food choices within this population.

Limitations

Despite its contributions, the study has several limitations. The use of self-report measures may introduce response biases, including recall errors and social desirability effects, which could affect the accuracy of the data. Additionally, the cross-sectional design limits the ability to draw causal inferences. While significant associations were identified, it cannot be conclusively determined whether UPF consumption directly causes gastrointestinal or cognitive changes.

Furthermore, the study did not account for other lifestyle variables such as sleep quality, stress levels, physical activity, and overall diet quality, all of which may influence both gastrointestinal and cognitive functioning. The use of convenience sampling also limits the generalisability of the findings to broader populations.

Finally, executive functioning was assessed using a composite measure, which may not fully capture the complexity of individual cognitive domains.

Future Directions

Future research should adopt longitudinal and experimental designs to better understand the causal relationships between dietary patterns, gastrointestinal health, and cognitive functioning. Intervention-based studies examining the effects of reducing UPF consumption on gut health and executive performance would be particularly valuable.

Incorporating biological measures, such as microbiome analysis and inflammatory markers, could provide deeper insight into the underlying mechanisms of the gut–brain axis.

Additionally, future studies should explore potential moderating variables, including stress, sleep, and physical activity, to better understand individual differences in these relationships. Expanding research across diverse cultural and demographic contexts will also enhance the generalisability of findings and provide a more comprehensive understanding of diet–brain interactions.

CONCLUSION

The present study examined the relationship between ultra-processed food consumption, gastrointestinal symptoms, and executive functioning among young Indian adults, providing valuable insights into the interconnected nature of diet, physical health, and cognitive performance. The findings demonstrated that higher consumption of ultra-processed foods is associated with increased gastrointestinal symptoms, which in turn are linked to greater executive functioning difficulties.

Importantly, gastrointestinal symptoms emerged as a significant predictor of executive dysfunction, suggesting that the relationship between dietary patterns and cognitive performance may operate indirectly through gut health. These results align with theoretical frameworks emphasising the role of the gut–brain axis in mediating the effects of lifestyle factors on psychological functioning.

The study contributes to the growing field of nutritional psychiatry by extending the focus beyond emotional outcomes to include executive functioning, a critical component of everyday cognitive performance. By highlighting the role of gastrointestinal health in this relationship, the findings underscore the importance of adopting a holistic, biopsychosocial perspective in understanding cognitive functioning.

Although causal conclusions cannot be drawn due to the cross-sectional design, the study provides a strong foundation for future research exploring the mechanisms linking diet, gut health, and cognition. The findings also have practical implications, suggesting that promoting healthier dietary habits may support both physical and cognitive well-being.

In conclusion, the study reinforces the importance of dietary behaviour as a modifiable factor in cognitive health and highlights the need for greater integration of nutritional considerations within psychological research and practice.

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Conflict of Interest

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