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THE ROLE OF SOCIAL SUPPORT AND EMOTIONAL REGULATION IN RELATIONSHIP WITH ADVERSE CHILDHOOD EXPERIENCES AND FOOD ADDICTION

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THE ROLE OF SOCIAL SUPPORT AND EMOTIONAL REGULATION IN RELATIONSHIP WITH ADVERSE CHILDHOOD EXPERIENCES AND FOOD ADDICTION

A Thesis

Presented to the

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California State University,

San Bernardino

In Partial Fulfillment

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by

Negin Ghaffari

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ABSTRACT

Adverse childhood experiences (ACEs) are potentially traumatic experiences that occur before the age of 18 and can have long-standing impacts on mental and physical health. Individuals with high exposure to ACEs may be at increased risk for depression, substance use disorders, and cardiovascular disease (Hughes et al., 2017). Social support has been shown to play an essential role in reducing the likelihood of adverse outcomes, such as substance dependence following exposure to adverse experiences. Furthermore, emotional regulation difficulties have been shown to mediate the relationship between childhood trauma and food addiction. There has been little research on adverse events in childhood and food addiction, and this study would add to the literature regarding the role of resilience factors in the relationship between ACEs and food addiction. The goal of the present study was to examine the role of social support and emotion regulation on the relationship between ACEs and food addiction among college students. Undergraduate college students from diverse backgrounds were asked to complete an online survey assessing social support, emotion dysregulation, ACEs, and food addiction. As predicted, there was a significant positive association between ACEs and food addiction and a positive association between food addiction and emotional dysregulation. However, there was no significant association between food addiction and social support. Lastly, there was an indirect effect of emotional dysregulation in relation to adverse childhood experiences and food addiction. However, there was no support for a

significant indirect effect of social support in relation to adverse childhood experiences and food addiction.

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LITERATURE REVIEW

Introduction

Adverse childhood experiences (ACEs) are negative experiences that occur before the age of 18. According to Felitti and colleagues (1998), these ACEs can be related to experiences that happened to the person directly/personally and/or experiences that happened to other family members that affected them as a child. Crouch and colleagues (2019) conducted a national study examining the prevalence of adverse childhood experiences among a sample of 45,287 children in the United States using a parental report ACEs questionnaire. Findings revealed that the most common ACEs reported nationally were divorce and separation of parents. Additionally, one in ten children nationally reported exposure to three or more ACEs, the highest spectrum for risk within the ACEs measurement. Moreover, some states in the US have reported that one in seven children have experienced ACEs and are in the high-risk category.

The Center for Disease Control and Prevention has stated that having a score of “4” or higher on an ACEs scale increases the health risk of developing heart disease, cancer, and stroke. Experiencing adversity during one’s childhood and adolescence development can lead to abnormally high/overactive stress reactions throughout childhood and into adulthood, including feelings of intense fear, terror, and helplessness (Sacks et al., 2018). Over-activation of the cortisol stress response can cause hormonal imbalances, which can interrupt normal

development (Sacks et al., 2018). Exposure to ACEs directly has been linked to a variety of negative outcomes, including increased health risk behaviors (e.g., smoking, physical inactivity, severe obesity, risky sexual behavior; Felitti et al., 1998), chronic health issues (e.g., autoimmune disorders, headaches, premature mortality, heart disease, cancers, suicide; Anda et al., 2010; Brown et al., 2009; Center for Disease Control and Prevention, 2019; Dube et al., 2009), and mental health difficulties (e.g. substance use, depressive symptoms and antisocial behaviors (Schilling et al., 2007). These findings provide further support for earlier studies conducted on ACEs, which concluded that the greater the number of ACEs a child experiences, the greater the risk for negative mental and physical health outcomes (Felitti et al., 1998).

A meta-analysis conducted by Hughes and colleagues (2017) examined studies assessing health risk outcomes associated with ACEs. The authors found that a person who has experienced adversity in childhood was at greater risk for depression, substance use disorders, and cardiovascular diseases. He and colleagues (2022) examined the relationship between addiction and adverse childhood experiences in a study among a sample of adults with drug addiction from two drug rehabilitation centers and individuals without substance addictions. Individuals with drug addiction were addicted to methamphetamine, heroin, Magu, and K powder. They found that the severity of ACEs was correlated with drug addiction. They concluded that abuse, neglect, and family dysfunction were significant predictors of drug addiction.

ACEs have also been associated with other forms of addictions. Higher childhood maltreatment has been associated with problems and severity of gambling (Bristow et al., 2022; Petry & Steinberg, 2005), mobile phone addiction (Li et al., 2020), and social media addiction (Chegeni et al., 2023). Although there is research supporting the link between ACEs and substance abuse and different forms of addiction, little is known about the relationship between ACEs and another serious form of addiction, food addiction (FA), a newly used term that is unique from eating disorders.

Food Addiction

There is no accepted definition of food addiction; in an attempt to operationalize it, Gearhardt and colleagues (2009) developed the Yale Food Addiction Scale (YFAS), which is based on the seven symptoms from the Diagnostic and Statistical Manual for Mental Disorders (DSM- IV-TR) for substance dependency (American Psychiatric Association, 2013). DSM-IV substance use disorder is based on 11 criteria, which include tolerance, withdrawal, and cravings. The YFAS assesses these same 11 criteria. Gearhardt and colleagues (2009) state that FA can be diagnosed in an individual once at least three of the symptom criteria and scores for clinically significant impairment or distress have been met (See Table 1).

There is much debate surrounding food addiction: one emphasizes solely the behavioral aspects of eating, while another underscores the role of food properties triggering addictive behaviors. However, food addiction refers to the consumption of highly palatable and processed foods. One argument proposed

that food addiction can be considered solely a behavioral addiction (Cottone, 2019). Looking at it as solely as a behavior moves away from the properties of food and that eating behavior happens separate from the nutritional factors of the food (Hebebrand et al., 2014). Hebebrand and colleagues argued that when overeating does occur, it may be due to a negative emotional state (boredom, anxiety) rather than any particular food type. Conversely, Schulte and colleagues (2015) proposed that food that includes large amounts of processed fats and sugars can trigger overeating and addictive behaviors because the properties of the food activate the reward system of the brain.

In a systematic review, Gordon and colleagues (2018) evaluated the empirical studies that examined food addiction in humans and animals. They particularly focused on addiction characteristics in relation to food, such as brain reward, dysfunction, preoccupation, risky use, impaired control, tolerance/ withdrawal, social impairment, chronicity, and relapse. The results of the review were that processed foods that have added sugars and fats have the greatest risk for addiction. They concluded that food addiction symptoms aligned better with the criteria for substance use disorder than behavioral addiction. They found support for neurobiological correlations of addiction, impaired control, social impairment, risky substance use, and pharmacological criteria connected to food addiction. The reviewers also found relapse, genetics, substance sensitization, impulsivity, and overall addiction connected to food addiction. The review, however, did not find any studies backing the sub-criteria for persistent desire or unsuccessful efforts to cut down, failure to fulfill major role obligations at work,

school, or home due to substance use, or continued use despite knowledge of physical or psychological programs caused by the substance.

Additionally, Schulte and colleagues (2015) explored symptoms of food addiction and asked participants to identify which foods were perceived as more addictive than others. Results indicated that individuals who consumed higher amounts of processed foods (i.e., chocolate, pizza, cake) tended to self-report symptoms of FA and that non-processed, lower-calorie foods were reported as less addictive (e.g., beans, broccoli, and cucumber). Onaolapo and colleagues (2018) state that there are specific tastes that humans prefer most, such as sugar, fats, and umami; in particular, sugar has a more pronounced role due to easy detection in our taste buds. This, in turn, creates a particular preference for these types of foods. In particular, highly processed food is engineered by the food industry to make it more palatable because of human evolution and inane preferences (Onaolapo et al., 2018). However, it is important to note that foods high in sucrose or fructose and elevated levels of fiber, such as fruits and vegetables, are less likely to lead to binge or overconsumption due to their fiber content (Criscitelli et al., 2016). Another important reason why certain foods may be more addictive is that foods high in sugar, fat, or combined create the same effect on the brain as drug abuse due to the reward system of the brain (Onalapo et al., 2018).

Interestingly, a study conducted by Lenoir and colleagues (2007) studied rats who were allowed to choose between water that was sweetened with artificial sweetener (saccharin) and cocaine, with 94% of the rats choosing

saccharin. They concluded that mammals have an inborn hypersensitivity to sweets and are not adapted to high concentrations of sweet tastes. In conclusion, they stated that when modern society creates an environment with widely available sugar-rich foods, it causes the brain reward signal to go into overdrive with the possibility of trumping self-control mechanisms, which can lead to addiction (2007).

Next, to clarify further the concept of food addiction, let us explore the difference between Binge Eating Disorder and food addiction. Gearhardt (2011) clearly differentiates between Binge Eating Disorder (BED) and food addiction, although food addiction does have important similarities and differences with other eating disorders. One difference is that in BED, episodes of binge eating occur during a discrete period of time, accompanied by the subjective feeling of eating being out of control. Overeating that happens throughout an entire day rather than during a limited time period would not fit the BED definition of binge eating. In contrast, substance dependency is defined by use that occurs in a greater frequency than originally intended. For example, if someone decides to have only one or two drinks in a sitting but drinks throughout the day, shows signs of diminished control over consumption according to substance dependency. This behavior of food consumption does not meet the criteria for binge eating episodes. Gearhardt and colleagues wrote that individuals with clinically relevant disordered eating that would not meet BED criteria, but could possibly result in obesity, and therefore may be better captured under an addiction framework (2011).

Furthermore, Gearhardt and colleagues (2012) examined the relationship between food addiction among obese patients with BED. Among the eighty-one patients who were seeking treatment for binge eating disorder,57% met the criteria for FA. Compared to individuals who did not meet the criteria for BED, they had higher levels of depression, negative affect, emotional dysregulation, and lower self-esteem. The 57% figure highlights that although there are similarities, there are differences that do not overlap with FA. Burrows and colleagues confirm that individuals with comorbidity of FA and binge eating disorder, compared to just BED, have higher impulsivity, greater food craving, and more depressive symptomatology.

It can be concluded that FA, just like BED, can be a factor in weight gain or obesity due to overeating, which is associated with low self-control (Franandez Aranda et al.,2019). Bak-Sosnowska (2017) examined differences between BED and food addiction and noted that BED behaviors tend to reduce mental tension, which can be related to cognitive distortions related to food or embarrassment and shame over body/weight. However, with FA, food can be used to foster a sense of satisfaction and experience a sense of pleasure from food. She continues by stating that individuals with food addiction do not have concerns over body shape/weight as seen in those with BED. Lastly, she assesses that with BED patients, there is a sense of awareness of the consumption of large portions and shame and distress associated with their eating habits. However, with individuals with food addiction, there is a sense of denial and lack of awareness, and thus, no sense of shame and guilt associated with eating habits.

Furthermore, Schulte and colleagues (2020) evaluated that food addiction criteria included craving, tolerance, a great deal of time spent to acquire, use and or recover from certain foods, and withdrawal symptoms. In contrast, eating disorders tend to put importance on the influence of shape and weight concerns (Gearhardt et al., 2011). Furthermore, FA treatment suggests abstaining from highly processed foods. However, with any eating disorders, the treatment is centered around that there are no restrictions or forbidden foods, and restriction can cause more binge episodes (Davis et al., 1988).

Lastly, Ratković and colleagues (2023) did a systematic review and compared BED and FA (See Table 2). They summarized that BED is characterized by body image/ shape, dietary issues, and weight, while FA is a substance and behavioral addiction. FA can be differentiated by examining the criteria such as hunger, taste, pleasure, function of food, loss of social connections, and concerns regarding weight (2023). The results revealed that there are overlapping symptoms and behaviors between BED and food addiction as well, such as not being hungry but indulging in food consumption, absence of hunger, short-term mood improvement after eating, and cravings. Furthermore, although hunger is absent in both FA and BED, individuals with FA tend to crave particular foods. The taste of food is not as important for BED patients, but rather the quantity of the food compared to individuals with FA, who select particular items according to their preferred taste (2023).

It is important to note that food addiction can occur among individuals with a healthy BMI as well (11.1%; Pursey et al., 2014), but the prevalence rate of FA

among individuals with obesity has been between 34% and 40% (Ceccarini et al., 2015). A review conducted by Meule (2012) examined the relationship between BMI and FA and BED. He found a positive association between FA and BMI and further explained that overweight and obese individuals may have strong FA symptomatology. However, that is not to say that under, and normal-weight range individuals do not exhibit symptoms of FA, but rather FA may happen to be more pronounced among overweight and obese individuals.

Food addiction has been associated with stress and quality of sleep, based on a study done by Najim and colleagues (2020). In their study, university students completed questionnaires regarding food addiction, quality of sleep, and perceived stress. Results revealed that 56% of students experience low-quality sleep. Next, 81% of individuals diagnosed with FA had low-quality sleep compared to 57% of students with no FA. Najim et al. (2020) concluded that food addiction, lack of quality sleep, and stress coexist which can affect the quality of life.

Other studies have found links between food addiction and childhood adversity. For example, there might be a link between the type of adversity and the outcome of food addiction. Mason and colleagues (2013) examined the relationship between child abuse and risk of food addiction, among adult subjects using the Yale Food Addiction Scale. Results revealed that both severe childhood physical abuse and sexual abuse were associated with roughly 90 percent increases in food addiction risk compared to individuals with no sexual or physical abuse experiences.

Furthermore, findings from the broader literature have demonstrated a link between childhood maltreatment and food addiction in college students. Wittick and colleagues (2023) found a significant correlation between food addiction and ACEs, with depression emerging as a predictor of food addiction. The study suggests that negative affect may be a risk factor for FA. Offer and colleagues (2022) examined childhood trauma and its association with obesity during adulthood and the possible development of food addiction. The findings suggested that childhood trauma was associated with being categorized as overweight or obese during adulthood. In particular, half of the variance in the relationship between trauma and obesity was linked to food addiction. Offer and colleagues concluded that the likely reason for this relationship was due to the maladaptive coping mechanism in response to trauma. Collectively, these results highlighted the impact of childhood adversity and associated negative affect contribute to the emergence of maladaptive eating behaviors and weight-related outcomes.

In summary, the assessment of FA as opposed to BED and other eating disorders has been demonstrated with the Yale food addiction scale 2.0, a relatively new scale used to evaluate food addiction. The Yale food addiction scale utilizes the DSM-IV seven symptoms of substance dependency and the functional impairment and distress criteria in response to overeating. Binge eating and substance dependence are both characterized by diminished control, but binge episodes happen during a particular time period, followed by a sense of loss of control. Further, if overeating happens throughout the day, it would not fit

the binge eating disorder definition (Gearhardt et al., 2009). Individuals with BED can fit the criteria for food addiction; in a clinical sample of BED patients, 57% fit FA diagnosis (Gearhardt et al., 2012). Although there are similarities, there are differences based on the sample that do not overlap with BED patients. Food addiction can affect the quality of sleep as well. Najim and colleagues (2020) found that students who have a food addiction have also reported a lack of quality of sleep. Furthermore, childhood adversity and maltreatment has been associated with food addiction as well. Wittick and colleagues (2023) found significant correlations between ACEs, depression, anxiety, stress, and food addiction. The adversity experiences that appear to place individuals at the most risk may be sexual and physical abuse. Mason and colleagues (2013) found that severe childhood physical abuse and sexual abuse were associated with roughly 90% increases in food addiction risk compared to individuals with no sexual or physical abuse experiences. There seems to be a high risk for individuals who have experienced childhood adversity to develop food addiction, which should be investigated further. Further, it is important to explore various potential mechanisms (i.e., social support and emotional regulation) that weaken this relationship between ACEs and FA. This will help shed light on the possible relationship between the variables and ways to promote resilience for populations at risk.

Social Support

Social Support has been shown to be an important resilience factor in the face of adversity (McLafferty et al, 2018). Social support is the perceived support

(e.g., emotional, practical, etc.) received from significant others, friends, and/or family members (Zimet et al., 1988). Researchers demonstrated that, compared to their peers, individuals who reported high family social support and family resilience coped well with early life adversity (Gore-Felton et al., 2002). Social support serves a protective function: receiving emotional validation and feedback on the individual's appraisal of the stressful events, providing aid in regard to reducing the impact of adverse events, and providing shielding and defending the individual from the stressor (Feeney et al, 2015).

Among child populations, parental social support has been shown to be crucial in developmental outcomes. Serrano-Villar and colleagues (2017) examined the relationship between social support and child development outcomes and the possible mediating effect of parenting practices in Mexican American and Dominican American mothers. They recruited 610 families of four to five years old in which mothers reported perceived social support, their child's problem (i.e., aggression, depression, hyperactivity) and adaptive behaviors (i.e., social skills, functional communication), and their parenting practices (e.g., positive parenting versus harsh parenting). The study also included the child's teachers' report on how much the mothers were involved and the child's problem and adaptive behaviors in the classroom. For both Mexican American and Dominican American mothers, familial support was associated with positive parenting, which was then associated with higher levels of adaptive behaviors. Furthermore, results showed that social support from family members may have a protective effect that promotes adaptive behaviors in children. The study

highlighted that support from school networks was not associated with child's outcomes. The study sheds light on the importance of family support within the development of children.

In a cross-sectional study of sixty subjects who were diagnosed with substance abuse disorder with a mean age of 39 years old, social support was found to predict longer substance abstinence, with low social support associated with briefer periods of abstinence (Rathinam et al., 2022). Most of the participants were diagnosed with alcohol and tobacco dependence. The results indicated that perceived social support among participants with abstinence from the substances within three months or above was significantly higher than people with lower perceived social support.

Roger and colleagues (2023) assessed the impact of adverse childhood experiences on alcohol and drug abuse and the possible moderating role of social support among Hispanic youth. The results indicated that youth with adverse childhood experiences were more likely to have problematic alcohol and drug abuse, in which the rates increased into young adulthood compared to individuals with no ACEs. Furthermore, the results provided support for social support as a protective factor for the possible risk of substance abuse among individuals with ACEs. The individuals with high perceived social support and adverse childhood experiences were less likely to have problematic substance abuse.

Li and colleagues (2022) examined the relationship between social support and food addiction within Chinese populations. Li and colleagues

explored the psychometric properties of the Chinese version of the Yale Food Addiction Scale and the relationship between resilience and social support in relationship with food addiction. In their results, they found that food addiction diagnosis was negatively correlated with resilience and social support, concluding that social support does play a role in food addiction.

Social support may also play a role in individuals who have experienced adverse childhood experiences and meet the criteria for food addiction. Wattick and colleagues (2022) examined the correlational relationship among social support, food addiction, and ACEs. They found that individuals who had severe food addiction had a mean ACEs score of “3”, which was higher than those with moderate or no food addiction. Furthermore, those with lower social support were more likely to have food addiction and high ACEs score. Hence, social support can be a possible protective factor against FA in individuals who have high ACEs. However, the study did not examine the mediational or moderation effect of the study variables.

In summary, perceived social support appears to be a protective factor in the face of adverse experiences, buffering against possible outcomes such as food addiction, substance abuse, and promotion of adaptive behaviors. Individuals who experienced adversity in childhood coped better when higher social support was perceived. Lack of social support from family has affected even school performance and higher social support had a stronger correlation with better social performance than even having school networks (Serrano-Villar, 2017). Social support affects those who are substance dependent as well.

Among individuals who were recovering from substance dependence, those with high perceived social support were able to abstain for a longer period compared to individuals who had low social support. Lastly, social support is a buffer against substance dependency with individuals with high ACEs (Roger et al., 2023) and as a resilience factor to food addiction (Li et al., 2022). Social support has been identified as a possible variable in order to promote resilience, but another important factor in resilience is emotional regulation.

Emotional Regulation

Based on the definition of Cole and colleagues (1994), emotional regulation is the ability to respond to events and experiences in life with a range of socially acceptable emotions. Silvers and colleagues (2022) state that adolescence is a developmental stage in which emotion regulation is shaped for the better or worse. Possible explanations for this change are parental influences in emotional regulation or dysregulation. A study conducted by Chang and colleagues (2003) examined the relationship between harsh parenting (e.g., when a child misbehaves, they may scold, kick, hit, get really mad with or humiliate) and child aggression and whether this relationship was mediated by emotional regulation. Results indicated that maternal and paternal harsh parenting affected child emotional regulation, which resulted in school aggression. Interestingly, paternal harsh parenting was more likely to result in more aggressive behaviors of the child than maternal harsh parenting, and this effect was more pronounced between father and son relationships. Maternal harsh parenting had more of an effect on the emotional regulation of the child

than paternal harsh parenting. Child's emotional regulation mediated the relationship between harsh parenting of mothers and child aggression.

Difficulties in controlling and managing negative emotions to a level that causes impairment, also known as emotion dysregulation (Gratz, 2004), may play a role in the connection between experiences of childhood trauma and the development of substance use disorders (Westphal, 2017). A study conducted by Hoover and colleagues (2022) with 300 participants recruited using Amazon Mechanical Turk examined the role of emotion regulation in the relationship between childhood trauma and food addiction. They further conducted an exploratory analysis to investigate possible gender differences among these associations. They investigated both possible correlational analysis and moderated mediational models and multilevel regression to identify the role of gender in the association between childhood trauma, food addiction, and emotion dysregulation. The results for the correlations revealed a strong positive association between FA, childhood trauma, and emotion dysregulation for both genders. The results for their multiple regression revealed that childhood trauma explained 47% of the variance in emotion dysregulation scores for men and 7% variance for women. They reported that childhood trauma explained 41% of the variance for food addiction for men and 24% of the variance for women. Interestingly, there was a stronger association for men in relation to childhood trauma and emotion dysregulation and a moderate association between the two variables for women. Moreover, the results of their moderated mediational analysis revealed that emotional dysregulation partially mediated the association

between childhood trauma and food addiction. However, they reported no significant differences in the indirect effects for men or women. Lastly, due to having a significant interaction of gender and childhood trauma on emotional dysregulation and childhood trauma on FA, they conducted a gender-stratified regression analyses. In the current study I examined a broader measure of childhood abuse (i.e., ACEs) in relation to food addiction and emotion dysregulation that also includes household dysfunction in addition to childhood abuse and neglect only.

Trauma can affect emotional dysregulation in adults, but the timing of when the trauma happens is equally important. Dunn and colleagues (2018) studied which time period is most associated with emotional dysregulation symptoms in adulthood. Overall, it was observed that participants who were exposed to trauma were at greater risk for emotional dysregulation compared to those who were not exposed to trauma. Further, it was seen that participants who were exposed to violence or maltreatment during middle childhood had higher emotional dysregulation scores compared to those who were exposed in other developmental stages.

In particular, emotional regulation plays a role in the relationship with adverse childhood events and the outcomes for individuals. In a study done by Rudenstine and colleagues (2018), individuals received psychological treatments at a community-based mental health clinic. They examined the mediating role of emotional regulation in the relationship between ACEs and adult psychological distress. The results indicated that emotional regulation mediated the

relationship between ACEs and psychological distress. In particular, impulse control difficulties and lack of coping strategies affected psychological distress in adulthood.

A study by Flouri and Mavroveli (2012) examined the role of coping (distraction, avoidance, support seeking, and active coping) and emotional regulation (cognitive reappraisal and expressive suppression) in the relationship between adverse life events and emotional and behavioral problems with adolescents. They collected longitudinal data in which they measured changes in emotional and problem behaviors over two different time periods (12 months apart). They found that avoidance and expressive suppression were associated with problem behavior. Cognitive reappraisal of emotional regulation moderated the effects of adverse events in worsening problem behaviors. This suggests that emotional regulation (cognitive reappraisal) is a protective factor for adolescents against problem behavior. Lastly, the relationship between adverse life events and changes in emotional and behavioral problems was not significant.

Having low emotional regulation can lead to adverse coping mechanisms with individuals who have experienced trauma. Echeverri-Alvarado and colleagues (2020) examined individuals who had post-traumatic stress symptoms (PTSS) and examined emotional regulation as a protective factor in relation to emotional eating. They found that emotional regulation partially mediated the relationship between PTSS and emotional eating. This sheds light on how more emotional regulation among individuals who have experienced trauma may combat adverse coping mechanisms (i.e., emotional eating).

Emotional regulation has been viewed as a protective factor for individuals with ACEs which may reduce the likelihood of developing psychological distress (Rudenstine et al., 2018). Dunn (2018) examined the variable of age when examining emotional dysregulation and the age in which a traumatic experience has occurred. The stage of development for developing low emotional regulation is when a traumatic experience happens during middle childhood. As previously reviewed, Hoover and collogues (2022), found that individuals with childhood trauma and low emotional regulation were more prone to higher levels of food addiction. In particular, individuals with posttraumatic distress who have high emotional regulation were less likely to engage in emotional eating.

THE PRESENT STUDY

Purpose

There has been considerable research on the relationship between social support and emotional regulation on substance dependency. Yet, despite substantive research on the protective factor of social support and emotional regulation on substance use, there is more to explore regarding the effects of social support and emotional regulation on the relationship of ACEs and food addiction. Furthermore, there has been little research on the effect of emotional regulation of individuals with high ACEs and food addiction. The goal of the present study was to investigate the relationship between ACEs and food addiction and explore possible mechanisms that may mediate this relationship.

Specifically, the current study examined the role of social support and emotional regulation as mediators of the relationship between childhood adversity and food addiction in a convince sample of primarily Latinx female college students. In the present study, I hypothesized a significant positive association between ACEs and food addiction. Furthermore, I hypothesized that food addiction will be negatively associated with social support and positively associated with emotional dysregulation. Next, I hypothesized that the relationship between ACEs and food addiction will be mediated by social support and the relationship between ACEs and food addiction will be mediated by emotion dysregulation.

Method

Participants

The present sample was comprised of 110 college students, ranging from 18 years old to 70 years old *(M* = 25.54 *SD* = 8.69*)*. The majority of the participants identified as female (86.4%), while (11.8%) identified themselves as male, and only a small percentage identified as non-binary/third gender (1.8%). We asked the participants about their ethnicity (77.3% = Hispanic, 21.8% = non-Hispanic, and 0.9% = Unknown) and racial background (52.7% = Caucasian/White, 3.6% = Asian (Asian-American), 25.5% = Other, 6.4%= African American, 1.8%= Middle Eastern, 1.8% = Native Hawaiian/Pacific Islander and 8.2% = American Indian/Alaskan Native*)*. In terms of relationship status, the majority of the participants reported being in a committed relationship (28.2%), living with a significant other (11.8%), or being married (12.7%). Less than half of the participants (45.5%) considered themselves single, and only 1.8%

considered themselves divorced or widowed. Lastly, the majority of participants reported their income level at $0-14,000 (56.4%).

Measures

Adverse Childhood Experiences (ACEs; Felitti et al., 1998). The ACEs is a 10-item, dichotomous (*Yes or No*) questionnaire that assesses abuse, neglect, and possible traumatic experiences that occurred before the age of 18 years of age. The questions are designed to evaluate the amount of ACEs an individual has experienced. Some of the questions are “Did you lose a parent through divorce, abandonment, death, or other reason?” and “Did you feel that no one in your family loved you or thought you were special?” Once an individual answers yes to each question, it would be added to provide an overall score for ACEs. Having a score of four or more is considered clinically significant.

Yale Food Addiction Scale (YFAS; Gearhardt, 2009). The YFAS-2.0 was used to evaluate addictive eating behaviors. The 35-item scale evaluates the DSM-IV substance use criteria converted for FA and includes consuming more than planned, being unable to cut down or stop, a great deal of time spent, important activities given up, use despite physical/emotional consequences, tolerance, withdrawal, use despite interpersonal/social consequences, failure in role obligation, use in physically hazardous situations, craving, clinically significant impairment and distress (Gearhardt, 2009). The scale uses the 11 FA criteria to assess food addiction based on the DSM-IV substance use disorder criteria. Some example items include, “I find that when I start eating certain foods (e.g., sweets, fatty foods), I end up eating much more than planned” or “I eat to

the point where I feel physically ill." The scale uses a Likert scale in which each item is rated on an eight-point scale, which ranges from never (0) to every day (7). When one or more items that represent one criterion for FA are selected, the criterion for that symptom is met. The severity of FA ranges from *mild* (2–3 symptom criteria met along with impairment/distress), *moderate* (4–5 symptom criteria met along with impairment/distress), to *severe* (6 or more symptom criteria met along with impairment/distress; Linardon and Messe (2019)). Yale Food Addiction Scale has two methods of scoring the questionnaire, one being diagnostic scoring and symptom count scoring. In our study, we utilized the symptom count scoring, in which the score ranged from 0 to 11 and didn't count for clinical significance. In the current sample, the reliability of the total score for the YFAS-2.0 was strong (α = .966).

Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). Social support was assessed with the MSPSS, which assesses perceived social support from family, friends, and significant others. Sample items of this 12-item measure include "I get the emotional help and support I need from my family." or "My family is willing to help me make decisions," in which participants are asked to respond to the extent to which they agree with each statement. Zimet and colleagues (1988) found acceptable internal reliability for the total score and for the three subscales (i.e., significant other, family, and friends). In the current sample, the reliability of the total score for the MSPSS was strong (α = .918).

The Difficulties in Emotion Regulation Scale (DERS; Gratz, 2004). *The DERS* consists of thirty-six items measuring emotional regulation. The scale is divided into six factors: nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. The scores can be summed to produce a total score, with higher means reflecting greater difficulties in emotional regulation (i.e., greater emotional dysregulation). The DERS has demonstrated high internal consistency, good test-retest reliability, and construct and predictive validity (Gratz & Roemer, 2004). In the current sample, the reliability of the total score for the DERS was strong ($\alpha = .943$).

Procedure

We recruited one hundred-ten college-age students through SONA. Participants completed the survey online using Qualtrics, in which they completed demographics questionaries and variables of interest questionnaires (e.g., ACE, YFAS, DERS, and MSPSS). Once the students completed the questionaries, they received extra credit for their undergraduate Psychology course.

Design

The current study employed a non-experimental, correlational design. The predictor variable was ACEs, and the outcome variable was food addiction. The potential mediators were social support and emotional dysregulation. Study hypotheses were tested using IBM SPSS version 27 (IBM Corporation, Armonk,

NY, USA) to conduct correlational analyses, Mediation analyses using a bootstrapping procedure were conducted using Model 4 in SPSS PROCESS (Hayes, 2013).

RESULTS

Descriptive Analysis

Participants completed surveys on childhood adversity *(M* = 2.74*, SD* = 2.55*)*, food addiction *(M* = 2.27*, SD* = 3.14*)*, emotion dysregulation *(M = 2.42, SD = 0.72),* and social support *(M* = 5.78*, SD* = 1.2*)*. It is important to mention that the average BMI score of participants was in the higher range of overweight (*M* = 27.49, *SD* = 6.87, and the average weight of participants was 175.24 pounds.

Correlational analysis

Results of correlational analyses revealed that food addiction (symptom count scoring) was positively associated with a total score of ACEs (r = 0.430, $p < 0.001$) and emotion regulation difficulties (r = 0.517*,* $p < 0.001$). No significant associations were found between food addiction and total perceived social support *(r* = -0.154*,* p = 0.107). ACEs were significantly positively correlated with emotion regulation difficulties *(r* = 0.280*,* p = 0.003) and negatively associated with perceptions of social support *(r* = -0.241, p = .011).

Multiple Regression Mediation Analysis

The ACEs/emotional dysregulation model accounted for a significant amount of variance in food addiction (R^2 = .3556, *F (*2, 107*)* = 29.52, p = .0000).

Moreover, emotion dysregulation did play a mediating role in the relationship between ACEs and food addiction *(B* = 0.148*, SE* = 0.056, 95% *CI [* 0.04 to 0.26*])*. The ACES/social support model accounted for a significant amount of variance in food addiction (R^2 = .1872, *F (*2, 107*)* = 12.34, *p* = .0000). However, contrary to hypotheses, social support did not have an indirect (mediating) effect on the relationship between ACEs and food addiction (*B* = 0.01 SE = .03, 95% CI [-.04 to .08]).

DISCUSSION

The goal of the present study was to investigate the relationship between ACEs and food addiction and explore possible mechanisms that may underlie this relationship. Results revealed a positive relationship between ACEs and food addiction. In addition, difficulties in emotion regulation were also found to play a role in the relationship between ACEs and food addiction. Thus, adding to the growing body of research on the protective function of emotion regulation following childhood adversity. However, there was no support for the potential mediating role of social support in the association between ACEs and food addiction.

Results demonstrated a positive relationship between ACEs and scores on a measure of food addiction; thus, the first hypothesis was supported. This finding is consistent with those reported by Wittick and colleagues (2022), who found a significant association between childhood trauma and food addiction.

Although there has been little research on the interaction between early adversity and food addiction, recent papers have begun to explore the neurobiological underpinnings of this link. In a study investigating early life trauma, brain connectivity, and food addiction, individuals who had a high BMI were found to have had greater early traumatic experiences and food addiction, and reward regions of the brain played a role in this interaction (Osadchiy et al., 2019). Thus, adversity and stress in early development may increase the chances of developing food addiction later in life. Furthermore, food addiction has been shown to play a mediating role in the relationship between childhood trauma and eating disorders (Bou Khalil et al., 2020). Bou Khalil and colleagues found that eating disorders were more prevalent among individuals exposed to childhood trauma, with food addiction playing a mediating role in this relationship. Further, food addiction appeared to play the strongest mediating role for individuals exposed to physical neglect, followed by emotional abuse. Hence, exposure to certain variants of childhood trauma may be more consequential and more likely to give rise to food addiction later in life. These findings speak further to the possible consequences of abuse and neglect.

The risk for addictive behaviors following exposure to childhood adversity has already been highlighted in previous literature. An interesting literature review conducted by Rogers and colleagues (2022) helped crystallize the effects of early life adversity on substance use in young adults. They examined studies conducted from 1998 to 2021, which assessed the relationship between early life adversity and substance dependence. They found that there is strong support for

the association between ACEs and substance use across all studies. In particular, forms of maltreatment (i.e., physical abuse, sexual abuse, verbal abuse, and neglect) were most predictive of developing substance dependency. Thus, individuals who have experienced adversity in childhood are at greater risk for substance misuse and other forms of addiction.

Individuals who experience childhood maltreatment may be using substances as a mechanism to cope. Substances may be used as a coping mechanism to manage the potential mental health impacts of ACEs (e.g., depression, PTSD), which can, over time, contribute to the development of substance use disorders (Gruhn et al., 2020; He et al., 2020). Khoury and colleagues (2010) expand on this idea and add that substances may be used for numbing/avoidance for individuals who experience childhood maltreatment. Furthermore, Hyman and colleagues (2006) found that maladaptive mechanisms such as emotion-focused coping and avoidance mediated the relationship between childhood maltreatment and substance use. Similarly, disordered eating behaviors may be used as a maladaptive coping mechanism (i.e., avoidant and emotion-focused coping) for individuals who have experienced childhood maltreatment (Hemmingsson et al.,2014). Disordered eating and overconsumption of foods may be maintained in an attempt to cope with trauma (Offer et al., 2022). Hence, individuals who experience childhood maltreatment may be using food as a maladaptive coping for their trauma. Thus, it is important to investigate potential mechanisms associated with childhood maltreatment and food addiction.

To identify the underlying mechanisms related to childhood adversity and food addiction, I predicted that food addiction would be negatively associated with social support and positively associated with emotion dysregulation. Results indicated that there was a significant positive relationship between food addiction and emotion dysregulation; however, there was no significant relationship between food addiction and social support in the correlational analysis. However, a study conducted by Li and colleagues (2022) found a negative correlation between food addiction and social support, thus concluding that there may be a need for more exploratory studies on perceived social support resilience factors among individuals with high ACE scores.

Next, my hypothesis on emotion dysregulation was supported, such that emotion dysregulation mediated the relationship between ACE scores and food addiction. These findings are corroborated by the prior findings of Hoover and colleagues (2022), who found that emotion dysregulation partially mediated the relationship between childhood trauma (e.g., emotional and physical abuse and neglect) and food addiction. Thus, combined with my current results, it appears that risk factors associated with abuse, neglect, and household dysfunction experienced in early childhood may play a role in the development of food addiction later in life. The current study added to previous literature by including household dysfunction as part of the subscales within the analysis. To my knowledge, there have been no other studies investigating the role of emotion regulation on the relationship between ACES and food addiction.

The results from the current study provide evidence for a negative relationship between ACEs and social support and no significant relationship between social support and food addiction. However, previous literature has found support for an association between food addiction and social support as well among individuals who have been exposed to early life adversity. A study conducted by Wattick and colleagues (2022) concluded that individuals with high food addiction scores and high ACEs had lower perceived social support. This highlights the importance of continuous exploration of the effect of perceived social support as a resilience factor among individuals who experience food addiction and have high ACEs.

Contrary to study hypotheses, social support did not mediate the relationship between ACEs and food addiction. There may be an association between ACEs and interpersonal difficulties mediated by emotion dysregulation. Poole and colleagues (2018) reported that ACEs positively correlated with interpersonal difficulties (i.e., social inhibition, overly accommodating, and self-sacrificing within the dimensions of interpersonal problems), and emotion dysregulation mediated this relationship. Therefore, a potential consequence of early life adversity is emotion dysregulation due to diminished social support and interpersonal difficulties. Thus, the results of the current study did not have a meditation effect of social support, which can be due to emotional dysregulation leading to interpersonal difficulties among the sample.

Food addiction symptomatology has been associated with social impairments because of eating habits and neglect of social interactions. It is

important to highlight that as a consequence of food addiction, individuals may be less likely to utilize and seek out social support. The current study supports that individuals' lack of perceived social support was low among individuals with high food addiction symptomatology. Lacroix and Ranson (2021) found a strong association between food addiction and social (e.g., eating habits inferring with relationships and reduced willingness to enjoy meals with loved ones), emotional (e.g., feelings of shame and upset), and cognitive (e.g., concentrating and performance challenges at work impairment. Thus, individuals with high food addiction may experience distance and reduced willingness for social interactions and social support.

Individuals with higher ACEs tend to report lower levels of social support; in a study by Karatekin and Ahluwalia (2016), undergraduates reported on the effects of ACEs, perceived stress, and perceived social support on their health. The study results revealed that individuals with higher levels of ACEs were more likely to report higher levels of stress and lower levels of social support. Thus, as a consequence of high childhood adversity and food addiction, individuals may not seek out social support. Seeking social support may be challenging for individuals with high ACE scores, possibly due to difficulties in interpersonal skills or an overall lack of familial social support (Crawford et al.,2020; Baker-Henningham & Francis, 2018; Pierce et al., 2022).

The present study had some limitations. First, there was limited diversity in terms of gender in the current sample, as the sample was primarily female. However, our findings are in line with prior investigations. For example, Osadchiy

and colleagues (2019) investigated the relationship between early life adversity, reward networks of the brain, and food addiction to identify sex-related and possible obesity differences. In the study, the results highlighted that women with higher BMI and adverse childhood experiences tend to have more activity in brain regions responsible for rewards and regulating their emotions. For the men in the study having higher BMI, there was an association between early life adversity and food addiction and somatosensory regions. Accordingly, it is crucial to investigate further factors that underlie the gender differences observed in food addiction and early life adversity.

Another limitation of the study is that my data was cross-sectional, making it impossible to speak to causal relationships between variables. In addition, all data was collected via surveys, which can be sensitive to over- or under-reporting or recall bias. For example, I assessed individuals on their childhood experiences and could not truly explore the possible consequences of adversity experienced in childhood.

It is important to explore the association between early life adversity and food addiction among more understudied populations. It would be beneficial to examine further differences among more diverse gender and racial minorities in relation to possible consequences of food addiction. More importantly, it would be helpful to explore different resilience factors associated with food addiction and early life adversity among these populations. In previous studies, it has been reported that individuals with lower socioeconomic status (Leung et al.,2023), racial and ethnic minorities (Schulte & Gearhardt, 2017), and sexual minorities

(Rainey et al., 2017) were predictors of food addiction. Thus, it will be important for future researchers to explore different resilience factors among these populations further.

The current study sheds light on the importance of protective mechanisms associated with food addiction among individuals who experienced early life adversity, which may be helpful for clinicians. The results of the current study highlight the importance of incorporating emotion regulation skill-building into interventions for clinical populations with food addiction. In addition, clinicians would benefit from taking an integrated therapeutic approach to food addiction, given its intricate bio-psycho-social pathogenetic (Vasiliu, 2021). Promising therapeutic interventions for food addiction include cognitive-behavioral psychotherapies for other addictive behaviors (Dimitrijevic et al., 2015) and those that target emotion regulation difficulties (e.g., Dialectical Behavioral Therapy [Linehan, 1993]). For example, teaching clients to identify triggering situations that may induce food consumption in their daily routine, eating only when hungry, and implementing emotion regulation strategies may be helpful (Vasiliu, 2015). Pharmacological interventions (e.g., antidepressants, antiaddiction drugs) and social interventions (e.g., decreasing the availability of additive foods; Vasiliu, 2015) may also be useful for populations with food addiction.

Although treatment of disordered eating is essential, preventable measures are also critical. For example, environmental factors (e.g., food diversity and availability, access to nutrition education) may play a role in food addiction and can be valuable public health initiatives for this issue and the

general population (Gearhardt et al., 2010). Hyper-palatable foods are available in cities considered food deserts, where access to nutritional foods is scarce. As mentioned previously, food addiction is prevalent among low socioeconomic populations (Leung et al.,2023), and thus, it is up to policymakers to address the social determinants of health, such as lack of access to nutritious food options and limited resources for mental health care.

In this study, I explored the possible consequences of ACEs in relation to food addiction and the possible protective mechanisms associated with this relationship. The results of the current study demonstrate a link between childhood adversity and food addiction and shed light on the potential role of emotion regulation in this association. Findings from the present study have important implications for vulnerable populations that may be at risk for developing food addiction and may inform future research, interventions, and public policies.

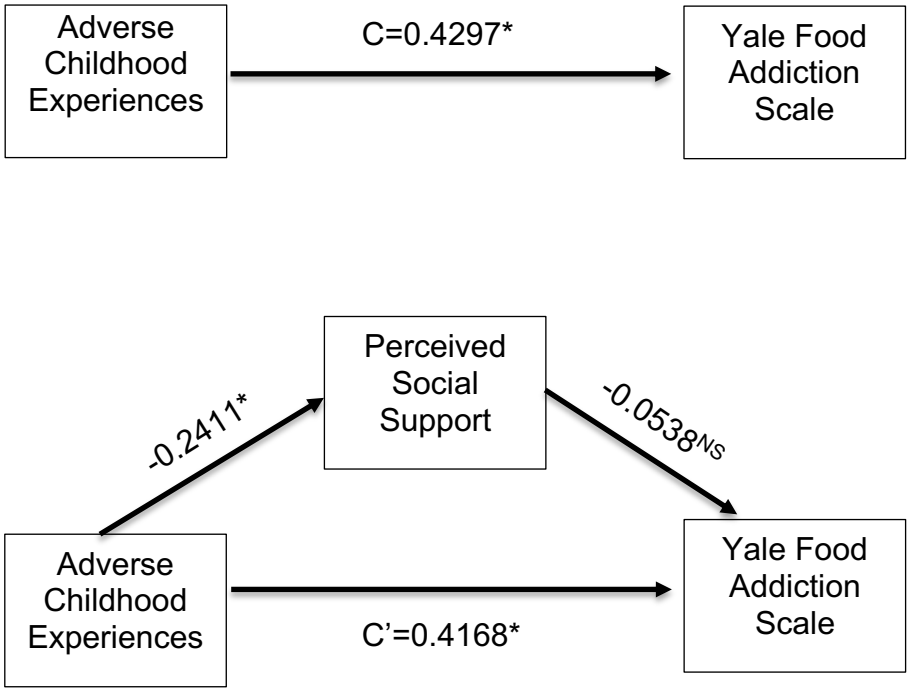
Table 1. Substance Use Disorder Criteria from the DSM, 5th Edition.

Impaired Control
1. Having a strong urge and craving for the substance 2. Spending long periods acquiring, using, or recovering from substance use 3. Unsuccessful attempts or desire to decrease or limit substance use. 4. Using substance in greater amounts or for longer periods than intended
Risky Use
5. Continued use despite risky and dangerous settings (e.g., driving under the influence) 6. Continued use despite psychological and physical issues caused by the substance.
Interpersonal and Social Issues
7. Inability to fulfill responsibilities and obligations to work, school, or home. 8. Not attending or reducing social, occupational, or recreational activities due to substance use
Physical Dependency
9. Higher need for a higher dose of the substance to achieve the desired effect or not achieving the desired effect when the usual dose is consumed (i.e., tolerance) 10. Experiencing negative psychological and physiological symptoms when substance use is reduced or discontinued (i.e. withdrawal)

Table 2. Similarities and differences between BED and FA from Ratković and colleagues (2023)

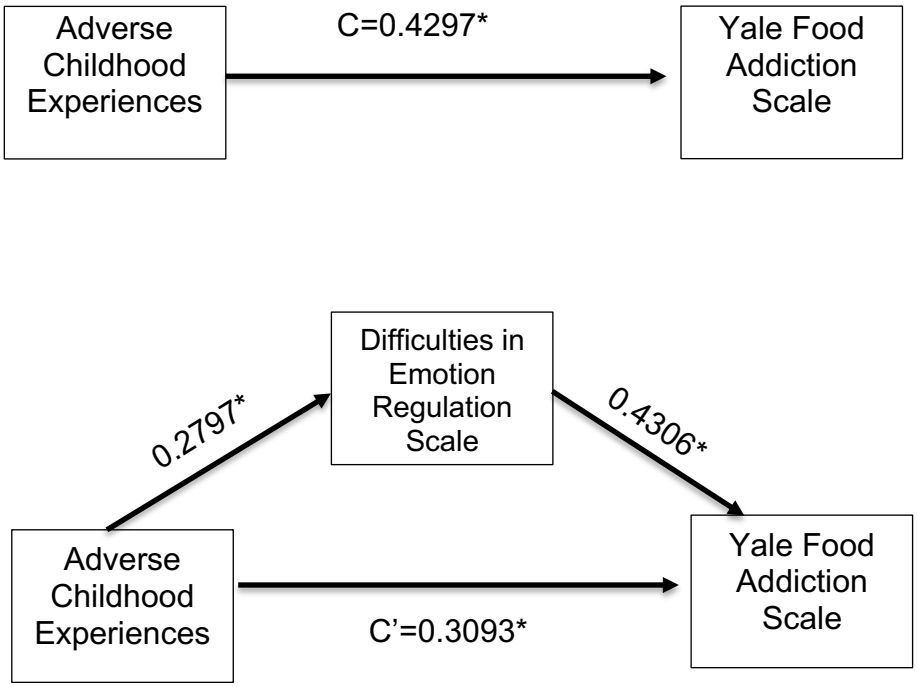
Similarities	Differences
Overindulgence of food in a short period of time	Individuals with FA eat continuously throughout the day whereas individuals with BED tend to exhibit episodes
Having cravings or urge to consume food that is hard to control	Individuals with FA crave a particular type of food or quantity whereas individuals with BED eat in order to ease distress because compulsion brings short term sense of pleasure
No sense of hunger before binge takes place	Individuals with FA deny or project their disordered behavior as a defense mechanism; while individuals with BED are concerned with their weight and are concerned with body image
Overindulgence in food	Individuals with FA do not engage in social connections in order to be able to overeat or overeat in front of others while individuals with BED overeat alone
Short term mood is boasted after binge	Individuals with FA tend exhibit anxious or aggressive behavior when they can not overindulge in food while BED individuals like situations that halt their binges
Having bloating or abdominal distention after overindulgence of food and continuing ingestion of food to the point of physical ailment	Individuals with FA exhibit symptoms of withdrawal and tolerance, neglect of social connections, other activities while individuals with BED does not show symptoms of addiction
Attempt but fail to quite the behavior	There is a sense of shame and guilt that is associated with individuals with BED but in individuals with FA there is not
There are physical, psychological, and social consequences	-
There is emotional instability	-
There is an increased impulsivity	-

Figure 1. Multiple Regression Mediation Analysis Model: Social Support



Note:
* Indicates $p < .0001$
^{NS} indicates $p > .05$
All beta coefficients are standardized.

Figure 2. Multiple Regression Mediation Analysis Model: Emotion Dysregulation



Note:
* Indicates $p < .0001$
^{NS} indicates $p > .05$
All beta coefficients are standardized.

APPENDIX A

ADVERSE CHILDHOOD EXPERIENCES SCALE

Adverse Childhood Experiences Questionnaire
Felitti et al., (1998)

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often** ...Swear at you, insult you, put you down, or humiliate you? **Or** Act in a way that made you afraid that you might be physically hurt?

2. Did a parent or other adult in the household **often** ... Push, grab, slap, or throw something at you? **or Ever** hit you so hard that you had marks or were injured?

3. Did an adult or person at least 5 years older than you **ever**...Touch or fondle you or have you touch their body in a sexual way? **or** Try to or actually have oral, anal, or vaginal sex with you?

4. Did you **often** feel that ...No one in your family loved you or thought you were important or special? **or** Your family didn't look out for each other, feel close to each other, or support each other?

5. Did you **often** feel that … You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? **or** Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

6. Were your parents **ever** separated or divorced?

7. Was your mother or stepmother: **Often** pushed, grabbed, slapped, or had something thrown at her? **or Sometimes or often** kicked, bitten, hit with a fist, or hit with something hard? **or Ever** repeatedly hit over at least a few minutes or threatened with a gun or knife?

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

9. Was a household member depressed or mentally ill or did a household member attempt suicide?

10. Did a household member go to prison?

APPENDIX B

YALE FOOD ADDICTION SCALE

Yale Food Addiction Scale
Gearhardt et al., (2009)

This survey asks about your eating habits in the past year. People sometimes have difficulty controlling how much they eat of certain foods such as:

- Sweets like ice cream, chocolate, doughnuts, cookies, cake, candy
- Starches like white bread, rolls, pasta, and rice
- Salty snacks like chips, pretzels, and crackers
- Fatty foods like steak, bacon, hamburgers, cheeseburgers, pizza, and French-fries
- Sugary drinks like soda pop, lemonade, sports drinks, and energy drinks

When the following questions ask about "CERTAIN FOODS" please think of ANY foods or beverages similar to those listed in the food or beverage groups above or ANY OTHER foods you have had difficulty within the past year…….

.

IN THE PAST 12 MONTHS:	Never	Less than monthly	Once a month	2-3 times a month	Once a week	2-3 times a week	4-6 times a week	Every Day
1. When I started to eat certain foods, I ate much more than planned.	0	1	2	3	4	5	6	7
2. I continued to eat certain foods even though I was no longer hungry.	0	1	2	3	4	5	6	7
3. I ate to the point where I felt physically ill	0	1	2	3	4	5	6	7
4. I worried a lot about cutting down on certain types of food, but I ate them anyways.	0	1	2	3	4	5	6	7
5. I spent a lot of time feeling sluggish or tired from overeating.	0	1	2	3	4	5	6	7
6. I spent a lot of time eating certain foods throughout the day.	0	1	2	3	4	5	6	7

7. When certain foods were not available, I went out of my way to get them. For example, I went to the store to get certain foods even though I had other things to eat at home.	0	1	2	3	4	5	6	7
8. I ate certain foods so often or in such large amounts that I stopped doing other important things. These things may have been working or spending time with family or friends.	0	1	2	3	4	5	6	7
9. I had problems with my family or friends because of how much I overate.	0	1	2	3	4	5	6	7
10. I avoided work, school, or social activities because I was afraid I would overeat there.	0	1	2	3	4	5	6	7
11. When I cut down on or stopped eating certain foods, I felt irritable, nervous or sad.	0	1	2	3	4	5	6	7
12. If I had physical symptoms because I hadn't eaten certain foods, I would eat those foods to feel better.	0	1	2	3	4	5	6	7

13.If I had emotional problems because I hadn't eaten certain foods, I would eat those foods to feel better.	0	1	2	3	4	5	6	7
14. When I cut down on or stopped eating certain foods, I had physical symptoms. For example, I had headaches or fatigue.	0	1	2	3	4	5	6	7
15. When I cut down or stopped eating certain foods, I had strong cravings for them.	0	1	2	3	4	5	6	7
16. My eating behavior caused me a lot of distress.	0	1	2	3	4	5	6	7
17. I had significant problems in my life because of food and eating. These may have been problems with my daily routine, work, school, friends, family, or health.	0	1	2	3	4	5	6	7
18. I felt so bad about overeating that I didn't do other important things. These things may have been working or spending time with family or friends.	0	1	2	3	4	5	6	7
19. My overeating got in the way of me taking care of my family or doing household chores.	0	1	2	3	4	5	6	7

20. I avoided work, school or social functions because I could not eat certain foods there.	0	1	2	3	4	5	6	7
21.I avoided social situations because people wouldn't approve of how much I ate.	0	1	2	3	4	5	6	7
22. I kept eating in the same way even though my eating caused emotional problems.	0	1	2	3	4	5	6	7
23. I kept eating the same way even though my eating caused physical problems.	0	1	2	3	4	5	6	7
24. Eating the same amount of food did not give me as much enjoyment as it used to.	0	1	2	3	4	5	6	7
25. I really wanted to cut down on or stop eating certain kinds of foods, but I just couldn't.	0	1	2	3	4	5	6	7
26. I needed to eat more and more to get the feelings I wanted from eating. This included reducing negative emotions like sadness or increasing pleasure.	0	1	2	3	4	5	6	7

27. I didn't do well at work or school because I was eating too much.	0	1	2	3	4	5	6	7
28. I kept eating certain foods even though I knew it was physically dangerous. For example, I kept eating sweets even though I had diabetes. Or I kept eating fatty foods despite having heart disease.	0	1	2	3	4	5	6	7
29. I had such strong urges to eat certain foods that I couldn't think of anything else.	0	1	2	3	4	5	6	7
30. I had such intense cravings for certain foods that I felt like I had to eat them right away.	0	1	2	3	4	5	6	7
31. I tried to cut down on or not eat certain kinds of food, but I wasn't successful.	0	1	2	3	4	5	6	7
32. I tried and failed to cut down on or stop eating certain foods.	0	1	2	3	4	5	6	7
33. I was so distracted by eating that I could have been hurt (e.g., when driving a car, crossing the street, operating machinery).	0	1	2	3	4	5	6	7

34. I was so distracted by thinking about food that I could have been hurt (e.g., when driving a car, crossing the street, operating machinery).	0	1	2	3	4	5	6	7
35. My friends or family were worried about how much I overate.	0	1	2	3	4	5	6	7

APPENDIX C

MULTIDIMENSIONAL SCALE OF PERCEIVED SOCIAL SUPPORT

Multidimensional Scale of Perceived Social Support (MSPSS)

Zimet, et al., 1988

1. There is a special person who is around when I am in need.

Very strongly disagree 1 2 3 4 5 Very strongly agree

2. There is a special person with whom I can share my joys and sorrows.

Very strongly disagree 1 2 3 4 5 Very strongly agree

3. My family really tries to help me.

Very strongly disagree 1 2 3 4 5 Very strongly agree

4. I get the emotional help and support I need from my family.

Very strongly disagree 1 2 3 4 5 Very strongly agree

5. I have a special person who is a real source of comfort to me.

Very strongly disagree 1 2 3 4 5 Very strongly agree

6. My friends really try to help me.

Very strongly disagree 1 2 3 4 5 Very strongly agree

7. I can count on my friends when things go wrong.

Very strongly disagree 1 2 3 4 5 Very strongly agree

8. I can talk about my problems with my family.

Very strongly disagree 1 2 3 4 5 Very strongly agree

9. I have friends with whom I can share my joys and sorrows.

Very strongly disagree 1 2 3 4 5 Very strongly agree

10. There is a special person in my life who cares about my feelings.

Very strongly disagree 1 2 3 4 5 Very strongly agree

11. My family is willing to help me make decisions.

Very strongly disagree 1 2 3 4 5 Very strongly agree

12. I can talk about my problems with my friends.

Very strongly disagree 1 2 3 4 5 Very strongly agree

APPENDIX D

THE DIFFICULTIES IN EMOTION REGULATION SCALE

The Difficulties in Emotion Regulation Scale

Gratz & Roemer, 2004.

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item.

1----------2----------3----------4----------5

Response categories:

- 1 Almost never (0-10%)
- 2 Sometimes (11-35%)
- 3 About half the time (36-65%)
- 4 Most of the time (66 – 90%)
- 5 Almost always (91-100%)

1. I am clear about my feelings.
2. I pay attention to how I feel.
3. I experience my emotions as overwhelming and out of control.
4. I have no idea how I am feeling.
5. I have difficulty making sense out of my feelings.
6. I am attentive to my feelings.
7. I know exactly how I am feeling.
8. I care about what I am feeling.
9. I am confused about how I feel.
10. When I'm upset, I acknowledge my emotions.
11. When I'm upset, I become angry with myself for feeling that way.
12. When I'm upset, I become embarrassed for feeling that way.
13. When I'm upset, I have difficulty getting work done.
14. When I'm upset, I become out of control.
15. When I'm upset, I believe that I will remain that way for a long time.

16. When I'm upset, I believe that I'll end up feeling very depressed.
17. When I'm upset, I believe that my feelings are valid and important.
18. When I'm upset, I have difficulty focusing on other things.
19. When I'm upset, I feel out of control..
20. When I'm upset, I can still get things done.
21. When I'm upset, I feel ashamed with myself for feeling that way.
22. When I'm upset, I know that I can find a way to eventually feel better.
23. When I'm upset, I feel like I am weak.
24. When I'm upset, I feel like I can remain in control of my behaviors.
25. When I'm upset, I feel guilty for feeling that way.
26. When I'm upset, I have difficulty concentrating.
27. When I'm upset, I have difficulty controlling my behaviors.
28. When I'm upset, I believe there is nothing I can do to make myself feel better.
29. When I'm upset, I become irritated with myself for feeling that way.
30. When I'm upset, I start to feel very bad about myself.
31. When I'm upset, I believe that wallowing in it is all I can do.
32. When I'm upset, I lose control over my behaviors.
33. When I'm upset, I have difficulty thinking about anything else.
34. When I'm upset, I take time to figure out what I'm really feeling.
35. When I'm upset, it takes me a long time to feel better.
36. When I'm upset, my emotions feel overwhelming.

APPENDIX E

INFORMED CONSENT

INVESTIGATOR:

Christina Hassija
Department of Psychology
California State University, San Bernardino
909-537-5481
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APPROVAL STATEMENT:

This study has been approved by the Department of Psychology Institutional Review Board Sub-Committee of the California State University, San Bernardino, and a copy of the official Psychology IRB stamp of approval should appear on this consent form. The University requires that you give your consent before participating in this study.

DESCRIPTION:

The purpose of this study is to investigate the impact of early life adversity on individuals' psychological and relational well-being. Specifically, we are interested in looking at characteristics of individuals who adjust well following stressful life events as compared to those who do not. In this manner, it may be possible to identify factors that may need to be addressed in order improve psychological, physical, and relationship functioning among adults who experience traumatic life events. Based on your responses on the Sona pre-screen, you are eligible to participate in the present study. Participation in this study will require 30 minutes to complete the survey questionnaire. You will be asked to complete surveys about stressful life experiences, emotional difficulties that you may be experiencing, personal characteristics, eating habits and strategies that you use to deal with difficult situations. Please note that there is no deception in this study, and we could not make this statement if there were any deception.

RISKS AND BENEFITS:

The benefits of participation include the gratifying experience of assisting in research which might have implications for the treatment of emotional disorders and difficulties. You will also receive a list of campus and community resources that may help you with emotional difficulties that you may be experiencing. In exchange for your participation, if you are a CSUSB student, you may receive up to 1 points of extra credit in a selected Psychology class at your instructor’s discretion. Minimal risks are possible with your participation in this study and include the possibility of short-term emotional distress resulting from recalling and completing surveys about stressful life experiences. It is very unlikely that any psychological harm will result from participation in this study. However, if you would like to discuss any distress you have experienced, do not hesitate to contact the CSUSB Psychological Counseling Center (909 537-5040).

VOLUNTARY PARTICIPATION:

Your participation in this study is entirely voluntary. You are free to withdraw your participation at any time during the study, or refuse to answer any specific question, without penalty or withdrawal of benefit to which you are otherwise entitled.

CONFIDENTIALITY STATEMENT:

As no identifying information will be collected, your name cannot be connected with your responses and hence your data will remain completely anonymous. All information gained from this research will be kept confidential. The results from this study will be submitted for professional research presentations and/or publication in a scientific journal. When the study results are presented or published, they will be in the form of group averages as opposed to individual responses so again, your responses will not be identifiable. Results from this study will be available from Dr. Christina Hassija, after September 2017. Your anonymous data will be sent to the researcher in an electronic data file and stored for a period of 5 years on a password protected computer in a locked office and may only be accessed by researchers associated with this project.

RIGHT TO WITHDRAW:

You are free to refuse to participate in this study or to withdraw at any time. Your decision to withdraw will not result in any penalty or loss of benefits to which you are entitled. You may withdraw your participation by simply clicking the appropriate button to exit the study. If you choose to withdraw from the study you will still receive credit for your participation. Alternatively, you may also choose to leave objectionable items or inventories blank.

QUESTIONS OR CONCERNS:

If you have any questions or concerns regarding this study, please feel free to contact the Department of Psychology IRB Subcommittee at Psych.irb@csusb.edu. You may also contact the Human Subjects office at California State University, San Bernardino (909) 537-7588 if you have any further questions or concerns about this study.

I acknowledge that I have been informed of, and understand the true nature and purpose of this study, and I freely consent to participate. I acknowledge that I am at least 18 years of age. Please indicate your desire to participate by placing and "X" on the line below.

_____ _____

Participant's X Date

APPENDIX F

IRB APPROVAL LETTER

February 21, 2023

CSUSB INSTITUTIONAL REVIEW BOARD
Administrative/Exempt Review Determination
Status: Exempt
IRB-FY2023-183

Christina Hassija
College of Social & B Sciences
California State University, San Bernardino
5500 University Parkway
San Bernardino, California 92407

Dear Christina Hassija :

Your application to use human subjects, titled “Social support and emotion regulation effect in relationship between food addiction and adverse childhood experiences” has been reviewed and determined exempt by the Institutional Review Board (IRB) of California State University, San Bernardino under the federal regulations at 45 CFR 46. As the researcher under the exempt category, you do not have to follow the requirements under 45 CFR 46 which requires annual renewal and documentation of written informed consent which are not required for the exempt category. However, exempt status still requires you to attain consent from participants before conducting your research as needed.

Your IRB proposal is approved. This approval is valid from February 21, 2023.

This approval notice does not replace any departmental or additional campus approvals which may be required including access to CSUSB campus facilities and affiliate campuses. Investigators should consider the changing COVID-19 circumstances based on current CDC, California Department of Public Health, and campus guidance and submit appropriate protocol modifications to the IRB as needed. CSUSB campus and affiliate health screenings should be completed for all campus human research related activities. Human research activities conducted at off-campus sites should follow CDC, California Department of Public Health, and campus guidance. See CSUSB's COVID-19 Prevention Plan for more information regarding campus requirements.

Your responsibilities as the investigator include reporting to the IRB Committee the following three requirements highlighted below. Please note, failure of the investigator to notify the IRB of the below requirements may result in disciplinary action.

- **Submit a protocol modification (change) form if any changes (no matter how minor) are proposed in your study for review and**

approval by the IRB before being implemented in your study to ensure the risk level to participants has not increased,

- **Submit an unanticipated/adverse events form if harm is experienced by subjects during your research, and**
- **Submit a study closure through the Cayuse IRB submission system when your study has ended.**
- **Ensure your CITI human subjects training is kept up-to-date and current throughout the study for all investigators.**

The protocol modification, adverse/unanticipated event, and closure forms are located in the Cayuse Human Ethics (IRB) System. If you have any questions regarding the IRB decision, please contact Michael Gillespie, the Research Compliance Officer. Mr. Michael Gillespie can be reached by phone at (909) 537-7588, by fax at (909) 537-7028, or by email at mgillesp@csusb.edu. Please include your application approval identification number (listed at the top) in all correspondence.

If you have any questions regarding the IRB decision, please contact Dr. Jacob Jones, Assistant Professor of Psychology. Dr. Jones can be reached by email at Jacob.Jones@csusb.edu. Please include your application approval identification number (listed at the top) in all correspondence.

Best of luck with your research.

Sincerely,

King-To Yeung

King-To Yeung, Ph.D., IRB Chair
CSUSB Institutional Review Board

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