Comorbid Anxiety, Body Image, And Stress as A Role in Eating Disorder Behavior: A Research Among Young Adults in Saudi Arabia

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Abstract

Introduction: Individuals with eating disorders have suffered greatly as a result of the COVID-19 epidemic. Experts and professionals worldwide have noticed a significant increase in the number and severity of new and pre-existing young people suffering from eating disorders since the start of the COVID-19 epidemic. Objectives: In this study, the author aims to understand the factors contributing to the eating disorder. This research focuses on ensuring that eating disorders get the same priority as other illnesses. Furthermore, to do better for young people suffering from eating disorders. This paper describes planned behavior, an extension of the theory of reasoned action required by the weaknesses of the original model of dealing with behaviors of which individuals have incomplete voluntary control. Methods: It is a quantitative study and data were collected through an online survey. A total of 300 questionnaires were distributed among university students in the eastern region of Saudi and 192 students gave responses. The questionnaire items were adapted from the planned behavior, an extension of the theory of reasoned action and other previous studies. SmartPLS was used for the data analysis. The model described in this paper aims to identify the pressing issues such as low self-esteem, high perfectionism, and dysfunctional mood regulation that lead to severe eating disorder symptoms. Results: The proposed result was statistically significant, proving that eating disorder severely increases primarily because of body image and comorbid anxiety. Therefore, based on the outcome, further attention and clinical treatment can be suggested or coupled to combat eating disorders in emerging adulthood groups. Conclusion: It is currently unknown if this increase in eating disorders will persist, worsen, or improve over time. Consequently, the objective of this study is to prepare for and manage this ongoing clinical burden, as well as to meet the immediate and long-term unmet requirements of emerging adulthood groups with eating disorders. It is time to act together to ensure that eating disorders receive the same attention as other diseases. It is time to improve services for adolescents with eating disorders.

Keywords: *COVID-19 Pandemic, Comorbid Anxiety, Body Image, Eating Disorder Symptoms, Emerging Adulthood, Theory of Reasoned Action.*

Introduction

It has been assumed that the COVID-19 pandemic had an acute impact on individuals with eating disorder symptoms, both in terms of symptom aggravation and restricted access to therapies. The epidemic has disturbed conventional methods of delivering health care, like as face-to-face therapy with a trained caregiver. This has exacerbated the already pervasive problem of unmet treatment needs among individuals with eating disorder symptoms; it has been demonstrated repeatedly that affected individuals either do not seek eating disorder-specific treatment or do not receive appropriate care when they do seek treatment (Hart et al., 2011; Striegel Weissman & Rosselli, 2017). In addition, the general anxiety-inducing environment of the pandemic, stay-at-home orders, at-home workouts, and the threat of food shortages may worsen eating pathologies. (Richardson et al., 2020).

Eating disorders are severe and sometimes fatal, conditions; food obsessions, body weight, and physique are frequently indicative of eating disorders. One of the generic definitions of eating disorder behavior is "bad eating behavior accompanied by worry, humiliation, and fear, among others." Anorexia, bulimia, binge eating disorder (BED), eating disorder not otherwise specified (EDNOS), and night eating syndrome are the five

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categories of eating disorders (Zam, Saijari, & Sijari, 2018). According to the National Eating Disorder Association (NEDA) (2008), the harmful effects of adolescent eating disorder behaviors may be detrimental to the cognitive development of pupils, student behavior and academic progress, food shortages, disease risk, and increased absenteeism will suffer from an eating disorder in their lives (Zam, Saijari, & Sijari, 2018; Mazubir, Hassan, Aziz, & Suan, 2020).

According to a study conducted by the Saudi Psychiatric Association (SPA), eating disorders are more common among adolescents. With the advent of global westernization, technological advancements, and cultural shifts, the concept of an ideal body shape and size has touched nearly all regions of the world. The National Eating Disorder Association states that over 70 million men and women suffer from eating disorders. (Thomas et al., 2018).

Even if their weight is normal and healthy, Saudi adolescents were anxious about being slim and reported a degree of dissatisfaction with their bodies when compared to the popular image of skinny women. In addition, 15.9% of Saudi teenagers suffer from eating problems and a desire to be skinny. (Momeni et al., 2020; Musaiger et al., 2004). The findings suggested that, as a whole, approximately 40% of the Arab population is on a diet (Radwan et al., 2018). Disordered eating is a collection of dysfunctional eating patterns and weight-related behaviors that have a detrimental impact on both psychological and physical health. Clinicians and physicians have determined overwhelmingly that eating disorders are psychologically dependent disorders.

University students are typically between the ages of 18 and 25, the majority of whom are undergraduates and are, therefore, in an emerging maturity era. According to a new study on emerging adulthood, those with a lifetime major depressive illness or anxiety disorder were four times more likely to have lifetime eating disorders (Garcia et al., 2020). Similar to anxiety disorders, individuals with an eating disorder use dysfunctional strategies such as disordered eating to cope with their emotions (Khanal et al., 2022). In addition, persisting comorbid anxiety symptoms following eating disorder remission enhance relapse risk (Bardone-Cone et al., 2010) when adolescents revert to eating disorder-related coping behaviors (Fitzsimmons & Bardone-Cone, 2011). Emerging adulthood is connected with increased comorbid anxiety disorders. Specifically, comorbid social anxiety impedes recovery because avoidance of interpersonal settings and fear of unfavorable assessments impede treatment engagement and the development of a healthy therapeutic connection (Smith et al., 2018). In emerging adulthood groups, prevalence rates for depressive disorders are increasing.

In addition, persisting comorbid anxiety symptoms following eating disorder remission enhance relapse risk (Bardone-Cone et al., 2010) when adolescents revert to eating disorder-related coping behaviors (Fitzsimmons & Bardone-Cone, 2011). Emerging adulthood is connected with increased comorbid anxiety disorders. Specifically, comorbid social anxiety impedes recovery because avoidance of interpersonal settings and fear of unfavorable assessments impede treatment engagement and the development of a healthy therapeutic connection (Smith et al., 2018). In emerging adulthood groups, prevalence rates for depressive disorders are increasing.

Body image is a multidimensional concept that encompasses how one perceives, believes, experiences, and behaves about one's body, all of which reside on a continuum between expectations of positive body image to negative perceptions of body image. A major public health issue is a negative image of oneself due to a considerably strong desire for thinness, particularly for young females (Rasheed, 1998). Eventually, the desire for thinness will develop into potentially dangerous eating disorders. A previous study shows that dissatisfaction with body size leads to a higher body mass index (BMI) among young adolescents, whereas another local study found that negative body image was correlated with negative body image disordered eating by adolescents (Chin et al., 2020). Perhaps, in childhood and adolescence, the negative view of self-image may have been developed and may have intensified in their young adulthood by undergoing a stressful university life. Binary logistic regression has demonstrated that body mass index (BMI) or other forms of substance use have not been substantially correlated with adolescent-disordered eating (Mazubir, Hassan, Aziz, & Suan, 2020). In order to understand the signs of stress or depression, institutions must have information about body image and insights (Manaf, Saravanan, & Zuhrah, 2016).

Apart from that, psychological stress happens when an entity considers a scenario as being essential for his or her well-being even whether the condition exceeds their sufficient means for coping (Deveuf, Verbeken,

Beveren, Michels, & Braet, 2018). The growth of various psychiatric and psychological conditions is correlated with stress. Furthermore, stress has affected eating disorder behaviors in adolescents, as many studies have identified emotional issues as a contributing factor to disordered eating behavior (Chin et al., 2020). There was an unforeseen finding that optimistic emotional states have influenced binge eating when the individual perceives a way to convey good emotions such as excitement or happiness (Chin et al., 2020). Besides, stress was associated positively with a daily urge to eat and appetite, but not with daily snacking, and both of these three measures of daily eating behavior were associated strongly positively (Deveuf, Verbeken, Beveren, Michels, & Braet, 2018). Overweight and obesity, with more recent exposure to the role of stress in the initiation and maintenance phase of these clinical problems, are rising conditions. The processes, however, are not yet known and well understood, and momentary ecological studies, such as the regular differences between stress and eating, are far less studied (Deveuf, Verbeken, Beveren, Michels, & Braet, 2018). As observed in other studies, emotional management issues trigger uncontrolled eating behavior, leading to disordered eating (Mazubir, Hassan, Aziz, & Suan, 2020). Determining and recognizing the causes associated with the occurrence of disordered eating habits will help decision-makers take concrete steps to minimize the possible negative consequences of eating disorder behaviors.

Research Objectives

The objectives of the study are:

- To examine the relationship between body image and eating disorder behavior
- To examine the relationship between comorbid anxiety and eating disorder behavior
- To examine the relationship between stress and eating disorder behavior.

Literature Review

Definitions of Eating Disorder Behavior

With prevalence, eating disorders (ED) are extreme mental illnesses. Eating disorder behavior is identified as 'a wide variety of abnormal eating behaviors that do not require a diagnosis of a particular eating disorder,' this is according to the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) (Sandanasamy, 2016). These disorders are described by a concern for food and body image and from that contribute to acts such as obesity, starvation, binge eating, and physical exercise (Suryawati, Dieny, Purwanti, Tsani, & Widyastuti, 2020). Furthermore, eating disorders (EDs) such as anorexia nervosa (AN), bulimia nervosa (BN), binge ED, and subthreshold variations, including the need for effective treatments and preventive measures in the general community, are deemed a public health problem (Zeiler et al., 2016). This is very common among university students and adolescents.

Comorbid Anxiety and Eating Disorder Behavior

When a person experiences two or more illnesses at the same time, those illnesses are considered "comorbid.". Comorbid Anxiety disorders and depression are among the most prevalent mental disorders in adolescence (Martín et al., 2019). Both are the most common comorbid diagnoses of eating disorders, especially in adolescence (Quenneville et al., 2022; Wang et al., 2022). Theoretical models that have received the most empirical support assume that anxiety, depression, and eating disorders are characterized by a shared etiologic. In the present study, the focus is on three aspects that are associated with eating disorders and play a role in the development and maintenance of anxiety disorders and depression.

According to a study by Murray, Nagata, Griffiths, Calzo, Brown, Mitchison, Blashill, and Mond (2017), eating disorders are more likely to occur in emerging adolescents and adults over 25 years old, as well as school-going children under 15 years old. These conditions are often associated with a range of clinical comorbidities, such as drug use, depressive symptoms, a higher age of onset, a history of prior obesity or being overweight, and weight-related bullying experiences. Moreover, National Longitudinal Adolescent to Adult Health Research (Add Health) showed that people aged 18-25 adults involved in poor weight management behaviors, binge

eating behavior, and being diagnosed with eating disorders. Hence, there is a significant relationship between comorbid anxiety and eating disorder behavior.

Body Image and Eating Disorder Behavior

Body image disruption is fundamental to eating disorders and is theorized to underpin maladaptive eating patterns and weight loss (Mitchison et al., 2017). Dissatisfaction with body size is also expected to a higher risk of eating disorders in the female population and seems to lead to adolescent binge eating behaviors. In addition, several studies have shown that average and overweight adolescents are associated with eating disorder habits, while some of the identified adolescents with overweight and obesity have shown that they are associated with disordered eating patterns (Mazubir, Hassan, Aziz, & Suan, 2020). Studies have also found that girls are generally more anxious about their bodies, have low self-esteem, and are more obsessed with having attractive, thin bodies than boys (Mazubir, Hassan, Aziz, & Suan, 2020). Therefore, it shows that dissatisfaction with body image can affect eating behavior.

Stress and Eating Disorder Behavior

Research has shown that through improvements in weight-related health behavior, stress is associated with overweight and obesity, as stress triggers emotional brain networks and elevates glucocorticoid and insulin secretion (Deveuf, Verbeken, Beveren, Michels, & Braet, 2018). The findings jointly confirm the initial opinion that eating disorder raises the risk of stress and depression, likely as a result of the inability to control eating behaviors, such as dietary restrictions and binge eating. This may lead to an inability to reach an idealized physique, which would then induce stress (Rasheed, 1998). Furthermore, in adolescents, the intake of more energy-dense foods and lower consumption of main meals and vegetables is correlated with chronic life stress (Latzer et al., 2009). Stress initiates uncontrolled eating behavior, leading to eating disorders. Depending on the underlying cause of stress and the stress level can result in under-or-over eating related to food intake (Mazubir, Hassan, Aziz, & Suan, 2020). Thus, there is a significant relationship that shows stress can lead to eating disorder behavior.

Underpinning Theory

Icek Ajzen (1985) stated that a framework for clarifying and predicting behavior has become the theory of planned behavior. The theory of planned behavior is an extension of the theory of reasoned action required by the weaknesses of the original model of dealing with behaviors of which individuals have incomplete voluntary control. The theory says that the primary force for behavior is the intent of performing the action. Moreover, the goal, in turn, is a function of underlying motivational factors such as attitude, subjective norms, and perceived behavioral control (Steinmetz, Ajzen, Knappstein, & Schmidt, 2016). These three main determinants can be helpful for recognizing non-compliant behavioral intentions.

The theory indicates that beliefs are shaped by motives that predict behaviors and intentions (Willekens, 2016). Intentions are meant to capture the motivating forces affecting behavior and they are indicators of how difficult individuals are able to try and how much effort they expect to put in order to execute the activity. Furthermore, significant correlations are identified between behavior and both behavioral attitudes and perceived elements of the philosophy of self–regulation, and studies have stated whereby subjective norms best demonstrate a relatively strong behavioral relationship (Steinmetz, Ajzen, Knappstein, & Schmidt, 2016). Each shows a distinct element of the behavior, intention, understanding of behavioral regulation, attitude towards the behavior, and subjective norm, and each will serve as a point of attack in efforts to alter it. Attitudes refer to the degree to which the conduct of concern is evaluated favorably or unfavorably by an individual. It requires a recognition of the consequences of the behavior when it is conducted, while behavioral intention refers to the motivational influences affecting a certain behavior in which the greater the intention to execute the behavior, the more likely it is to perform the behavior (Goh, Ritchie, & Wang, 2017). The role of subjective norms can be seen as the key determinant of body image as it applies to the perception of whether the behavior is accepted or disapproved by most people (Bailey, L. Gammage, & Ingen, 2017). Planned behavior theory can be applied in this study since it is constructed with three dimensions.

Theoretical Framework

Figure 1 below shows the independent variables and dependent variables. The three independent variables are the factors of eating disorder behavior.
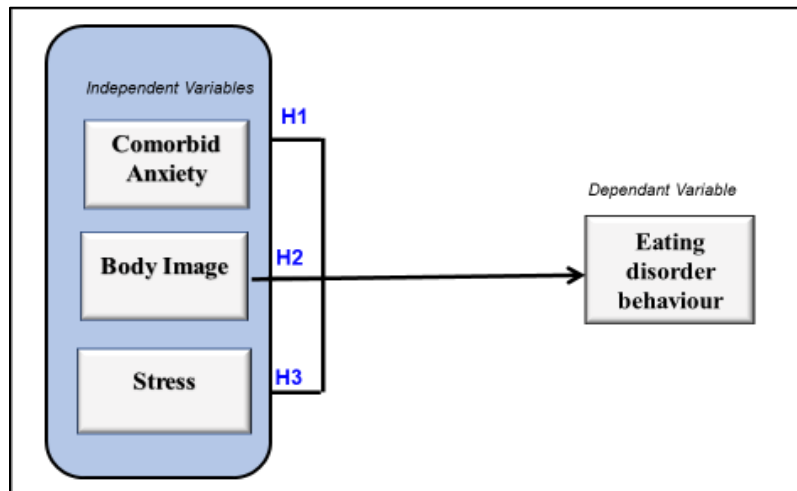

Figure 1: Theoretical Framework

The present study offers a theoretical framework and a full description to clarify the relationship between the three independent variables, which are comorbid anxiety, body image, and stress with eating disorder behavior. Thus, the hypothesis shows that there is a relationship between comorbid anxiety and eating disorder behavior. Secondly, the current study identifies the relationship between body image and eating disorder behavior. A study has found that emerging adulthood age groups are more anxious about their bodies in general, have low self-esteem, and are more obsessed with having an attractive, thin body (Mazubir, Hassan, Aziz, & Suan, 2020). The hypothesis shows that there is a significant relationship between body image and eating disorder behavior. Last but not least, the study will identify the relationship between stress and eating disorder behavior. Some researchers confirm that the initial opinion is that eating disorder raises the risk of stress and depression, likely as a result of an inability to control eating behaviors, such as dietary restrictions and binge eating (Chin et al., 2020). Therefore, the current study hypothesizes that stress has a significant relationship with eating disorder behavior.

Hypothesis Development

The following hypotheses are formulated:

H1: There is a significant relationship between body image and eating disorder behavior.
H2: There is a significant relationship between comorbid anxiety and eating disorder behavior.
H3: There is a significant relationship between stress and eating disorder behavior.

Methodology

Materials and Method

The present study employed a quantitative design method, and data were collected through an online survey. A total of 300 questionnaires were distributed among university students in the eastern region of Saudi, and 192 students gave responses. The questionnaire items were adapted from the planned behavior and are an extension of the theory of reasoned action and some other previous studies (Biddle, 2016; Guaman-Quintanilla et al., 2018; Woodward, 2000). A seven-point Likert scale was used to evaluate the questionnaire, with 1 denoting strongly disagree and 7 denoting strongly agree. The research design elements used in this study are shown in Table 1, along with their corresponding justifications.

Table 1: Elements of Research Design.

Design	Element	Explanation
The Study	Exploratory	This research aims to establish the three main factors among emergent adolescent groups on eating disorder behavior. The research scope is universities in the eastern region of Saudi Arabia and the specific domain is still at an embryonic stage.
Role of Theory	Theory Testing	This research utilized a deductive approach to test the theoretical framework i.e., the role of comorbid anxiety, body image, and stress to analyze the effect of eating disorder behavior among emerging adolescent groups.
Sampling Process	Purposive Sampling	Purposive sampling was employed to select respondents from universities in the eastern region of Saudi Arabia. The universities were selected using the RAND (random) function of Excel.
Data Collection	Survey	The questionnaire was prepared using Google Forms. Owing to post COVID-19 pandemic, social media such as email and WhatsApp were used to distribute the questionnaire to the university students. According to G*Power analysis, at least 158 respondents are required for this quantitative study. In reality, 192 were successfully collected.
Researcher Interference	Minimal	The data collection activity did not hinder the respondents' natural course of activities or work processes.

Data Analysis

In this study, all the loading for each item is above 0.70 (Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, 2014), and they fall within the satisfactory range. Table 2 below shows that the loadings for each item fall within the satisfactory value. Internal consistency reliability is determined by the composite reliability (CR). As depicted in Table 2, the CR values for each construct are well above the 0.70 threshold. Hence this affirms that the internal consistency reliability is satisfactory. Convergent validity is determined by the average variance extracted (AVE), which is the degree to which the indicators reflect a convergent construct compared to indicators measuring other constructs (Pea, 1993). The value shown in Table 2 are all above 0.5 for the AVE range which shows a significant convergent validity level for the study. Figure 2 shows the overall measurement model.

Table 2: Factor Loadings and CR For Independent and Dependent Variables

Construct	Items	Loading	Composite Reliability	Average Variance Extracted (AVE)
Comorbid anxiety	Anx 1	0.717	0.858	0.671
	Anx 2	0.844		
	Anx 3	0.866		
Body Image	Body_Img 1	0.73	0.889	0.728
	Body_Img 2	0.898		
	Body_Img 3	0.786		
Stress	Stress 1	0.871	0.938	0.752
	Stress 2	0.83		
	Stress 3	0.872		
	Stress 4	0.868		
	Stress 5	0.8.92		
Eating Disorder Behavior	EDB2	0.85	0.889	0.668
	EDB3	0.852		
	EDB4	0.781		
	EDB5	0.783		

Discriminant Validity

In this study, discriminant validity is evaluated according to the Fornell and Larcker and HTMT criterion. Specifically, discriminant validity needs a test to not correlate very highly with measures that it should differ (Voorhees et al., 2016a) (Hair Jr. et al., 2017). In the event discriminant validity cannot be established; a construct will affect the variation of not only the observed variables that they are theoretically connected to. As a result, it cannot be ascertained if findings confirming hypothesized structural paths are valid or caused by statistical inconsistencies (Shiu et al., 2011). Furthermore, a latent variable's AVE must be higher compared to squared correlations between the latent variable and the remaining variables. Hence, the square root of AVE on the diagonal must be more in comparison to a correlation of the off-diagonal. Therefore, in this study, all the values, as stated in Table 3, clearly indicated that there were no issues of discriminant validity violation. Henseler, Ringle, and Sarstedt (2015) suggested an alternative approach to assessing discriminant validity using the HTMT approach (Henseler, 2015a). HTMT.90 value above indicates that there is a problem with discriminant validity (Henseler, 2015b; Voorhees et al., 2016b). Table 3 below shows that all the values are below 0.90. Therefore, there are no issues of discriminant validity.

Table 3: Discriminant Validity (Fornell-Larcker & HTMT)

	Comorbid anxiety	Body Image	Eating Disorder behavior	Stress
Comorbid anxiety	0.819			
Body Image	0.618	0.853		
Eating Disorder Behavior	0.545	0.582	0.817	
Stress	0.511	0.405	0.284	0.867

Table 4: Heterotrait-Monotrait Ratio (HTMT)

	Body Image	Comorbid Anxiety	Eating Disorder Behavior	Stress
Body Image				
Comorbid Anxiety	0.791			
Eating Disorder Behavior	0.477	0.64		
Stress	0.672	0.664	0.321	

Assessment of Structural Analysis

Identifying the independent variable's effect on a dependent variable helps to understand better the mechanism underlying this effect under different. This may subsequently lead to a better understanding of the baseline relationship and advancement of existing theoretical knowledge. Table 5 below shows the interaction between independent variables and dependent variables. If the T value > 1.645, and the p-value <0.05, it shows a positive interaction between the independent and dependent variables. Based on table 5 shows that H1 and H2 are accepted because p-value < 0.05 and T value < 1.645 (H1: there is a significant relationship between body image and eating disorder behavior, H2: there is a significant relationship between comorbid anxiety and eating disorder behavior, while H3 is rejected H3: there is a significant relationship between stress and eating disorder behavior with T-value 0.747 and p-value >0.05(0.455).

In addition to this, table 5 shows that body image has a significant relationship with eating disorder behavior and comorbid anxiety has a significant relationship with eating disorder behavior. This is because the significance level of mean falls between [LL = 0.017 < 0.169< UL =0.314], [LL = 0.281 < 0.436< UL =0.582] did not span aa zero in between indicating there was a significant relationship between the independent variable and dependent variable (Preacher & Hayes, 2008). Whereas the H3 value span a zero in between [LL = -0.177 <-0.05< UL =0.082], indicating there was no significant relationship between the independent variable and dependent variable (Stress and Eating behavior).

Table 5: Assessment of The Structural Model

	Original Sample (O)	Sample Mean (M)	STDEV	T Statistics	P Values	2.50% (LL)	97.50% (UL)
Body Image -> Eating Disorder Behavior(H1) (Accepted)	**0.165**	0.169	0.076	2.168	0.03	**0.017**	**0.314**
Comorbid Anxiety -> Eating Disorder Behavior(H2) (Accepted)	**0.436**	0.439	0.076	5.764	0	**0.281**	**0.582**
Stress -> Eating Disorder Behavior(H3) (Rejected)	**-0.05**	-0.047	0.066	0.747	0.455	**-0.177**	**0.082**

Discussion

This study examined relationships among disordered eating concerns of young adults that severely increase in terms of body image, comorbid anxiety, and stress. Findings indicate overall eating disorder severity increases significantly, which suggests that body image and comorbid anxiety rise in tandem. Attention to anxiety and depression in disordered eating treatment programs is especially important given the greater physical, social, and psychological impairment that occurs when depression and anxiety co-exist, coupled with the higher mortality risk of eating disorders compared to other mental health diseases or stress in general (Leung et al., 2013; Martinson, 2016).

This study demonstrated that stress is not associated with or results in an insignificant relationship in the overall eating disorder behaviors. The findings of the study suggest that when young adults receive a diagnosis of an eating disorder, different types of stress also should be assessed and when diagnosed, it must be treated. In addition, the hypothesis between stress and eating disorder behavior is rejected probably different types of clinical stress should be specified and data should have been collected rather than just general stress and eating behavior. Therefore, in future research, there should be a specific stress type to be tested to identify the specific eating disorder behavior such as anorexia binging, purging, and restraint eating syndrome.

Conclusion

Consistent with earlier findings, there is a robust relationship between body image and concomitant worry regarding eating disorder-related impairment. Results further corroborate existing evidence that emerging adulthood or in other terms young adults with low self-esteem, high perfectionism, and dysfunctional mood regulation demonstrate more severe eating disorder symptoms.

Future interventions aiming to reduce disordered eating in emerging adulthood may be strengthened by incorporating comorbid anxiety management strategies. Screening for subclinical anxiety and depression (Mixed Anxiety and Depression Disorder (MADD) may be helpful in providing early intervention to resolve disordered eating behaviors before they become entrenched. Future research agenda should consider moderating effects of self-esteem, perfectionism, and mood dysregulation regarding the link between body image, comorbid anxiety, and stress.

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