Effects of Emotional Intelligence and Social Support on the Relationship Between Childhood Maltreatment and Disordered Eating

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Abstract

Current research has established a connection between childhood maltreatment and eating disorders, and some studies have looked at emotional intelligence or social support as mediators of this connection. However, little research has looked at how emotional intelligence and social support work together in the relationship between childhood maltreatment and eating disorders. This study looked at how emotional intelligence and social support act as mediators in this relationship. Undergraduate students (N = 134) were administered the Childhood Trauma Questionnaire (CTQ-90), Wong-Law Emotional Intelligence Scale (WLEIS), Difficulties in Emotion Regulation Scale (DERS), Perceived Social Support Scale (PSSS), and the Eating Attitudes Test (EAT-26). Correlations between scales were analyzed to determine associations, which were used for sequential mediation analysis. Disordered eating behaviors were positively correlated with childhood maltreatment, particularly emotional abuse and total maltreatment. Maltreatment was not correlated with the emotional intelligence scale; however, it was positively correlated to emotion regulation difficulty, which further correlated positively with disordered eating and negatively with social support. Social support is negatively correlated with disordered eating. Mediation analysis showed that childhood maltreatment predicts disordered eating, and that emotion regulation acts as a mediator between maltreatment and disordered eating. Social support does not act as a mediator between any of the other variables, nor does it predict or is predicted by the other variables, indicating that there is not a sequential mediation pathway for maltreatment, emotion regulation, social support, and disordered eating. These results highlight the importance of emotion regulation difficulties in the development of disordered eating patterns in those with a history of childhood maltreatment, indicating a greater emphasis needed on emotion regulation abilities in the treatment of eating disorders.

Effects of Emotional Intelligence and Social Support on the Relationship Between Childhood Maltreatment and Disordered Eating

Childhood maltreatment, which involves deliberate harm to a child or a failure to provide for their needs, is tragically common. In 2018, the Children's Bureau reported 678,000 confirmed cases in the U.S., and it is believed that many more cases go unreported (U.S. Department of Health and Human Services, 2020). Experiences of childhood maltreatment can lead to numerous negative effects in adulthood, including poorer physical health, mental health challenges, including eating disorders, decreased emotional intelligence, and lower social support levels (Armour et al., 2016; Cloitre et al., 2019; Zhao, et al., 2019). Furthermore, the effects of maltreatment tend to be connected. Emotional intelligence, defined as "the ability to perceive, recognize, and manage one's emotions" (Ciarrochi et al., 2001, p. 2), and emotion regulation (Gratz & Roemer, 2004; Racine & Wildes, 2014), are both correlated with social support, which is characterized by the size, strength, and adequacy of one's social network (Langford et al., 1997; Metaj-Macula, 2017). Both have been shown to predict disordered eating symptoms. Clinically diagnosed eating disorders include anorexia, bulimia, or binge eating disorder, while disordered eating involves any symptoms of those disorders, or other unhealthy behaviors, such as an obsessive focus on clean eating (American Psychological Association [APA], 2013, p. 328). The present study focused on the prediction of disordered eating symptoms over diagnosed disorders. While some research has been done looking at two or three of these variables, none have been found to examine all four at once.

The purpose of this study was to look at emotional intelligence and social support as possible sequential mediators between childhood maltreatment and disordered eating behaviors. It was hypothesized that childhood maltreatment predicts emotional intelligence, which predicts

social support, which then predicts disordered eating behaviors. Understanding the intertwined mediators between childhood maltreatment and disordered eating behaviors can help both prevent the development of eating disorders and aid in improving their treatment.

Childhood Maltreatment as a Predictor of Disordered Eating

Childhood maltreatment is a broad category of harm intentionally inflicted on children. It involves deliberate abusive or violent actions done to a child by a parent or other caregiver, which cause direct physical or mental harm to the child. Childhood maltreatment can cause numerous long-term negative effects on physical and mental health, and impact the development of many mental health disorders, including depression, anxiety, and posttraumatic stress disorder (PTSD) (Zhao et al., 2019).

Childhood maltreatment plays a role in the development of eating disorders. One large-scale study by Armour and colleagues (2016) found that in women 16 and older, a history of childhood physical or sexual abuse increased the incidence of disordered eating behaviors. Increased prevalence of these behaviors was present in individuals demonstrating both weight loss and weight gain. The presence of disordered eating behaviors was correlated with increased risk of depression, PTSD, and suicidality. ~~This demonstrates strong links between~~ In adolescents with eating disorders, over 2/3 report having experienced some form of childhood trauma (Groth et al., 2020). In adults with eating disorders, trauma history appears to exist at a lower, but still significant rate. A Swedish study (Backholm et al., 2013) found that 18.6% of respondents had experienced at least one traumatic event prior to developing an eating disorder. Of these, 61.9% had experienced trauma before reaching adulthood. Although trauma history was not linked to any specific eating disorder, it increased the severity of disordered eating symptoms. The disparity in rates of trauma history between adolescents and adults appears large but may be

explained by age differences. Adolescents may react stronger to trauma and be more likely to develop disordered eating patterns as a means of coping, especially if the trauma occurred earlier in life. Regardless of this disparity, general trauma history is unusually high in eating disorder patients.

Childhood maltreatment can directly and indirectly affect the development of eating disorders and disordered eating patterns. In one study by Monteleone and colleagues (2019), all types of maltreatment were connected to eating disorders, with emotional abuse showing the strongest and more direct association, and emotional abuse acted as a mediator between other types of maltreatment and eating disorders. Though some association was found between certain types of maltreatment and different eating disorder behaviors, all types of maltreatment were associated with all types of disordered eating. The role played by emotional abuse is likely due to the frequent co-occurrence between other types of maltreatment and emotional abuse. The lack of evidence for differences in associations between maltreatment types and specific eating disorders may be due to a common underlying pathway in the development of the disorders, and the specific manifestation of disordered eating may result from individual differences in personality, genetics, and other early experiences.

Many studies focus more on childhood abuse rather than neglect, particularly physical or sexual abuse, or maltreatment more broadly. Physical and sexual child abuse have been shown to increase the risk of developing disordered eating behaviors. The development of these behaviors, in turn, can negatively impact other mental health outcomes and increase the risk of suicidal thoughts and/or behaviors (Armour et al., 2016). All types of childhood maltreatment can impact the development of disordered eating behaviors and eating disorders. In a study of patients with anorexia nervosa, any type of maltreatment was predictive, with emotional abuse having the

strongest correlation. The authors concluded childhood abuse impairs emotional regulation capabilities, which may further increase the likelihood and severity of an eating disorder (Racine & Wildes, 2014).

Childhood Maltreatment as a Predictor of Emotional Intelligence

Several studies show that maltreatment history negatively impacts emotional intelligence in high school and college students (Mattar, 2018; Zhao et al., 2019). Further, emotional intelligence may mediate between childhood maltreatment and other life outcomes. One study found that childhood maltreatment predicted emotional intelligence, and emotional intelligence then impacted life satisfaction in young adults (Xiang et al., 2021). Another study found similar results in adolescents, wherein emotional abuse predicted emotional intelligence, which impacted happiness levels (Kwan & Kwok, 2021).

Childhood maltreatment is particularly connected to the emotion regulation aspect of emotional intelligence. In a study on college students, childhood maltreatment, especially emotional abuse and neglect, was associated with greater perceived stress, and it appeared that this relationship may be mediated by emotional regulation ability and trait resilience in women (Hong et al., 2018). The lower correlation and lack of mediation in males may be related to how males are socialized. Men are taught to express less emotions than women and may be more able and likely to suppress feelings of stress. This socialization could lead to different impacts of maltreatment in men, such as increased aggression or substance use. Emotional abuse has been shown to negatively impact emotion regulation abilities (Racine & Wildes, 2014). Someone who experiences emotional abuse may fail to learn healthy means of regulating and expressing emotions, increasing emotion dysregulation.

Emotional Intelligence as a Predictor of Social Support

Emotional intelligence and social support are associated, as seen in one study that found higher emotional intelligence positively correlated with perceived social support in adolescents. Both general emotional intelligence and specific aspects, such as emotion recognition in self and others, affected social support (Fabio et al., 2011). One study of Serbian college students found that emotional intelligence increased social support (Metaj-Macula, 2017). Emotions and emotion regulation affect how people relate to and understand others, so higher emotional intelligence may improve both quantity and quality of interpersonal interactions and relationships. However, in most correlational studies, the direction of causal association, if any, is difficult to determine.

Levels of emotional intelligence and social support impact well-being and mental and physical health outcomes. One study, by Zhao and colleagues (2019), of Chinese college students found that childhood maltreatment increased the incidence and number of mental health symptoms experienced. Social support and emotional intelligence were both determined as mediating factors working together, with social support mediating between maltreatment and emotional intelligence, and emotional intelligence mediating between social support and mental health symptoms. No significant gender differences were found between childhood maltreatment and mental health symptoms, but females were shown to have higher social support. This study highlights how mediation pathways and outcomes can be rather complex, with numerous variables impacting each other. The finding of social support impacting emotional intelligence in this pathway, rather than the other way around, may be indicative of the collectivist culture in China and other Asian countries. In a Western country with a more individualistic culture such as the U.S., it is possible that emotional intelligence may have a greater impact on social support in

the pathway. More research is needed to determine the presence of this possible cultural difference.

Social Support as Predictors of Disordered Eating

Disordered eating behaviors are complex symptoms with multifaceted etiology, and social support may be a causal factor. Both perceived and actual social support may contribute to the development of disordered eating. Patients with anorexia nervosa and bulimia nervosa both have lower social support than a general student population, with a smaller sized support circle and lower levels of practical or emotional support. Anorexia patients are generally satisfied with their levels of social support, whereas bulimia patients report greater dissatisfaction with their social support (Tiller et al., 1997). In a study on college women, social support, particularly from friends, was associated with lower levels of binge eating (Mason & Lewis, 2017). The impact of family support was mixed, depending on race. In African American women, social support from family decreased the likelihood of binge eating, while in Caucasian women, family social support had the opposite effect. This demonstrates that social support is not only preventative but can aid in recovery as well. Individuals that have recovered from an eating disorder report that closeness, empathy, compassion, and understanding in their relationships with family, friends, and treatment providers aided in recovery, while isolation, lack of direct communication, and trivializing or demeaning comments hindered recovery (Linville et al., 2012). Many of the aspects affecting recovery are directly related to social support and communication.

Purpose of the Study

The current literature shows the individual correlations between childhood maltreatment, emotional intelligence, social support, and disordered eating psychopathology. Childhood

maltreatment history correlates to lower emotional intelligence and social support, and higher incidence of disordered eating behaviors and other maladaptive behaviors. Eating disorder patients are shown to have lower levels of emotional intelligence and social support, and a higher likelihood of childhood trauma history. Emotional intelligence and social support are strongly correlated, and both can impact general well-being and severity of disordered eating. Though many studies show the relationships between two or three of these variables, none analyzes all four at once. Studies looking at the possible sequential mediation of emotional intelligence and social support in the relationship between childhood maltreatment and disordered eating behaviors are necessary. To address the current gaps in the research, the purpose of this study is to analyze the relationships between childhood maltreatment, emotional intelligence, social support, and disordered eating. The question asked by this study was, "How do emotional intelligence and social support impact the relationship between childhood maltreatment and disordered eating behaviors in college students?" Further questions include:

1. Does childhood maltreatment predict disordered eating?

2. Does childhood maltreatment predict emotional intelligence?

3. Does social support predict disordered eating?

4. Do emotional intelligence and social support mediate the pathway between maltreatment and disordered eating?

This study was designed to test a hypothesized sequential mediation model in which emotional intelligence and social support serve as mediators in the pathway between childhood maltreatment and disordered eating.

Method

Participants

Participants (N = 134) were recruited through introductory psychology courses at the University of Northern Colorado during the Spring and Fall 2023 semesters. Participation was voluntary, and students were given two credits towards the research participation requirements for the courses. The ages of these participants ranged from 18 to 30, with a mean age of 19.66 and standard deviation of 2.563. The sample included 102 (76.1%) females, 29 (21.6%) males, and 3 (2.2%) nonbinary individuals. Participants were given the option to select multiple ethnicities, with 106 identifying as White, 38 as Hispanic/Latino, 5 as Black, 5 as Asian, 3 as Native Hawaiian/Pacific Islander, and 1 as Other. At the time of participation, 77 (57.5%) participants were freshmen, 26 (19.4%) were sophomores, 22 (16.4%) were juniors, and 9 (6.7%) were seniors. 53 (39.6%) of participants identified themselves as first-generation college students. These demographics are mostly consistent with the university's student population.

Measures

Childhood Trauma Questionnaire-Short Form (CTQ-SF)

The CTQ-SF is a self-report measure of childhood abuse and neglect history. It was developed by Bernstein and colleagues (2003) as a streamlined version of the original CTQ scale created nearly a decade earlier (Bernstein et al., 1994). It consists of 28 questions, scored on a 5-point Likert scale (1 = *never true,* 2 = *rarely true,* 3 = *sometimes true,* 4 = *often true,* 5 = *very often true*). The scale includes 25 questions split evenly across five subscales of maltreatment types: Physical Abuse, Emotional Abuse, Sexual Abuse, Physical Neglect, and Emotional Neglect. There are another three questions designed to test the validity of responses. They relate to a "perfect family" construct, and high scores on these questions is indicative of denial of maltreatment experience, which may impact responses to other questions. Responses of "very

often true" to at least two of the three questions fail the validity test, and those responses were excluded from the final sample.

Wong-Law Emotional Intelligence Scale (WLEIS)

The WLEIS is a self-report measure of emotional intelligence. It was developed by Wong and Law (2002) as a short yet comprehensive scale of general emotional intelligence. It is designed to be used across broad populations and is often used with college students and in workplace management studies. The scale has 16 questions scored on a seven-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly disagree*, 4 = *neither agree nor disagree*, 5 = *slightly agree*, 6 = *agree*, 7 = *strongly agree*). The questions are split into four subscales: Self-emotion Appraisal, Others-emotion appraisal, Use of Emotions, and Regulation of Emotions. Emotional intelligence consists of numerous abilities and a variety of knowledge, so the scale and its subscales are broad to capture a high-level overview of the respondent's general emotional intelligence.

Difficulties in Emotion Regulation Scale (DERS)

The DERS is a self-report scale measuring emotion regulation difficulties. It was developed by Gratz and Roemer (2004) to measure difficulties in coping and regulating emotions on a broader level. The scale consists of 36 questions scored with a five-point Likert scale (1 = *almost never,* 2 = *sometimes,* 3 = *about half the time,* 4 = *most of the time,* 5 = *almost always*). The questions contain six subscales: 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. Emotion regulation is the broadest component of emotional intelligence and is particularly

significant in looking at mental health disorders that involve maladaptive coping, such as borderline personality disorder or eating disorders. Unlike other scales used in this study, the DERS looks at the lack of an attribute, rather than its presence.

Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS is a self-report measure of perceived levels of social support. It was developed by Zimet and colleagues (1988) to quantify social support levels of distinct types. The scale consists of 12 questions, scored with a seven-point Likert scale (1 = *very strongly disagree*, 2 = *strongly disagree*, 3 = *mildly disagree*, 4 = *neutral*, 5 = *mildly agree*, 6 = *strongly agree*, 7 = *very strongly agree*). The questions are split into three subscales: Family, Friends, and Significant Other. It is designed to measure the presence of each type of social support, as well as the perceived adequacy of support.

Eating Attitudes Test (EAT-26) Procedures

The EAT-26 is a screening tool measuring disordered eating attitudes and behaviors. It was developed by Garner and colleagues (1982) to refine the EAT-40 (Garner and Garfinkel, 1979). Both versions of the EAT were initially developed for clinical screening purposes, but they are also used frequently in research to measure disordered eating. The tool's main section consists of 26 questions measuring various attitudes, beliefs, and behaviors found among various eating disorders. There are two shorter sections in the questionnaire as well, but for this study only the largest section was used. It has three subscales: Dieting, Bulimia and Food Preoccupation, and Oral Control. The scale typically uses a non-traditional scoring system (0 = *never*, *rarely*, *sometimes*, 1 = *often*, 2 = *usually*, 3 = *always*) in clinical settings. However, the

questions were scored using a 6-point Likert scale (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*, 5 = *usually*, 6 = *always*) for use in this study.

Procedures

Researchers administered a set of self-report questionnaires through the online platform *Qualtrics*. Participants were recruited through introductory psychology courses. They signed up for the study through the university's SONA platform, where they were given a description of the study and the link to participate remotely. After giving informed consent, participants filled out demographic information and completed the *CTQ*, *WLEIS*, *DERS*, *MSPSS*, and *EAT-26* scales. At the end of the survey was a debriefing containing more information about the study and data being collected, as well as links to mental health support and other resources. Estimated time of completion was 30-45 minutes, and participants were given 2 research credits to fulfill the research participation requirement of their psychology course. Participation was entirely anonymous, and each response was assigned a number for confidentiality.

Data was analyzed using SPSS 29.0.1 to look at how the variables correlate and impact or predict other variables. Relationships between the total scales and subscales of the *CTQ*, *WLEIS*, *DERS*, *MSPSS*, and *EAT-26* were examined using bivariate correlation. These correlations were used to determine what scales and subscales could potentially fit the hypothesized model. These scales and subscales were then analyzed using Hays PROCESS 4.0 to determine if any subscales of emotional intelligence/emotion regulation and social support mediated the pathway from childhood maltreatment and disordered eating patterns.

Results

The following analysis includes descriptive statistics of the five measures, and the correlations between childhood maltreatment, different measures/aspects of emotional intelligence, social support, and disordered eating. Correlations focused on the pathways in the hypothesized model. Supplementary correlational analysis was done with childhood maltreatment and social support, and with emotional intelligence and regulation and disordered eating, in case this analysis was informative for mediation. Significant correlations between scales and subscales were then used for mediation analysis to determine the role of emotional intelligence and social support in mediating between childhood maltreatment and disordered eating and to test the hypothesized sequential mediation model.

Descriptive Statistics

As a traditional Likert scale was used to score the EAT-26 over its usual scoring system, analysis of the instrument's descriptives is necessary to complete before using it for further analysis. The scale's range in this study is 26-156, as opposed to the usual 0-78. Each subscale is looked at based on averages, as the subscales are not of equal size, so their ranges are each 1-6. The scoring values are not one-to-one from the original scoring, so algebraic comparison is more difficult; however, means should be relatively lower on the range, and standard deviations not a substantial fraction of the range. All three subscales' means were in a range of 1.9-2.5, with standard deviations less than 1.1. The total EAT-26 score mean was also relatively low (M = 59.1, S.D. = 19.9), with a range of 30-117.

The means, standard deviations, and minimum and maximum values for the CTQ-SF, WLEIS, MSPSS, EAT-26, and DERS scores and their subscales are shown in Table 1. Note that the subscales for the EAT-26 and DERS are based on each respondent's average response for questions in each subscale, as the subscales in those measures are not equal sizes. No substantial

gender differences between scores were found. Minor gender differences were found in EAT-26 total scores (sig. = .029), but the differences were determined small enough to not look at gender differences further.

Correlations between Maltreatment and Disordered Eating

A Pearson one-tailed correlation analysis was conducted between childhood maltreatment, measured by the CTQ-SF, and disordered eating patterns, measured by the EAT-26, to determine their association (shown in Table 2). Emotional abuse and CTQ total score (overall maltreatment) were significantly positively correlated with disordered eating. Emotional abuse was correlated to all disordered eating subscales and total score, with the strongest correlation found between emotional abuse and EAT-26 total score, $r(126) = .33$, $p < .001$. Total maltreatment scores were positively correlated with dieting and total disordered eating, with the stronger correlation between the total scores, $r(126) = .24$, $p = .003$. Physical and sexual abuse showed some weaker correlation to disordered eating (at $p < .05$, $p > .01$), while neglect of any type was not significantly correlated to disordered eating patterns.

Correlations between Maltreatment and Emotional Intelligence

Correlation analysis between childhood maltreatment, measured with the CTQ-SF, and emotional intelligence, measured by the WLEIS, showed little correlation. Between the five subscales of the CTQ, four subscales of the WLEIS, and total scores of both, only four pairs of variables had significant correlation at the p <.05 level: emotional abuse and use of emotions, $r(131) = -.19$, $p = .015$, emotional neglect and use of emotions, $r(132) = -.16$, $p = .031$, physical abuse and regulation of emotions, $r(132) = .15$, $p = .038$, and physical abuse and total emotional

intelligence, $r(131) = .17$, $p = .024$. No correlations at the $p < .01$ level were found, so the

WLEIS was not used for any further analysis.

Correlation analysis between the CTQ and emotion dysregulation, measured with the

DERS, shows stronger and more significant correlation than with general emotional intelligence

(shown in Table 3). Emotional abuse, sexual abuse, emotional neglect, and total maltreatment

scores were positively correlated to several subscales of emotion dysregulation and total DERS.

The strongest correlation was found between sexual abuse and nonacceptance, $r(130) = .32$, $p <$

.001. Sexual abuse was also correlated to dysregulation total score. Emotional abuse was

correlated to nonacceptance, lack of regulation strategies, and total dysregulation, with the

strongest correlations found between emotional abuse and nonacceptance, $r(129) = .30$, $p < .001$,

and emotional abuse and lack of regulation strategies, $r(128) = .30$, $p < .001$. Emotional neglect

was correlated with nonacceptance, $r(130) = .27$, $p < .001$. Total maltreatment score was

correlated with nonacceptance and lack of regulation strategies, with the stronger correlation

between total maltreatment and nonacceptance, $r(129) = .28$, $p < .001$.

Correlations between Emotional Intelligence and Social Support

Since general emotional intelligence, measured with the WLEIS, was not correlated with

maltreatment, correlation between the WLEIS and MSPSS was not looked at; instead, the DERS

was substituted for the WLEIS, as emotion regulation is a major part of emotional intelligence,

to determine the correlations of emotion dysregulation and social support. Correlation analysis

between emotion dysregulation and perceived social support (shown in Table 4) showed

significant negative correlation between several subscales of dysregulation and all types of

support. Lack of emotional awareness was correlated to all social support scores, with the

strongest correlation between lack of awareness and total perceived social support, $r(129) = -.32$,

$p < .001$. Lack of emotional clarity and total emotion dysregulation were correlated with family and total perceived social support, with the strongest correlation found between lack of emotional clarity and family support, $r(132) = -.33$, $p < .001$. Lack of regulation strategies was correlated with family support, $r(129) = -.27$, $p = .001$.

Correlations between Social Support and Disordered Eating

Correlation analysis between perceived social support and disordered eating patterns shows negative correlations between several subscales and the total scores (shown in Table 5). At the $p < .01$ level, the only significant correlation is between total perceived social support and bulimia/food preoccupation, $r(125) = -.21$, $p = .009$. At the $p < .05$ level, family, friend, and total perceived social support are all correlated with dieting, bulimia/food preoccupation, and total disordered eating. The strongest correlation (after what was present at the $p < .01$ level) was found between family support and total disordered eating, $r(127) = -.19$, $p = .017$. The correlations between these two variables are weaker than correlations between other pairs of variables, and most the significant correlations are only significant at $p < .05$, not $p < .01$.

Supplementary Analysis: Correlations between Childhood Maltreatment and Social Support, and Correlations between Emotion Regulation and Disordered Eating

Correlation analysis between childhood maltreatment and perceived social support, as measured by the MSPSS, showed significant negative correlations between several types of maltreatment and realms of social support (shown in Table 6). Emotional neglect was correlated to all subscales and total social support, with the strongest correlation found between emotional neglect and family support, $r(132) = -.56$, $p < .001$. Emotional abuse, physical abuse, physical neglect, and total maltreatment scores were correlated to family and total perceived social

support, with stronger negative correlations to family support than total perceived social support. The strongest correlations were between emotional abuse and family support, and total maltreatment and family support, with equal correlations of r(131) = -.44, p < .001. The only maltreatment scale not associated with social support was physical abuse.

As with correlations between the DERS and other variables, emotion dysregulation scores were used in place of general emotional intelligence. Correlation analysis between emotion dysregulation and disordered eating patterns shows significant positive correlations between several subscales and total dysregulation and all scales of disordered eating (shown in Table 7). Nonacceptance, lack of regulation strategies, and total dysregulation were correlated with all subscales and total disordered eating. Correlation was stronger with total disordered eating scores than with the subscales, with the strongest correlations between lack of regulation strategies and total disordered eating, $r(124) = .41$, $p < .001$, and total dysregulation and total disordered eating, $r(123) = .40$, $p < .001$. Lack of emotional clarity was correlated with dieting, bulimia/food preoccupation, and total disordered eating, and lack of goal directed behavior was correlated with oral control and total disordered eating, with the strongest correlation between lack of clarity and bulimia/preoccupation, $r(127) = .31$, $p < .001$.

Maltreatment to Disordered Eating: Emotional Intelligence and Social Support as Mediators

To determine if emotional intelligence and social support acted as mediators between maltreatment and disordered eating, all subscales of the variables were looked at. Potential pathways were drawn from correlations between the CTQ (predictor) and DERS (first mediator), DERS and MSPSS (second mediator), MSPSS and EAT-26 (outcome), and the CTQ-SF and EAT-26 to test for a sequential mediation model. Subscales utilized in the mediation analysis

include CTQ emotional abuse and total, DERS nonacceptance and lack of regulation strategies, MSPSS family support and total, and EAT-26 bulimia/preoccupation and total. Each mediation analysis was completed using the Hays Process module in SPSS, and direct and indirect effects were looked at between four sets of four subscales.

First, pathways between CTQ total and EAT-26 total were examined. DERS regulation strategies and MSPSS total were used as potential mediators. Without the mediators in the model, the pathway between CTQ total and EAT-26 total was significant, $b = .29$, $t = 2.78$, $p = .0063$. With DERS strategies and MSPSS total added as mediators, the pathway between CTQ total and EAT-26 total became nonsignificant, indicating significant mediation ($b = .18$, $t = 1.77$, $p = .0792$). The pathways between CTQ total and DERS strategies, and of DERS strategies and EAT-26, were both found to be significant ($p = .0231$, .0000), but the pathways between DERS strategies and MSPSS total, and of MSPSS total and EAT-26 total, were not significant ($p = .1582$, .4250). Thus, DERS strategies acted as a mediator, while MSPSS total did not. The indirect effect of DERS strategies was $b = .09$, LLCI ULCI [.0099, .1923], which fully mediated the pathway between CTQ total and EAT-26 total (shown in Figure 1).

Next, the pathways between CTQ emotional abuse and EAT-26 total were examined. Two pairs of potential mediators were identified: DERS nonacceptance and MSPSS family support, and DERS lack of strategies and MSPSS family support. For the first model, the pathway between CTQ emotional abuse and EAT-26 total without mediators was significant, $b = 1.08$, $t(126) = 3.85$, $p = .0002$. With DERS nonacceptance and MSPSS family support added as mediators, the pathway between CTQ emotional abuse and EAT-26 total became weaker but remained significant, $b = .78$, $t = 2.49$, $p = .0141$. The pathways between CTQ emotional abuse and DERS nonacceptance, and between DERS nonacceptance and EAT-26 total, were

significant (p = .0008, .0142), but the pathways between DERS nonacceptance and MSPSS family support, and between MSPSS family support and EAT-26 total, were not significant (p = .5503, .4815). The indirect effect of DERS nonacceptance was b = .21, LLCI ULCI [.0174, .5017], which partially mediated the pathway between CTQ emotional abuse and EAT-26 total. (shown in Figure 2)

For the second model between CTQ emotional abuse and EAT-26 total, the pathway between these two variables without mediators was once again significant, b = 1.07, t(125) = 3.77, p = .0003. With DERS lack of strategies and MSPSS family support added as mediators, the pathway between CTQ emotional abuse and EAT-26 total became weaker yet remained significant, b = .73, t = 2.42, p = .0169. The pathways between CTQ emotional abuse and DERS strategies, and between DERS strategies and EAT-26 total, were significant (p = .0012, .0002), but the pathways between DERS strategies and MSPSS family support, and between MSPSS family support and EAT-26 total, were not significant (p = .0728, .8354). The indirect effect of DERS strategies was b = .31, LLCI ULCI [.0998, .5881], which partially mediated the pathway between CTQ emotional abuse and EAT-26 total. (shown in Figure 3)

Finally, the pathways between CTQ emotional abuse and EAT-26 bulimia/food preoccupation (BFP) were examined. DERS total and MSPSS total were identified as potential mediators. The pathway between CTQ emotional abuse and EAT-26 BFP without mediators was significant, b = .04, t = 3.22, p = .0016. With DERS total and MSPSS total added as mediators, the pathway between CTQ emotional abuse and EAT-26 BFP became weaker yet was still significant, b = .03, t = 2.14, p = .0346. The pathways between CTQ emotional abuse and DERS total, and between DERS total and EAT-26 BFP, were significant (p = .0110, .0008), while the pathways between DERS total and MSPSS total, and between MSPSS total and EAT-26 BFP,

were not significant (p = .1059, .1713). The indirect effect of DERS total was b = .01, LLCI ULCI [.0016, .0208], which partially mediated the pathway between CTQ emotional abuse and EAT-26 BFP (shown in Figure 4). Of note with this model is that although the pathways are significant, they are notably weaker than those of the other three models.

Discussion

The purpose of this study was to examine the mediating roles of emotional intelligence and social support on the relationship between childhood maltreatment and disordered eating patterns. Previous research suggests that childhood maltreatment predicts disordered eating patterns (Armour et al., 2016; Groth et al., 2019; Monteleone et al., 2019), and this relationship may have numerous mediators, such as emotional intelligence (including emotion regulation) and social support (Cloitre et al., 2019; Racine & Wildes, 2013; Tiller et al., 1997). However, no previous research looked at multiple mediators acting at once, prompting the design of this study. A sequential mediation model was hypothesized, in which childhood maltreatment predicted emotional intelligence, which predicted perceived social support, which predicted disordered eating patterns. In this model, it was hypothesized that childhood maltreatment predicts disordered eating, and emotional intelligence and social support both mediate the relationship between childhood maltreatment and disordered eating.

As hypothesized, childhood maltreatment predicted disordered eating patterns. All three types of abuse and total maltreatment scores were significantly positively correlated to disordered eating, with emotional abuse and total maltreatment having the strongest correlations. Both emotional abuse and total maltreatment predicted disordered eating patterns. These findings are consistent with previous research (Armour et al., 2016; Monteleone et al., 2019; Rai et al., 2019). It is unusual that physical neglect was not significantly correlated with disordered eating,

as previous research shows that those with eating disorders have a high rate of childhood physical neglect (Pignatelli et al., 2016). It is likely that other factors may be mitigating the relationship of physical neglect on disordered eating in this study, particularly as they relate to college students, such as access to strong social networks or a greater focus on school.

Childhood maltreatment was not correlated to general emotional intelligence. There are several possible reasons for this. First, while some research shows correlation between childhood maltreatment and the WLEIS measure of emotional intelligence used in this study (Zhao et al., 2019), a larger quantity of research focuses on emotion regulation specifically. Childhood maltreatment was correlated with the more well-established DERS measure of emotion regulation, indicating that aspects of emotion regulation may be more significant than general emotional intelligence, and that the DERS is a more effective tool than the WLEIS. The lack of correlation with emotional intelligence may also be due to demographics. The participants were predominantly young adults ages 18-21, and about three quarters female, which could affect emotional intelligence scores. A different cohort, with a wider age range and more balanced gender ratios, may show greater correlation between the two variables. Because of the lack of correlation, the DERS measure of emotion regulation was used in place of the WLEIS in mediation analysis. Childhood maltreatment, particularly emotional abuse and total maltreatment were correlated with several types of emotion regulation difficulties. Both total maltreatment and emotional abuse predicted emotion regulation difficulties. This relationship is consistent with previous research (Han & Pistole, 2013; Racine & Wildes, 2013, 2014; Rai et al., 2019).

Emotion regulation was also correlated to perceived social support. However, neither variable predicted the other. Furthermore, perceived social support was correlated to disordered eating, but it did not predict eating patterns. The lack of impact on or of social support may be

the result of the participants. The study was completed using American college students in Colorado. The United States is a very individualistic culture, which may lead to social support having a weaker relationship to emotion regulation (and other metrics of emotional intelligence) than in a more collectivist culture. One study done with college students in China, looking at general emotional intelligence and social support, found social support predicted emotional intelligence (Zhao et al., 2019). The same individualistic culture also may explain why social support did not play a role in disordered eating.

Though not part of the hypothesized model, the relationships between childhood maltreatment and social support, and between emotion dysregulation and disordered eating, were examined due to support in the literature. Childhood maltreatment was correlated to perceived social support. Most types of maltreatment were strongly negatively correlated with family and general social support. Total maltreatment and emotional abuse were found to predict perceived social support. This is supported by the literature (Pepin & Banyard, 2006; Zhao et al., 2019), and is to be expected in the context of who perpetrates the abuse and neglect. The perpetrator is usually related to the victim, whether it is a parent or grandparent, sibling, or another close relative. Those who experienced childhood maltreatment at the hands of a relative are likely to distance themselves from that person. In some families, distancing from one relative may require distancing from other relatives as well, leaving the person estranged from their family. Thus, those with maltreatment history would have significantly decreased family support.

Emotion regulation difficulties, particularly nonacceptance and lack of strategies, was correlated to disordered eating patterns. Emotion regulation difficulties also predicted disordered eating. This is consistent with previous research (Brown et al., 2018; Monell et al., 2018; Trompeter et al., 2021). Disordered eating and eating disorders, contrary to the popular belief

that they are solely appearance based, often develop as an unhealthy means of coping with any negative aspects of life such as trauma. When someone feels out of control and has no better way to regulate, they may turn to food and unhealthy eating patterns to regain a sense of control or numb their emotions. In this way, difficulties in healthy emotion regulation leads to unhealthy attempts at emotion regulation. Previous research has found links between emotion regulation difficulties and certain disordered eating behaviors, such as fasting and binge eating (Trompeter et al., 2021). The lack of ability to identify and healthily express emotions may make it more difficult to regulate them, which in turn could lead to coping using disordered eating behaviors.

The mediation models showed that emotion regulation acted as a mediator between childhood maltreatment and disordered eating patterns but did not mediate between childhood maltreatment and perceived social support. Additionally, social support did not mediate the relationships between any other variables. The role of emotion regulation in the pathway between maltreatment and disordered eating is consistent with previous research (Cloitre et al., 2019; Racine & Wildes, 2014; Rai et al., 2019). As disordered eating can be a coping mechanism for childhood maltreatment and other trauma, emotion regulation should a role in the pathway between maltreatment and disordered eating, and emotion regulation skills may mitigate the effects of maltreatment in disordered eating. Social support not acting as a mediator in any pathway is to be expected, given that it did not predict any other variable. A different measure of social support may produce a different result. The measure used in this study looks at perceived social support. Perception is subjective, so one person's idea of adequate support may be noticeably more or less than another's or may change based on circumstances. Perceived and actual support levels may vary, so a measure of actual support may mediate where perceived social support does not. One previous study by Tiller and colleagues (1998) showed that though

actual social support was universally lower among eating disorder patients, perception of that support varied by disorder. Further research is needed to look at the roles of actual versus perceived support in the pathway between childhood maltreatment and disordered eating.

Limitations

This study has several limitations. First, the study was conducted at a single college in Colorado, with only 134 valid responses composed of students from psychology courses. This participant pool was approximately three quarters female-identifying students and was predominantly White and Hispanic. Thus, certain populations may be underrepresented. The age was restricted to 18-30 years, so the findings may not apply to a different age cohort. Second, the data was collected through anonymous self-report surveys, through which participants may over- or under-represent maltreatment, emotional intelligence and emotion regulation, and disordered eating behaviors. The sensitive nature of the topics may also impact responses. Often, disordered eating and eating disorders may have an element of denial, which can lead to under-reporting. While measures of denial can be accounted for in maltreatment, it is harder to factor in with disordered eating. All measures used are considered to have high validity, but the possibility of over or under reporting is still important to consider. Finally, participants may self-select for the survey based on prior information given, which may also have some impact on results.

Implications and Directions of Further Research

This study has several implications. First, it further highlights the role of emotion dysregulation in the development of disordered eating symptoms among those with childhood maltreatment history. Eating disorders and even subclinical disordered eating behaviors can quickly become deadly, and eating disorders have a low recovery rate, even after several

decades. The role of emotion dysregulation indicates that a greater emphasis on emotion regulation skills is important in treating disordered eating symptoms. Second, it suggests that perceived social support may not play a role in the development of disordered eating patterns in certain cohorts of those with maltreatment history. Further study is needed with more diverse groups to determine when perceived social support does or does not impact eating patterns. Finally, emotion regulation partially mediated between emotional abuse and disordered eating, indicating that other mediators are likely present that were not looked at in this study.

Replication of the study with a larger, more diverse sample may help confirm findings. Given the lack of correlations with the emotional intelligence scale used an alternative emotional intelligence scale should be considered in future studies. Another consideration is looking at actual social support, rather than perceived, as their influences may be different. Also, other mediators should be considered, such as other mental health symptoms or food insecurity. Finally, moderation of the maltreatment to disordered eating, with respect to emotional intelligence and social support, to look at the potential role they may play outside of mediation.

This study offers further support to the mediation effect of emotion regulation on the pathway between childhood maltreatment and disordered eating. It also suggests that perceived social support, though predicted by childhood maltreatment, does not necessarily play a significant role in the pathway. By looking at these pathways, this study adds to the current understanding of the complex etiology of disordered eating in those who experienced childhood maltreatment.

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Table 1

Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
Emotional Abuse	5	25	11.9699	5.93518
Physical Abuse	5	25	7.1194	4.02071
Sexual Abuse	5	25	6.5746	3.89211
Emotional Neglect	5	25	10.9925	4.79112
Physical Neglect	5	18	7.5075	3.20419
CTQ Total	25	113	44.1353	16.69412
Self-Emotion Appraisal	9	28	20.3955	4.31298
Regulation of Emotions	7	28	21.6119	4.01671
Use of Emotions	4	28	20.6194	5.31107
Others-Emotion Appraisal	8	28	20.2331	4.42597
WLEIS Total	52	108	82.7895	12.39505
Significant Other	4	28	23.1053	5.88947
Family	4	28	20.9627	5.83019
Friends	4	28	21.6767	5.51657
MSPSS Total	16	84	65.5909	13.32847
Dieting	1.08	5.62	2.4822	1.00411
Bulimia/Food Preoccupation	1	5.83	1.9289	0.90302
Oral Control	1	4.29	2.1802	0.75713
EAT-26 Total	30	117	59.1395	19.89926
Nonacceptance	1	4.83	2.5896	1.07647
Goal directed behavior	1	5	3.0556	0.99281
Impulse Control	1	4.5	1.7904	0.62552
Emotional Awareness	1	5	2.6742	0.89397
Regulation Strategies	1	4.13	2.3225	0.80667
Emotional Clarity	1	5	2.3537	0.80147
DERS Total	38	140	87.8	22.76792

Table 2

Correlations of CTQ-SF and EAT-26

	Dieting	Bulimia/Food Preoccupation	Oral Control	EAT-26 Total
Emotional Abuse	**.284****	**.269****	**.235****	**.327****
Physical Abuse	.159*	0.109	0.041	.150*
Sexual Abuse	.143*	0.039	0.065	0.124
Emotional Neglect	0.11	0.07	0.108	0.127
Physical Neglect	0.08	0.059	0.128	0.108
CTQ Total	**.219****	.165*	.166*	**.239****

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table 3

Correlations of CTQ-SF and DERS

	Nonacceptance	Goal directed behavior	Impulse Control	Emotional Awareness	Regulation Strategies	Emotional Clarity	DERS Total
Emotional Abuse	**.300****	0.109	.156*	-0.003	**.296****	.160*	**.257****
Physical Abuse	-0.019	-0.117	-0.107	-0.038	0.019	-0.1	-0.067
Sexual Abuse	**.320****	0.039	.150*	0.031	.198*	0.077	**.205****
Emotional Neglect	**.273****	0.007	0.03	0.141	.176*	.143*	.201*
Physical Neglect	.145*	0.031	-0.004	0.076	0.084	.170*	0.126
CTQ Total	**.283****	0.028	0.072	0.051	**.222****	0.123	.204*

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table 4
Correlations of DERS and MSPSS

	Significant Other	Family	Friends	MSPSS Total
Nonacceptance	-0.034	-.174*	-0.082	-0.117
Goal directed behavior	.168*	-0.138	0.047	0.041
Impulse Control	0.00	-0.056	-0.066	-0.043
Emotional Awareness	**-.221****	**-.309****	**-.240****	**-.324****
Regulation Strategies	-0.035	**-.266****	-.164*	-.190*
Emotional Clarity	-0.076	**-.326****	-.165*	**-.236****
DERS Total	-0.055	**-.307****	-.162*	**-.215****

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table 5
Correlations of MSPSS and EAT-26

	Dieting	Bulimia/Food Preoccupation	Oral Control	EAT-26 Total
Significant Other	-0.09	-0.095	0.097	-0.048
Family	-.146*	-.177*	-0.1	-.187*
Friends	-.158*	-.175*	-0.067	-.166*
MSPSS Total	-.171*	**-.211****	-0.02	-.175*

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table 6
Correlations of CTQ-SF and MSPSS

	Significant Other	Family	Friends	MSPSS Total
Emotional Abuse	-0.095	**-.436****	-0.131	**-.283****
Physical Abuse	-0.126	**-.253****	-.149*	**-.223****
Sexual Abuse	0.058	0.002	0.106	0.075
Emotional Neglect	**-.281****	**-.559****	**-.216****	**-.457****
Physical Neglect	-0.077	**-.295****	-0.088	**-.205****
CTQ Total	-.145*	**-.436****	-0.139	**-.308****

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Table 7

Correlations of DERS and EAT-26

	Dieting	Bulimia/Food Preoccupation	Oral Control	EAT-26 Total
Nonacceptance	**.255****	**.259****	**.228****	**.313****
Goal directed behavior	.189*	0.132	**.287****	**.263****
Impulse Control	.148*	.186*	.169*	.190*
Emotional Awareness	.151*	0.131	0.04	.153*
Regulation Strategies	**.343****	**.294****	**.331****	**.412****
Emotional Clarity	**.268****	**.310****	0.124	**.308****
DERS Total	**.332****	**.317****	**.284****	**.399****

* Correlation is significant at the 0.05 level (1-tailed).

** Correlation is significant at the 0.01 level (1-tailed).

Figure 1

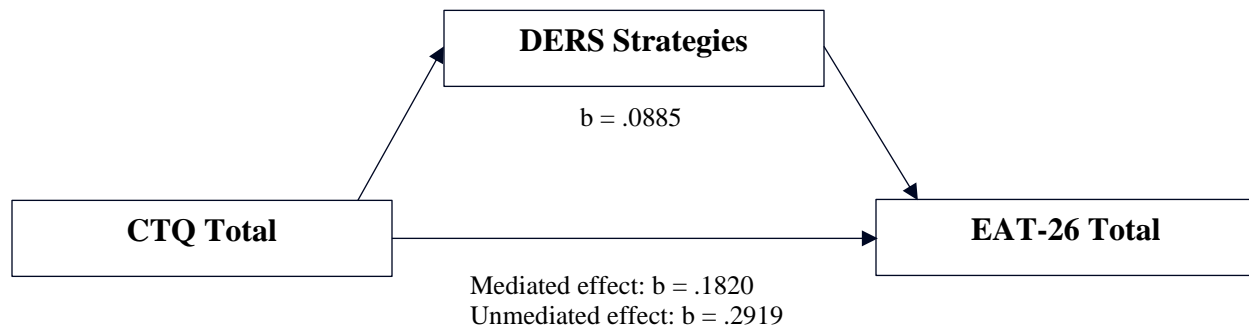*DERS Strategies mediates the relationship between CTQ total and EAT-26 total.*

DERS Strategies
b = .0885
CTQ Total
EAT-26 Total
Mediated effect: b = .1820
Unmediated effect: b = .2919

Figure 2

DERS Nonacceptance partially mediates the relationship between CTQ total and EAT-26 total.

DERS Nonacceptance

b = .2127

CTQ Emotional Abuse

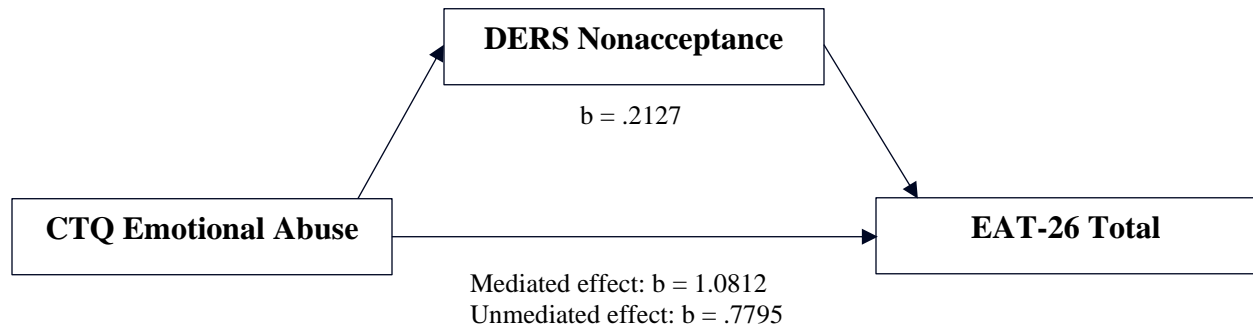**EAT-26 Total**

Mediated effect: b = 1.0812
Unmediated effect: b = .7795

Figure 3

DERS Strategies partially mediates the relationship between CTQ emotional abuse and EAT-26 total.

DERS Strategies

b = .3141

CTQ Emotional Abuse

EAT-26 Total

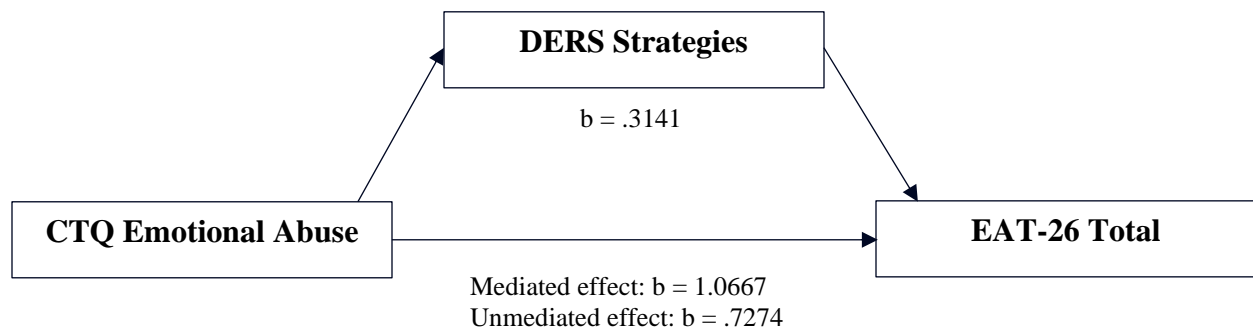Mediated effect: b = 1.0667
Unmediated effect: b = .7274

Figure 4

DERS total partially mediates the relationship between CTQ emotional abuse and EAT-26

bulimia/food preoccupation (BFP).

DERS Total

b = .0101

CTQ Emotional Abuse

EAT-26 BFP

Mediated effect: b = .0421
Unmediated effect: b = .0278