Attention Deficit Hyperactivity Disorder in Early Adolescence and the Prevalence of Disordered Eating in Late Adolescence

Student Example

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Abstract

Attention deficit/hyperactivity disorder is one of the most commonly diagnosed neurodevelopmental disorders in the United States. Often, ADHD contributes to additional challenges for children/adolescents outside of learning. One of these challenges includes the development of disordered eating behaviors at some point throughout childhood or adolescence. Although this is seemingly a well-researched topic, there are a lot of aspects that contribute to the problem. Also, eating behaviors that contribute to disordered eating appear in many forms. For example, types of eating disorders range from anorexia that causes severe malnutrition to binge eating that causes obesity, and both of these pose a serious threat to overall physical health. Additionally, mechanisms through which ADHD relates to eating behaviors are still unclear, and researchers are unsure whether impulsivity or attention deficits, or a combination of both, are the primary underlying trigger for disordered behaviors among children with ADHD. The proposed study will look at ADHD symptoms and eating behaviors over a ten-year period to determine how ADHD symptoms contribute to eating behaviors across adolescence. The current study will provide further insight into which ADHD symptoms are most likely to contribute to disordered eating, as well as which aspects of eating behavior are most impacted by ADHD throughout childhood and adolescence.

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It has been well researched that attention deficit/hyperactivity disorder is associated with higher rates of disordered eating symptoms (Bisset et al., 2019) including body image dissatisfaction, drive for thinness, emotional overeating, and satiety responsiveness, among others. The science behind this association has been studied by many groups of researchers. For example, Fuemeller et al. (2020) studied the association between ADHD and obesity-related eating pathology, and Yilmaz et al. (2016) studied the association between ADHD symptoms in early childhood and symptoms of anorexia or bulimia in late adolescence. Thus, individuals with ADHD present with a range of eating disorder symptoms suggesting several possible pathways from ADHD symptoms to a broad range of eating pathologies.

Although psychiatric comorbidities exist in people with ADHD that often include disordered eating habits, other factors can play a role in this development as well. Mikami et al. (2008) suggests that people with ADHD have more problems understanding and regulating emotions. Fuemeller et al. (2020) discovered a positive association between the impulsive, inattentive, and hyperactive ADHD symptoms and emotional eating. Findings across the studies of Mikami et al. (2008) and Fuemeller et al. (2020) suggest that people with ADHD might turn to eating when they are struggling to perceive and regulate their emotions as a possible explanation between the association. Emotional eating can involve over and undereating. Overeating to resolve emotions typically involves an overload of addictive junk food, which puts the individual at risk for developing an addiction to junk foods. The more obvious risk of overeating is weight gain that can start one down a path of battling obesity (Fuemeller et al., 2020). Similarly, undereating can cause lowered brain functioning that affects academic

achievement. More seriously, it can alter one's physical development during crucial growth periods (Brown et al., 2020).

Comprehensive research has indicated patterns about commonly reported emotional experiences of adolescents with ADHD. Mikami et al. (2008) found that baseline peer rejection and parent-child relationship strain related to ADHD predicted the prevalence of eating disorder symptoms in adolescence. Experiencing common hardships in adolescence can be challenging, especially in coexistence with ADHD symptoms because of the potential emotional regulation problem (Yilmaz et al., 2017). Parent-child relationship strain might stem from a mutual misunderstanding, where the parent does not understand that the inattentive and hyperactive/impulsive symptoms are the underlying cause of disruptive behavior and/or lack of school achievement, and children might not understand why they are constantly being disciplined (Mikami et al., 2008). Similarly, peer-rejection might occur due to hyperactive and inattentive symptoms of ADHD that can result in the occurrence of interruptions that make it hard for friendships to form (Mikami et al., 2008). In conclusion, experiencing baseline peer rejection and parent-child relationship strain is likely emotional, and people with ADHD tend to struggle understanding and confronting emotions. Therefore, eating disorder symptoms, such as emotional eating (Fuemeller et al., 2020) could potentially arise due to unresolved emotions or inability to regulate emotions.

Studies on ADHD and eating behaviors often include entirely female, or largely female samples, which is likely due to the increased prevalence of eating disorders among female adolescents. However, because ADHD is more common in males, these samples may be unrepresentative of the larger population of individuals with ADHD. Within the studies conducted in Biederman et al. (2007) and Mikami et al. (2008), the researchers chose to recruit a

target group of adolescent girls only for the study samples. The findings of these studies both indicated a positive correlation between ADHD and eating disorder symptoms, but the external validity of the studies may have been affected due to the fact that girls report higher rates of eating disorders than boys to begin with. On the contrary, Bisset et al. (2019) conducted a cross-sectional study of a population-based sample of adolescents with and without ADHD ages 14-15 examining the differences in DSM-5 eating disorder symptoms and partial-syndrome diagnoses. Interestingly, the results of the study indicated that boys aged 14-15 were more at risk for regular binge eating and no other eating disorder symptoms according to the DSM-5 criteria, without mentioning any notable findings concerning the female participants.

Fuemmeler et al. (2020) conducted a cross-sectional study of ADHD symptoms and eating behaviors that suggests attention problems and hyperactivity are the specific ADHD symptoms that can predict poor eating pathology. Similarly, Yilmaz et al. (2017) research results suggest that the hyperactive/impulsive ADHD symptom in addition to the attention deficit symptom throughout childhood and adolescence should be considered the most efficient aid in identifying early symptoms of poor eating behaviors. On the contrary, findings from Mikami et al. (2008) indicate that impulsivity is the main ADHD symptom that is predictive of adolescent disordered eating behaviors, rather than inattention and/or hyperactivity. In order to inform preventative measures addressing the growing presence of eating disorders in today's youth, additional research is needed to understand specific ADHD symptoms and how they can predict eating pathology, particularly as these things unfold across adolescence.

In order to contain the growing problem of obesity, self-regulation and healthy eating behaviors must be taught to young children because of the link between ADHD symptoms and poor eating behaviors that exists and the high rate of children that are diagnosed with ADHD

(Bisset et al., 2019). Preventing eating disorders unrelated to obesity, such as anorexia, bulimia, and orthorexia is equally important because these types of behaviors (Yilmaz et al. 2017) play an equal role in the overall negativity that society has constructed for self-image. Because there is a range of ADHD symptoms and a wider range of eating behaviors, the current correlational research between ADHD and eating disorder symptoms is too general to generate a useful platform of information for parents of children with ADHD to reference regarding signs of poor eating pathology and recommendations for regulating eating early on.

The proposed study will recruit a sample of 150 participants diagnosed with attention deficit/hyperactivity disorder within 6 months of turning 8 years old who will undergo yearly assessments for a period of ten years. These assessments will include the Swanson, Nolan, and Pelham Rating Scale-4th ed. (Mikami et al., 2008), ERICA-S and ERICA-P (Mikami et al., 2008), *Eating Disorders Inventory-II* (Mikami et al., 2008), and Children's Eating Behavior Questionnaire (CEBQ) (Fuemmeler et al. 2020). By examining the correlation between prevalent ADHD symptoms and expressed emotion to eating behaviors throughout childhood and adolescence, a platform of information for parents of children with ADHD to reference regarding signs of poor eating pathology and recommendations for regulating eating early on will be obtainable.

Method

Participants

This longitudinal study will include a total of 150 participants diagnosed with attention deficit/hyperactivity disorder. Participants will be recruited from both genders, a variety of ethnicities, and within 6 months of turning 8 years old through pediatricians, schools, and mental health centers (Mikami et al., 2008). Cluster sampling will be used to randomly select three pediatricians, three schools, and three mental health centers within Tippecanoe County to recruit participants from. Then, stratified sampling will occur to ensure the sample reflects the gender balance of the selected clusters. This randomized sample will undergo yearly assessments until they turn 18 years old.

Measures

This study's independent variable is time. Participants will be assessed annually over the course of ten years. The prevalence of ADHD symptoms will serve as the second independent variable and measured through parent- and teacher-reported scores on the Swanson, Nolan, and Pelham Rating Scale-4th ed. This entails a checklist of the 9 DSM-IV items for inattention, the 6 items for hyperactivity, and the 3 items for impulsivity, with each scored on a 0 ("not at all") to 3 ("very much") scale (Mikami et al., 2008). This variable is measured to determine which symptoms are more and/or less prominent and compared to reported eating disorder symptoms.

The third independent variable in this study is expressed emotion. This variable will be measured through the emotion regulation index for children and adolescents (ERICA) self- and parent reported (ERICA-S and ERICA-P) (Mikami et al., 2008). This 16-item report is measure of emotion regulation, and items are rated on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree).

The dependent variable of this study is eating behaviors throughout childhood and adolescence. This variable will be measured using scores on the parent-reported Children's Eating Behavior Questionnaire (CEBQ) and self-reported *Eating Disorders Inventory-II.* The CEBQ is made up of Likert scale response options ranging from 1 (never) to 5 (always). There are eight eating behaviors assessed on the CEBQ, but this study will only cover three food approaching behaviors: food responsiveness (FR), enjoyment of food (EF), emotional overeating (EOE); and two food avoidant behaviors: satiety responsiveness (SR) and slowness in eating (SE) (Fuemmeler et al. 2020). Furthermore, the *Eating Disorders Inventory-II* is a self-report questionnaire that includes 9 Body Dissatisfaction items, 7 Bulimia items, and 7 Drive for Thinness items scored on a 1–6 metric (1=never, 2=rarely, 3=sometimes, 4=often, 5=usually, 6=always) (Mikami et al., 2008).

Procedure

To initiate this study, adolescents with ADHD were recruited through pediatricians, schools, and mental health centers (Mikami et al., 2008). Participants will be screened for evident ADHD symptoms (hyperactivity, impulsiveness, and inattention) by means of both parent- and teacher-reported hyperactivity-inattention scores on the Swanson, Nolan, and Pelham Rating Scale-4th ed. (Mikami et al., 2008). Informed adolescent assent and parental consent will be required from each participant. Assessments will be conducted in office or at participants' homes and schools to ensure a neutral environment. This will require permission from the schools and IRB approval.

Participants will be tested a total of 10 times over the course of 10 years. Assessment will include all items included in the teacher-reported hyperactivity-inattention scores on the Swanson, Nolan, and Pelham Rating Scale-4th ed. (Mikami et al., 2008) and ERICA-S and

ERICA-P (Mikami et al., 2008) every year. Participants will be assessed by means of four items on the Children's Eating Behavior Questionnaire (CEBQ) (Fuemmeler et al. 2020) for their first five years of participation and all items on the *Eating Disorders Inventory-II* (Mikami et al., 2008) for their remaining years of the study.

Strengths and Limitations

The ten longitudinal intervals at which this study conducts its assessments occur regularly, ensuring that we are able to observe significant developments of the dependent variable (eating behaviors) over time. Initial screening of participants will control for factors besides ADHD symptoms that may affect the dependent variable, such as a home and school environment that supports access to food and healthy meals. Furthermore, the sample will be tested by means of four different assessments, one involving ADHD symptoms, one for expressed emotion, and two that cover eating behaviors. This provides an abundance of information for the researchers to review. The two assessments that cover eating behaviors include one specifically intended to measure eating behaviors for the first five yearly assessments (ages 8-12), and another intended to measure eating behaviors for the remaining yearly assessments (ages 13-18). Therefore, the first five yearly measures of eating behaviors are parent-reported, and the remaining yearly measures of eating behaviors are self-reported. This is another strength of the study; parent-reported measures are likely more accurate when participants are ages 8-12 because more time is spent with parents, and self-reported measures are likely more accurate for participants ages 13-18 because more time is spent independently, without parents. Furthermore, multiple sampling methods are used to ensure that the sample is representative of the entire population, including stratified, cluster, and randomized sampling.

Limitations of this study include the likelihood that some participants will have to opt out of the study at some point in the ten years over which the study occurs. This is because the study requires participants to be tested over such a long period of time; therefore, some participants will move or have to drop out of the study for other reasons. Another limitation of this study is that it has three independent variables effecting the dependent variable, which can produce a variety of correlation data. This makes it difficult to make accurate, straight-forward causal claims.

References

Biederman, J., Ball, S. W., Monuteaux, M. C., Surman, C. B., Johnson, J. L., & Zeitlin, S. (2007). Are girls with ADHD at risk for eating disorders? Results from a controlled, five-year prospective study. *Journal of Developmental & Behavioral Pediatrics*, *28*(4), 302–307. https://doi.org/10.1097/dbp.0b013e3180327917

Bisset, M., Rinehart, N., & Sciberras, E. (2019). DSM-5 eating disorder symptoms in adolescents with and without attention-deficit/hyperactivity disorder: A population-based study. *International Journal of Eating Disorders*, *52*(7), 855–862. https://doi.org/10.1002/eat.23080

Brown, T. A., Forney, K. J., Klein, K. M., Grillot, C., & Keel, P. K. (2020). A 30-year longitudinal study of body weight, dieting, and eating pathology across women and men from late adolescence to later midlife. *Journal of Abnormal Psychology*, *129*(4), 376–386. https://doi.org/10.1037/abn0000519

Fuemmeler, B. F., Sheng, Y., Schechter, J. C., Do, E., Zucker, N., Majors, A., & Kollins, S. H. (2020). Associations between attention deficit hyperactivity disorder symptoms and eating behaviors in early childhood. *Pediatric Obesity*, *15*(7). https://doi.org/10.1111/ijpo.12631

Mikami, A. Y., Hinshaw, S. P., Patterson, K. A., & Lee, J. C. (2008). Eating pathology among adolescent girls with attention-deficit/hyperactivity disorder. *Journal of Abnormal Psychology*, *117*(1), 225–235. https://doi.org/10.1037/0021-843x.117.1.225

Yilmaz, Z., Javaras, K. N., Baker, J. H., Thornton, L. M., Lichtenstein, P., Bulik, C. M., & Larsson, H. (2017). Association between childhood to adolescent attention deficit/hyperactivity disorder symptom trajectories and late adolescent disordered eating.

Journal of Adolescent Health, *61*(2), 140–146.

https://doi.org/10.1016/j.jadohealth.2017.04.001