The Impact of Ultra-Processed Foods on Adolescent Mental Health in Central Ohio

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Introduction

During the past decade, adolescent depressive disorders, anxiety disorders, and attention-deficit hyperactivity disorder (ADHD) have been diagnosed more often than before. The adolescent brain is still developing as Naveed et al. (2020) notes, and external influences, including dietary intake, may be especially important because the adolescent brain is responding to outside influence in possibly unintended ways. This raises an important question: To what extent does the consumption of ultra-processed foods (UPFs) contribute to the growing mental health challenges faced by adolescents in Central Ohio?

While both environmental and genetic causative factors are typically identified for mental health disorders, there are an increasing number of studies showing diet is a significant (and often ignored) factor. Ultra-processed foods (UPFs) more specifically, are a significant part of the standard American diet, and many of the potential negative impacts of UPF consumption can lead to chronic diseases such as obesity or diabetes, but there is also an increasing concern that the relationship between UPF consumption and mental health may be equally important. UPFs are characterized by their high content of artificial additives, preservatives, refined sugars, and unhealthy fats. In the U.S., the prevalence of UPF consumption is especially high, with UPFs accounting for over 60% of the American diet, a rate much higher than in many other countries (Amaraggi et al., 2023). Furthermore, the U.S. has a unique regulatory system through the Generally Recognized as Safe (GRAS) list, which permits the use of additives and preservatives that are restricted in other countries (Maffini et al., 2017). There are over 1,000 substances on the GRAS list that have been added without public knowledge, most of which are not approved in Europe or other countries and less than 22% of almost 4,000 chemicals have sufficient data to estimate how much is safe to eat, and less than 7% were tested for developmental or reproductive effects (Maffini et al., 2017). This distinct regulatory environment raises important questions about how American UPFs may contribute to mental health issues in adolescents, who may be particularly vulnerable to their effects due to ongoing brain development.

With the mounting evidence that links diet to mental health, the position of UPFs as a mental health determinant among American adolescents is hardly researched. Past research has been concerned about how diet affects mental health in adults, or adolescent groups in other settings, but none have touched on the unique context of the American UPFs and their probable role in adolescent health. This gap in research is particularly concerning, given the extensive use of unique and potentially toxic UPFs in the U.S., and the increasing prevalence of mental health disorders among American adolescents. Therefore, this paper seeks to fill this gap by examining the relationship between UPF use and mental health in adolescents aged 14-18 in central Ohio. In filling this gap, this research aims to shed light on a potentially correctable factor contributing to the mental health pandemic among American youth.

Literature Review

Link Between Diet and Mental Health

In the last ten years, there has been mounting evidence to suggest that diet significantly contributes to mental health. Diets rich in nutrients, which involve high fruit, vegetable, whole grain, and lean protein consumption, have been repeatedly associated with enhanced mood, cognitive ability, and general psychological health (Lachance & Ramsey, 2019). On the other hand, poor dietary habits, including those particularly high in processed foods, added sugars, and unsaturated fats, have been associated with increased risks of depression, anxiety, and cognitive decline (Rico-Campà et al., 2019). Studies have confirmed that diet not only impacts

physical health but also brain chemistry and function, potentially influencing mood and behavior. For instance, chronic inflammation, typically brought about by the consumption of an unhealthy diet, has been associated with the causation of several mental disorders (Javier Clemente-Suárez et al., 2023).

The link between food and mental well-being is particularly relevant for adolescents, an age group that still matures its brain critically. Adolescents' brains are more susceptible to external influences, including food intake, as parts of decision-making, emotional regulation, and cognitive processing (Naveed et al., 2016). Such increased sensitivity may predispose adolescents, particularly to the negative impact of an inappropriate diet, for instance, ultra-processed food intake.

Ultra-processed foods, being very processed and often rich in artificial additives, preservatives, and added sugars, have been blamed for their potential to cause harm to physical and mental well-being. A key issue with UPFs is their high content of artificial additives such as food dyes (e.g., Red No. 3, Yellow No. 5), which have been shown to affect neurobehavioral outcomes, especially in children and adolescents (Miller et al., 2022). Other studies have indicated that such additives cause hyperactivity, attention deficit, and other behavioral changes, which suggest that consumption of such chemicals may be adding to the causation of mental disorders, particularly in vulnerable populations like adolescents.

In addition to artificial additives, UPFs can also cause chronic inflammation in the body, which has been associated with the causation of mental illness. Inflammation, particularly in the brain, is seen to affect mood regulation and cognitive function, resulting in conditions such as depression and anxiety (Miller et al., 2022). On top of this, the high sugar content in many UPFs has been found to disrupt emotional regulation and cognitive function. Research by Westwater et al. (2020) demonstrated that sugar consumption is associated with higher levels of cortisol, a stress hormone, which can negatively affect emotional stability and increase the risk of anxiety and depression. As adolescents are particularly sensitive to hormonal shifts, this upset in emotional regulation may have profound consequences for their mental health.

UPFs and Adolescent Mental Health

Adolescents are most vulnerable to the harmful effects of UPFs due to their ongoing brain development, thus they may get impacted more through diet compared to adults. It has been shown that the adolescent brain remains extremely susceptible to environmental factors, including diet. The maturing prefrontal cortex, the region of the brain involved in decision-making and emotional regulation, develops into late adolescence and beyond, and thus nutritional influence during this stage may leave an enduring effect on mental health (Naveed et al., 2020). Studies of UPF intake in adolescents in other countries have shown that high intake of these foods is associated with increased levels of depression, anxiety, and other mood disorders.

Mesas et al. (2022) investigated UPF dietary behaviors among Brazilian adolescents using data from the National School Health Survey of Brazil (PeNSE) with over 94,000 participants aged 12-17. They established a strong, clear link between higher UPF consumption and elevated depressive symptoms and behavior and anxiety symptoms and behavior. For example, the adolescents who reported 6 or more unique UPFs per day, including packaged snacks, fast foods, and sugar-sweetened beverages, had higher odds of feeling down, depressed, or hopeless, had heightened irritability, and reported life not being worth living. The reported associations remained significant after controlling for a series of confounding factors such as physical activity, sleep, family dynamics, and socioeconomic status, suggesting that consumption of UPFs is independently associated with poorer mental health. Reales-Moreno et

al. (2022), examined UPF behaviors among European adolescents, aged 14-17 in Spain, and established that higher UPF consumption was related to increased emotional distress and psychosocial difficulties. This study also utilized validated psychological measures and determined that adolescents who consumed UPFs reported significantly greater emotional instability, more attention problems, high levels of social withdrawal, internalizing problems like depression and anxiety, and externalizing behaviors such as aggression.

Justification Through Prior Research

Although there have been several studies that have indicated the impact of diet on mental health in adults and children in other countries, no studies have examined the impact of American UPFs on the mental health of American adolescents. Lane et al. (2023) noted that higher intake of UPF foods in US adults was associated with increased risks of depression, possibly due to the large quantity of added sugars, saturated fats, and artificial preservatives found in such foods. In addition, research showed that UPF consumption in the US is linked with physical health issues such as metabolic syndrome and sarcopenia that can indirectly contribute to deteriorating mental health outcomes (Lane et al., 2023), making the lack of data on U.S. adolescents especially concerning.

Lack of data on U.S. adolescents is another enormous shortcoming in existing literature. The U.S.'s unique regulatory system, like the GRAS list, allows for the use of additives banned elsewhere, which can make American UPFs more dangerous than similar ones anywhere else. This requires an examination of the possible effect of U.S.-only UPFs on adolescent psychological well-being.

While the powerful relationship between exposure to UPFs and mental well-being has in the past been demonstrated among American adults and non-American teenagers in past research, current research among American teenagers is desperately needed. The distinct makeup of U.S. UPFs as well as the inherent vulnerabilities of adolescents underscore the urgency of taking into account a more detailed investigation of this relationship. By bridging this gap, this study seeks to provide important insight into the place of diet, specifically UPFs, within adolescent mental health.

Methods

This research utilized a correlational survey design to assess the association between ultra-processed food (UPF) consumption and mental health among 14- to 18-year-old adolescents residing in central Ohio. Data gathering consisted of a two-part survey that covered mental health status and UPF consumption frequency. The first half of the survey utilized the General Health Questionnaire-12 (GHQ-12), which is a widely validated psychological distress screening tool (Wojujutari et al., 2024). The second element is a self-report dietary intake questionnaire that categorizes food intake based on the NOVA food classification system for UPFs (Monteiro et al., 2019). This allowed for an efficient data collection tool to establish potential correlations between diet and mental health.

A survey method was ideal for this research since it is able to gather data from a high number of adolescents within a limited time. Given that the research focuses on developing correlations rather than causation, cross-sectional surveying makes it possible to evaluate current dietary habits and mental health status without having to observe them for a long time. GHQ-12 has been extensively used in adolescent mental health research and has been found to be reliable and valid with various populations (Wojujutari et al., 2024). Similarly, dietary intake questionnaires have been effective in nutritional epidemiology studies to quantify UPF intake habits (Shim, 2025). Compared to experimental or longitudinal designs, this method provides a

pragmatic and ethical means of investigating dietary effects on mental health without direct intervention.

The target population was adolescents aged 14-18 years old who are attending Central Ohio schools. Convenience sampling was used, distributing surveys through school classrooms. The sample size was 54 returns, allowing for a representative data set without making the analysis impractically complex. The inclusion criteria are being within the targeted age bracket and attending the participating school as a student. The exclusion criteria are individuals with existing medical conditions that impact diet or mental health significantly (e.g., eating disorders, clinical depression with ongoing treatment) since these would constitute confounding variables.

Measures & Instruments

The GHQ-12 is a 12-item instrument to screen for general health and psychological distress. The response is given on a 4-point Likert scale, with higher scores indicating greater levels of distress (Wojujutari et al., 2024). GHQ-12 has been proven valid for adolescents and thus is a valid measure for use within this study (Baksheev et al., 2011).

Dietary intake was assessed using a self-reported questionnaire that categorizes food intake according to the NOVA classification system, which distinguishes minimally processed, processed, and ultra-processed foods (Monteiro et al., 2019). Participants reported the frequency of UPF item consumption (e.g., sweet cereals, processed snacks, fast food). This tool has been utilized in previous research effectively linking dietary patterns with mental health outcomes (Reales-Moreno et al., 2022).

Parental Consent & Ethical Approval were necessary since the research is regarding minors and mental health. Parental consent was obtained through an online questionnaire prior to participating. Institutional review board (IRB) approval has been granted in order to meet ethical guidelines. Participants completed the confidential online survey within a classroom setting. The survey takes approximately 5-10 minutes. The online survey was made available for a period of one week to accommodate various schedules and ensure an adequate response. The responses will be anonymous and analyzed after the collection of data. The correlation coefficient will be calculated to determine if there is any correlation between UPF frequency consumption and GHQ-12 scores.

Two previous studies form the methodological precedent for the current research. First, Mesas et al. (2022) conducted a cross-sectional study in Brazil on UPF consumption and depressive symptoms among adults using dietary intake surveys and validated psychological questionnaires. According to their findings, there was a positive relationship between UPF consumption and poor mental health outcomes, validating the use of dietary surveys in mental health research. Second, Reales-Moreno et al. (2022) used an identical approach in a longitudinal study assessing the association between UPF consumption and depression risk among Spanish adolescents.

Certain limitations are worth mentioning. First, dietary intake reported by individuals is susceptible to recall bias and also to underreporting, particularly of unhealthy foods. Second, the cross-sectional nature of this study cannot prove causality. Even though correlations can be identified, causality cannot be inferred directly. Thirdly, the excessive reliance on convenience sampling in schools will limit the study's generalizability to the population of adolescents in central Ohio. Despite these limitations, the present study is a first step towards an understanding of the relationship between the consumption of UPF and adolescent psychological well-being in America.

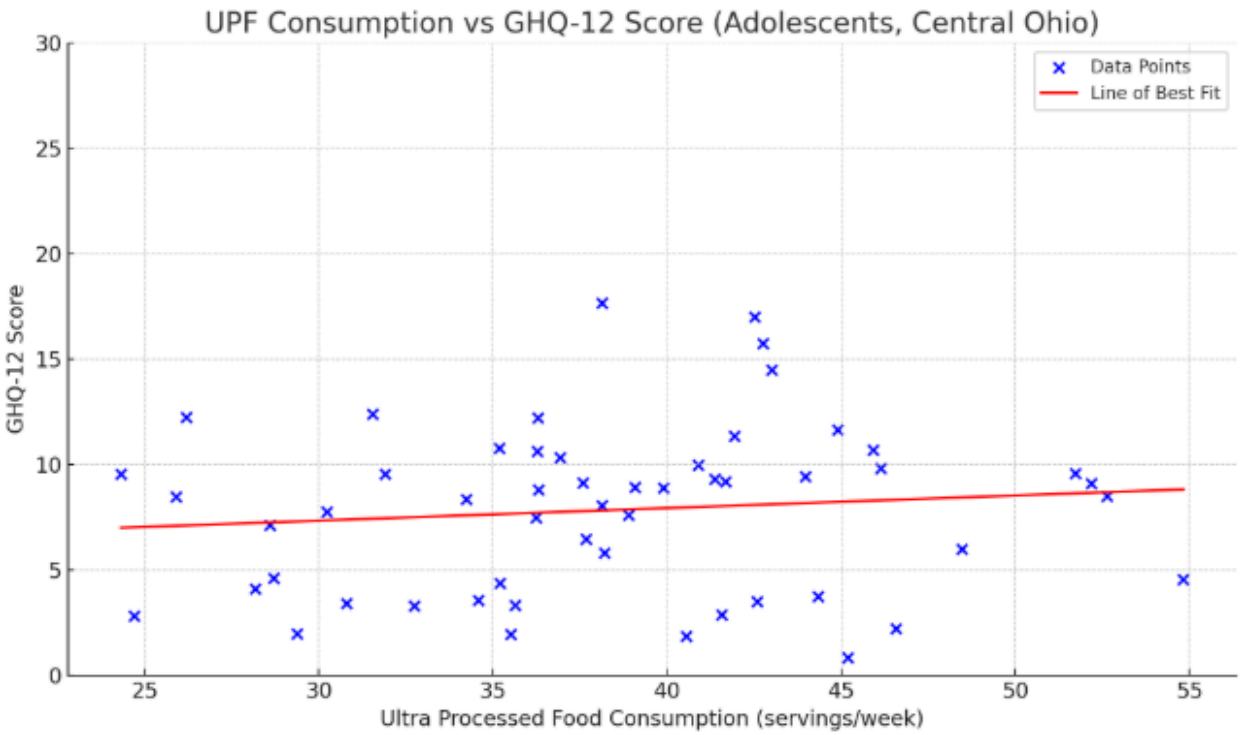

Figure 1: General trend

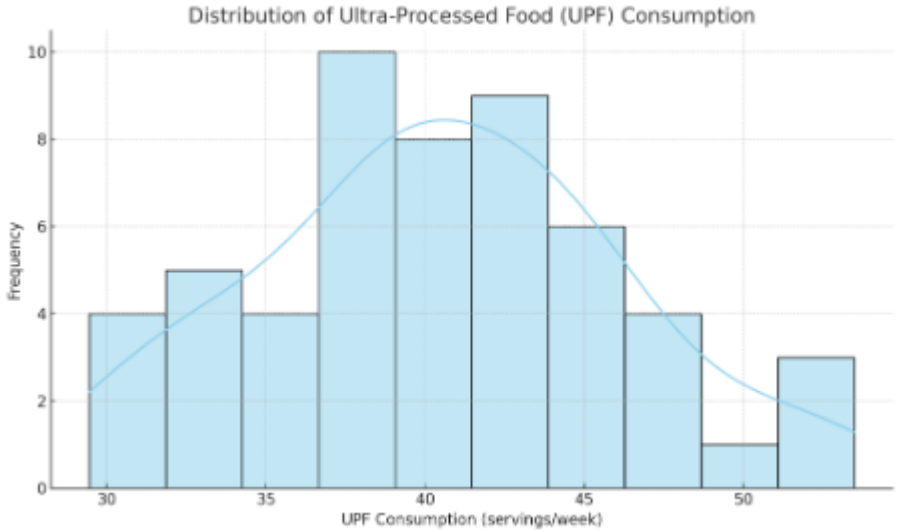

Figure 2: UPF consumption distribution

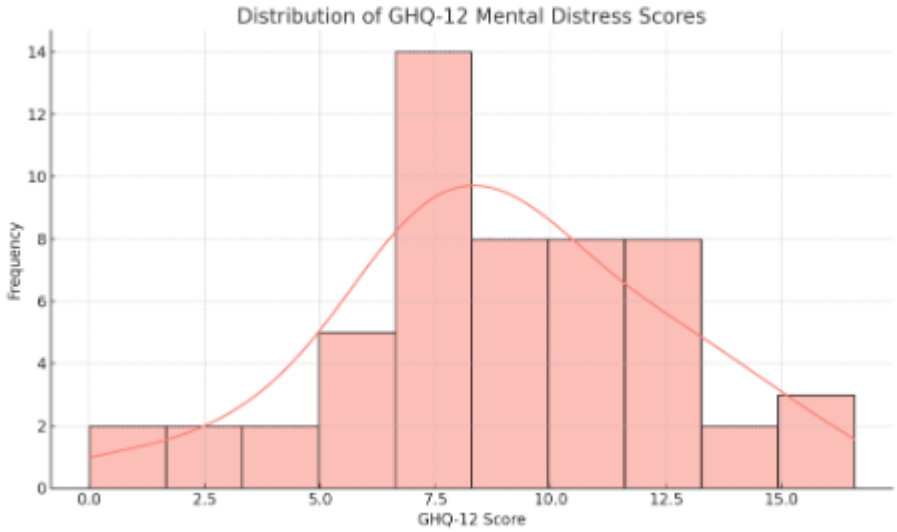

Figure 3: GHQ-12 mental distress score distribution

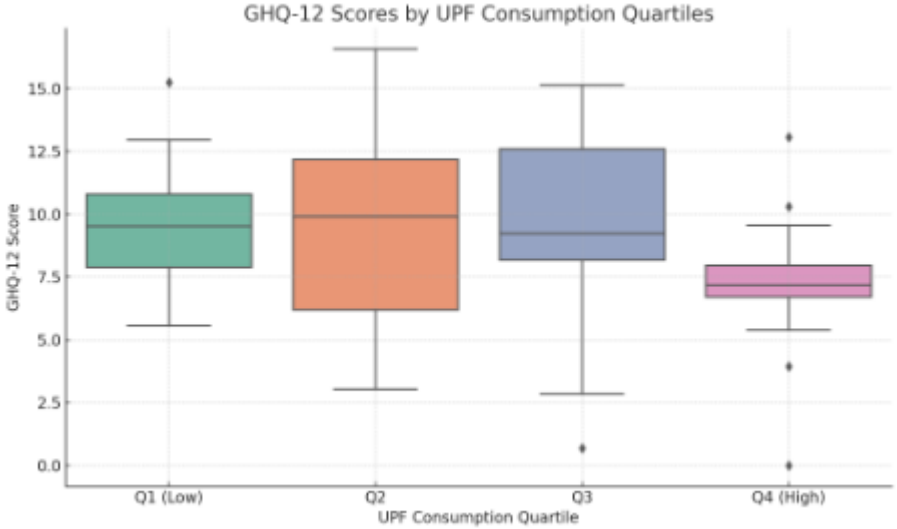

Figure 4: UPF consumption quartiles

Data analysis of the 54 valid survey responses found key patterns in both ultra-processed foods (UPF) consumption and mental health outcomes among Central Ohio adolescents.

Of the 54 valid survey responses, reports of ultra-processed food (UPF) consumption per week ranged from 25 to 54 servings, with an average of 41.8 servings (SD ≈ 6.3). The IS graphically depicted in Figure 2 showed a distribution that was slightly right-skewed noted among the variation of UPF intake, with the largest number of participants consuming somewhere between 35 and 45 servings. Neither very low nor very high weekly UPF consumption led to the majority of observations.

GHQ-12 mental health scores, ranging from 2 to 21 with a mean of 8.84 (SD ≈ 4.1). Figure 3 confirms the approximate normal distribution of GHQ-12 scores observed with the majority of participants scoring between 6 and 12. The spread of scores showed a variance in self-reported psychological well-being within the adolescent sample.

For analysis purposes, participants were divided into quartiles determined by the consumption levels of UPF. Figure 4 shows the median GHQ-12 scores for each quartile of UPF consumption did deviate slightly. The first quartile (lowest consumption of UPF) responded with higher median GHQ-12 scores, while the quartile with the highest consumption of UPF indicated lower scores. The boxplots in Figure 4 also show that as these quartiles varied, there was some overlap between quartiles, and variability in scores was also present within each quartile within the boxplot.

To assess the relationship between these two variables as shown in figure 1, a Pearson correlation analysis was conducted. The analysis indicated a correlation coefficient (r) of 0.2, reflecting a weak positive relationship between UPF consumption and GHQ-12 mental distress scores. That is, as UPF consumption increased, self-reported mental distress increased modestly. However, the weakness of the correlation also means that only a small proportion of the variability in mental health status is explained by UPF consumption. The coefficient of determination (R^2) was 0.04, which means that 4% of the variation in GHQ-12 mental distress scores is explained by variability in UPF consumption.

Discussion

Summary of Key Findings

The correlation of ultra-processed food (UPF) consumption with adolescents' mental health in Central Ohio through GHQ-12 scores was studied here. The participants' average GHQ-12 score was 8.84, reflecting an average level of psychological distress. Participants had, on average, consumed 41.8 portions of UPFs a week, a notably high intake. A Pearson correlation of $r = 0.2$ between UPF intake and GHQ-12 scores and an R^2 value of 0.04 was found, which indicates a weak positive correlation such that only 4% variation in mental health scores can be explained on the basis of variation in UPF intake.

A mean GHQ-12 score of 8.84 indicates that most adolescents in this study have intermittent problems with emotional well-being, though not necessarily to a clinically significant degree. This is in accordance with national trends of rising but variable levels of teenage stress and mental distress. While not very high, this score does demonstrate that emotional problems are quite common within this group and indicates a requirement to investigate further contributing factors.

The estimated average of 41.8 UPF servings a week suggests that UPF intake is a large portion of this population’s diet. This includes foods such as sweetened drinks, processed foods, prepared desserts, and restaurant meals. National trends are in line with this since American teens tend to consume a high proportion of their calorie consumption from UPFs. This level of consumption is troubling nutritionally due to the fact that foods so high in sugar, low in fiber, and additive-rich don't contribute much to dietary intake and cause displacement of other, more nutritious foods. These foods indirectly impact mental health through the resulting dietary imbalance.

The weak positive correlation ($r = 0.2$) suggests that slightly increased levels of psychological distress were reported by those adolescents who had consumed more UPFs. The low value of $R^2 = 0.04$, however, means that this correlation explains only a small proportion of the variance in GHQ-12 scores. This does not refute the potential effect of UPFs on mental health but shows that their effect is reasonably modest relative to other unmeasured variables.

Mental health among teenagers is shaped by a complex interplay of environmental, psychological, and biological influences. For instance, peer pressure, school pressure, family context, hormonal fluctuation, and particularly sleep are important but not measured in this

research. Their absence implies that the observed association between UPF consumption and mental health could be partially confounded or exaggerated.

The Role of Confounding Variables

Several confounding factors may have impacted the observed correlation between UPF use and mental health. In the first instance, stressed or depressed teens would be more likely to employ UPFs as an emotional comfort option, a behavior known as emotional eating. This creates the setting for a probable reverse causality issue, wherein poor mental health is an instigator of too much UPF use, as opposed to being an effect.

Secondly, socioeconomic status (SES) most likely played its part. Lower SES teens have fewer sources of healthy food due to financial constraints, thus they consume more UPFs, which are also cheaper and easy to access. At the same time, such teens are also likely to have higher chronic stress, reduced mental health care, and more stressful home environments, all of which are negative predictors for emotional health. This is supported by a 2020 study from Leung et al., which illustrates an evident relationship between food insecurity, and higher psychological distress in US adolescents.

Other unassessed but influential variables are sleep quality, social or family support, exercise, and recreational screen time. Lower physical activity and sleep, for example, have been reported to be associated with greater UPF consumption and greater psychological distress (Andreeva et. al., 2023). These intersecting effects on UPFs and mental health imply that the relationship between UPFs and mental health is likely more complex with various lifestyle and environmental determinants, which were outside the scope of this study.

Because of these unmeasured variables and the correlational nature of the study, causality cannot be established. UPF consumption could be an origin of mental health challenges, but it may equally be a result, or both may be outcomes of shared external conditions.

Comparison with Existing Literature

The results of the current study concur with new evidence by Mazloomi et al. (2023), who conducted a meta-analysis of over 260,000 adults. They found a significant correlation between UPF intake and the risk of depression, with a dose-response relationship where for every 10% increase in UPF intake, the risk of depression increased by 11%. Although their results were more robust than those presented here, both studies show the same trend: higher UPF intake is linked to poorer mental health.

However, unlike in the current study, where adolescents were the target, Mazloomi et al.'s review involved adults and utilized more heterogeneous diet assessment tools. These may be responsible for varying magnitudes of correlation. Still, both findings indicate a large relationship that would be worthwhile investigating further, given the physiological and psychological susceptibility of adolescents. Both of the previously mentioned studies by Reales-Moreno et al. (2022) and Mesas et al. (2022) also presented the same results with teenagers, though the UPFs analyzed were compositionally different at the chemical level.

Limitations of the Study

There are several important limitations to this study that must be taken into account. The most significant is maybe the fact that it employed a cross-sectional design. Because all data were collected at a single point in time, no inference can be made about whether consumption of UPF preceded mental health change or the reverse. Longitudinal research would be more suitable to determine the directionality and potential causality of this association.

Another limitation is the reliance on self-report data, which inherently is subject to social desirability bias and recall bias. The participants may have done so unconsciously or intentionally by either underestimating the intake of UPF or the degree of mental distress. This can reduce the validity of the results and conceal actual associations.

The small sample size of only 54 participants further limits the statistical power of the study. Since the sample population is so limited, even big trends might not be statistically significant, and the findings of the study are not likely to generalize to larger populations. The geographic specificity of the sample—adolescents in central Ohio—is another concern regarding generalizability since results might not directly generalize to comparable regions or subpopulations elsewhere.

This study also focused specifically on UPF consumption without examining the broader picture of total diet quality. For example, it did not control for protective nutrients such as fiber, omega-3 fatty acids, or whole-food micronutrient-dense foods, all of which might contribute to improved mental well-being. This narrow dietary emphasis handicaps the potential to understand the full nutritional context.

Lastly, while the GHQ-12 is a highly validated and widely used measure, it measures general psychological distress and does not provide clinical diagnoses of some mental disorders. This limits the degree and scope of mental health information to be inferred from the findings.

Broader Implications

Although the correlation is weak, the study has public health significance. At the population level, even small associations can have considerable effects, especially if UPF consumption exacerbates other risk factors. The results support the value of more refined research, including the specific constituents of UPFs—e.g., artificial food color (e.g., Red No. 40, Yellow No. 5), preservatives, and flavor enhancers.

These ingredients, some of which are included on the U.S. GRAS (Generally Recognized As Safe) list, have shown potential behavioral effects in animal and human studies. In contrast to Europe, where stricter regulation is being placed on some ingredients, the U.S. continues to approve their use with yet unresolved concerns (Simmons et al., 2014). This gap in oversight highlights the necessity for updating food safety evaluations and additional targeted research on the impact of ingredients.

For educators, parents, and policymakers, the findings call for a more comprehensive teen nutrition strategy—one that considers not only calorie consumption or sugar content but also food processing and additive exposure. This could affect school food programs, public health messaging, and food labeling policy.

Conclusions

While no major statistically significant association between the consumption of ultra-processed foods (UPF) and mental health scores in adolescents was found in this investigation, the weak negative association found here indicates the potential for an association that should be investigated further. The findings indicate that higher UPF intake may be modestly linked to poorer mental health outcomes, as measured by the GHQ-12, even if not conclusively. These conclusions agree with previous global studies reporting that diet quality has some impact on the health of teenagers. However, limitations such as a small sample size, reliance on self-reported data, and potential confounding variables highlight the need for more robust, longitudinal research to better understand the impact of UPFs on youth mental health. Future studies should address current limitations and explore several key directions.

Longitudinal Studies to Establish Causality

To determine if UPF consumption has an active impact on mental health, future research should utilize longitudinal designs that track changes over time. Multiple measurements of dietary consumption and mental health—using established measures like the GHQ-12—would clarify the direction of changes. This approach would determine if increased UPF consumption precedes deteriorating mental health or if the relationship is bidirectional.

Investigating Specific Ultra-Processed Food Components

Rather than lumping all categories of UPFs together, future studies will need to isolate the impact of individual ingredients. Ingredients such as high sugar, artificial sweeteners, trans fatty acids, and food additives (such as synthetic color, preservatives, flavor enhancers, and emulsifiers) may have potentially differential impacts on brain function and mood. Research into their separate and joint biological impacts—such as inflammation, gut microbiome disruption, or neurochemical changes—is warranted.

Examining the Role of Confounders and Mediators

To strengthen causal inference, future studies need to control for confounding variables like socioeconomic position (SES), physical activity, screen time, sleep quality, family environment, and academic stress. Mediators such as emotional eating, gut microbiota alterations, or cortisol levels may also be examined for a deeper understanding of the mechanisms by which UPF consumption and mental health outcomes are related.

Examining the Effect of Overall Diet Quality

It is important to situate UPF intake in the broader context of diet quality. Subsequent research needs to investigate how UPF intake interacts with intakes of nutrient-dense foods (e.g., fruits, vegetables, whole grains, lean meats) in affecting mental health. Determining whether high UPF intake has more negative consequences when combined with low nutrient intakes can guide more balanced nutritional approaches.

Using More Objective Measures

Self-reported dietary intakes and self-reported mental health measures are also prone to biases. Future research must incorporate objective measures such as dietary biomarkers, wearable personal health monitoring technologies, or physiologic signs of stress (e.g., cortisol levels, heart rate variability) to help improve the quality and validity of data.

Raising the Sample and Population

Greater, more representative samples are needed in order to translate findings to populations. Adolescent participation in future studies must come from a wide variety of cultural, geographic, and socioeconomic strata. Research examining cultural variation in UPF use and attitudes about mental health may provide useful context to inform tailoring interventions.

Intervention Studies

To translate findings into practice, intervention studies are needed. Those interventions that reduce UPF intake—through nutrition education, school programming, or parents—need to be examined for their impact on teen mental health. Longitudinal follow-up can determine the sustainability and long-term effects of such interventions.

Exploring Developmental Aspects

Finally, developmental timing may be a critical variable. Research would explore whether the effects of UPF use differ during early, middle, and late adolescence and whether these effects persist into adulthood. Such understanding would inform prevention timing.

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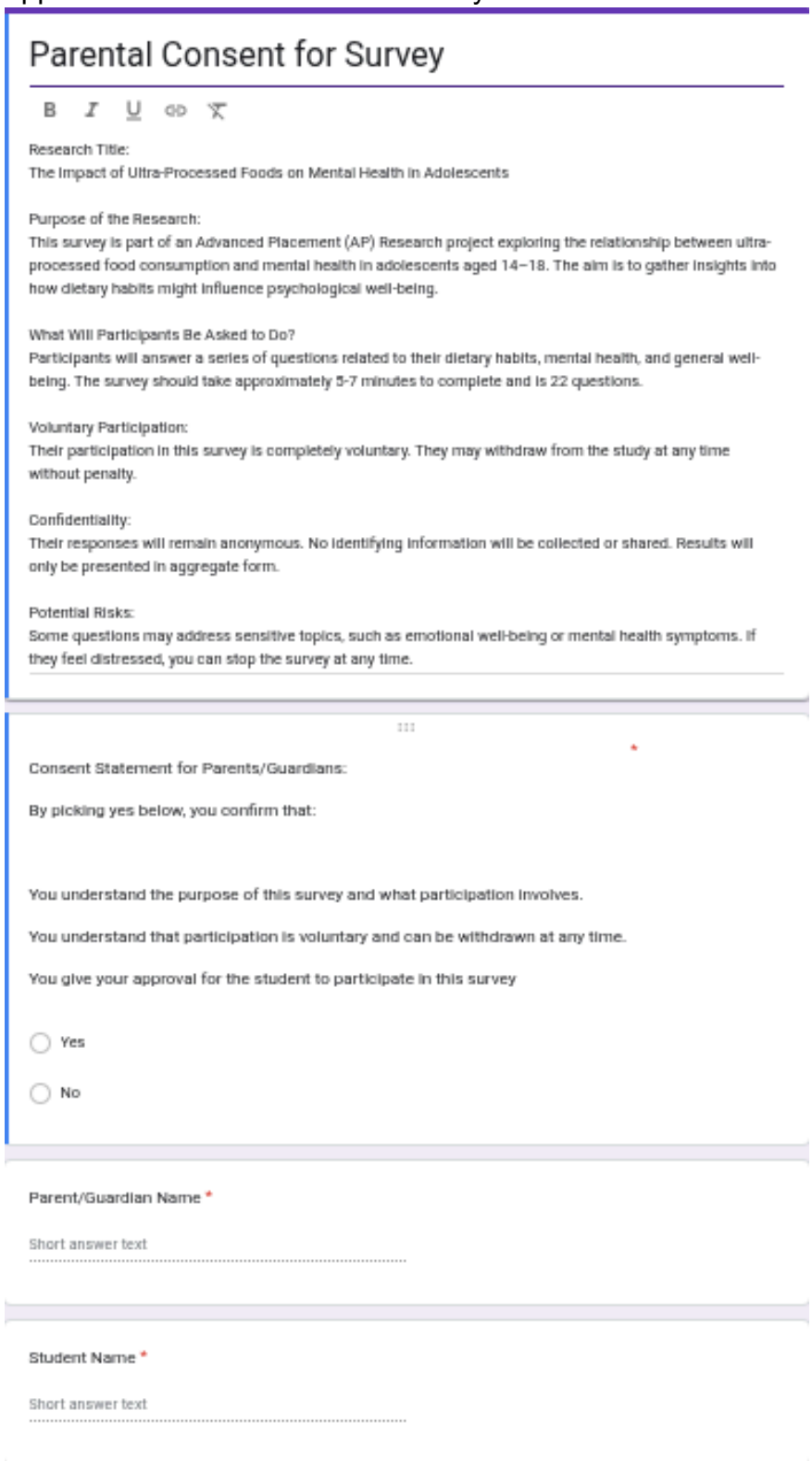
Appendix

Appendix A: Parental consent survey



Parental Consent for Survey

Research Title:
The Impact of Ultra-Processed Foods on Mental Health in Adolescents

Purpose of the Research:
This survey is part of an Advanced Placement (AP) Research project exploring the relationship between ultra-processed food consumption and mental health in adolescents aged 14–18. The aim is to gather insights into how dietary habits might influence psychological well-being.

What Will Participants Be Asked to Do?
Participants will answer a series of questions related to their dietary habits, mental health, and general well-being. The survey should take approximately 5-7 minutes to complete and is 22 questions.

Voluntary Participation:
Their participation in this survey is completely voluntary. They may withdraw from the study at any time without penalty.

Confidentiality:
Their responses will remain anonymous. No identifying information will be collected or shared. Results will only be presented in aggregate form.

Potential Risks:
Some questions may address sensitive topics, such as emotional well-being or mental health symptoms. If they feel distressed, you can stop the survey at any time.

Consent Statement for Parents/Guardians: *

By picking yes below, you confirm that:

You understand the purpose of this survey and what participation involves.

You understand that participation is voluntary and can be withdrawn at any time.

You give your approval for the student to participate in this survey

- Yes
- No

Parent/Guardian Name *

Short answer text

Student Name *

Short answer text

Appendix B: Survey content

Section 1 of 3

AP Research survey

Please fill out the form to the best of your ability.

Survey content

This survey tests ultra processed food consumption and mental health. If you consent to taking this survey, select yes below.

Consent to taking the form

*

After section 1

Continue to next section

Section 2 of 3

Food consumption survey

Description (optional)

How often do you consume a serving of sugary drinks like soda, energy drinks, or sweetened iced tea per week?

None

Once per week

Twice per week

3 times per week

4 times per week

5 times per week

6 times per week

Daily

Other...

How often do you eat a serving of packaged snacks like chips, pretzels, or flavored crackers per week?

None Once per week Twice per week 3 times per week 4 times per week 5 times per week 6 times per week Daily Other...

How often do you eat a serving of breakfast cereals that are sugary or have added flavors per week?

None Once per week Twice per week 3 times per week 4 times per week 5 times per week 6 times per week Daily Other...

How often do you eat a serving of fast food meals (e.g., from restaurants like McDonald's, Burger King) per week?

Other...

How often do you consume a serving of pre-packaged ready-to-eat meals or frozen dinners per week? Frozen Pizza, Hot pockets, etc.

None Once per week Twice per week 3 times per week 4 times per week 5 times per week 6 times per week Daily Other...

How often do you eat a serving of processed meats like sausages, hot dogs, or deli meats per week?

None Once per week Twice per week 3 times per week 4 times per week 5 times per week 6 times per week Daily Other...

How often do you eat a serving of ultra-processed sweets like candy, chocolate bars, or packaged cookies per week?

None Once per week Twice per week 3 times per week 4 times per week 5 times per week 6 times per week Daily Other...

How often do you consume a serving of instant noodles or soups per week?

None Once per week Twice per week 3 times per week 4 times per week 5 times per week 6 times per week Daily Other...

How often do you use a serving of packaged sauces, dressings, or condiments that are ready to use per week?

None Once per week Twice per week 3 times per week 4 times per week 5 times per week 6 times per week Daily Other...

How often do you eat a serving of commercially produced bread, pastries, or baked goods per week?

None Once per week Twice per week 3 times per week 4 times per week 5 times per week 6 times per week Daily Other...

After section 2

Continue to next section

Section 3 of 3

Mental health assessment

Have you been able to concentrate on what you're doing? 1-4 scale
Have you lost much sleep over worry? 1-4 scale
Have you felt that you are playing a useful part in things? 1-4 scale

Have you felt capable of making decisions about things? 1-4 scale
Have you felt constantly under strain? 1-4 scale
Have you felt you couldn't overcome your difficulties? 1-4 scale
Have you been able to enjoy your normal day to day activities? 1-4 scale
Have you been able to face up to your problems? 1-4 scale

Have you been feeling unhappy or depressed? 1-4 scale

Have you been losing confidence in yourself? 1-4 scale
Have you been thinking of yourself as a worthless person? 1-4 scale
Have you been feeling reasonably happy, all things considered? 1-4 scale