Childhood Sexual Abuse and Eating Disorder Symptomatology

Abstract
In order to manage the distress that is often associated with a history of sexual abuse, children may employ maladaptive behaviors as coping skills. It is hypothesized that children with histories of sexual abuse will report more self-injurious behavior and more binge-eating and purging behaviors than non-abused children. The sample consisted of 323 children who were admitted to a local clinic for disordered eating. Severity of disordered eating behaviors was assessed with a parent self-report measure. Results did not indicate a significant difference between children who reported a history of sexual abuse and those who did not in terms of eating behaviors. However, children who reported a history of sexual abuse reported self-injurious behavior more often than non-abused children. Furthermore, children with a history of self-injury reported more frequent disordered eating behaviors than children without this history.

Degree Type
Dissertation

Degree Name
Doctor of Psychology (PsyD)

Committee Chair
Daniel Muñoz, Ph.D.

Keywords
childhood sexual abuse, eating disorders, self-injurious behavior, binge eating, purging, impulsivity

Subject Categories
Psychiatry and Psychology
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Abstract

In order to manage the distress that is often associated with a history of sexual abuse, children may employ maladaptive behaviors as coping skills. It is hypothesized that children with histories of sexual abuse will report more self-injurious behavior and more binge-eating and purging behaviors than non-abused children. The sample consisted of 323 children who were admitted to a local clinic for disordered eating. Severity of disordered eating behaviors was assessed with a parent self-report measure. Results did not indicate a significant difference between children who reported a history of sexual abuse and those who did not in terms of eating behaviors. However, children who reported a history of sexual abuse reported self-injurious behavior more often than non-abused children. Furthermore, children with a history of self-injury reported more frequent disordered eating behaviors than children without this history.

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Table of Contents

Abstract ............................................ i
List of Tables ...................................... iii
Introduction ........................................ 1
   A Review of the Literature ...................... 4
Current Study ...................................... 12
Method .............................................. 12
   Participants ..................................... 12
   Measures ........................................ 13
   Statistical Analysis .............................. 15
Results .............................................. 15
   Correlation coefficients within the REDS-C .... 15
   Childhood sexual abuse and measures of binge-eating and purging 15
   Childhood sexual abuse and self-injurious behaviors 17
   Self-injurious behaviors and measures of binge-eating and purging 17
Discussion .......................................... 18
   Limitations ..................................... 21
   Clinical Implications ............................ 22
References ......................................... 24
Appendix ............................................. 27
List of Tables

| Table I. | Characteristics of participants at intake | 14 |
| Table II. | Bivariate correlations among items on the REDS-C | 16 |
| Table III. | Mean Bing-Eating and Purging Scores for Children with and without a History of Self-Injurious Behavior | 18 |
Introduction

Childhood sexual abuse (CSA) is commonly defined as a negative life event where a child is coerced into a sexual act or experience. The World Health Organization (1999) defined CSA as an incident that the child or youth (1) does not fully comprehend, (2) does not give informed consent to, (3) is not developmentally prepared for and cannot give consent to, or (4) that violates the laws or social taboos of society. This violation can occur between a child and an adult, or between a child and an individual under the age of 18 who is perceived to have a level of responsibility, trust, or power. This activity is performed with the intention of gratifying or satisfying the needs of the abuser. Russell (1983) noted that this form of abuse can include behavioral force, or noncontact maltreatment (i.e., exposure to pornography, voyeurism). According to the American Academy of Child and Adolescent Psychiatry (2008) up to 80,000 instances of CSA are reported each year; however, the number of unreported cases is estimated to be far greater.

It is difficult to argue against the notion that children who experience sexual abuse will endure some form of clinical distress. To date, there has been a great deal of research and clinical attention devoted to this observation. With this research, professionals have aimed to determine the most appropriate methods to identify and treat the individuals who experience this form of abuse (Cohen, Mannarino, & Knudsen, 2005; Deblinger, Steer, & Lippman, 1999; Deblinger, McLeer, Atkins, Ralphe, & Foa, 1989).

The negative sequale of CSA can include depression, anxiety, feelings of anger, symptoms of post-traumatic stress, low self-esteem, and self-blame (Wekerle & Wolfe, 2003; Kendall-Tacket, Williams, & Finkelhor, 1993). Children who experience this form
of abuse may also exhibit sleep disturbance, academic difficulties, and disruptive behaviors (Mullen, Martin, Anderson, Romans, & Herbison, 1996). The negative effects of CSA can carry into adolescence and adulthood. Such long-term effects may include substance abuse, impaired social relationships, sexual dysfunction, and personality disorder traits (Finkelhor & Browne, 1986). This implication serves to magnify the importance of early identification and early treatment for children who experience sexual abuse.

It is possible that children who experience sexual abuse perceive a general lack of control and lack of security within their own lives (Waller, 1998; Moyer, DiPietro, Berkowitz, & Stunkard, 1997). In order to cope with these negative sensations, individuals may search for mechanisms to regulate their emotions and to decrease feelings of distress. The process of affect regulation requires the ability to modulate, modify, redirect, and control intense emotions (Cicchetti, Ganiban, & Barnett, 1990). According to Wekerle and Wolfe (2003) children who experience sexual abuse may exhibit limitations in this ability. In other words, they may exhibit an inability to appropriately self-soothe and an inability to tolerate or accept certain emotions. This inability may be attributed to the fact that sexual abuse is a confusing experience that often serves to disrupt a child’s overall concept of safety and view of the world. Therefore, the behaviors that are employed by these individuals are often rash or impulsive and may be displayed as maladaptive and self-injurious (Wonderlich, Crosby, Mitchell, et al. 2001). Herman (1992) suggested that self-injurious behaviors may be a pathological form of self-soothing. With these behaviors, a child may be replacing psychological pain with physical pain.
The maladaptive methods of affect regulation are not limited to self-injurious behaviors. Beitchman and colleagues (Zucker, Hood, DaCosta, Akman, & Cassavia, 1992) identified substance misuse, risky sexual behavior, and compulsive risk taking as other methods to regulate negative emotions. Another potential way to reduce negative affectivity is with eating behaviors. These behaviors may allow an individual to perceive a reacquired sense of control as this is a process they can monitor and adjust. Furthermore, eating behaviors may provide an individual with a method to cope with symptoms of distress when more adaptive coping mechanisms are either not known or not available.

Eating behaviors can be perceived as pathological when there is a negative effect on an individual’s general health and well-being. Eating disorders are characterized by severe disturbances in eating behaviors, unhealthy efforts to control body weight, and abnormal attitudes about body weight and shape (Wilson, Becker, & Heffernan, 2003). The current edition of the *Diagnostic and Statistical Manual for Mental Disorders (DSM-IV-TR)*; American Psychiatric Association, 2000) focuses on two main categories of eating disorders: bulimia nervosa and anorexia nervosa. Bulimia nervosa is typically characterized by discrete periods of compulsive eating and compensatory purging. Anorexia nervosa is typically characterized by a cognitive drive for thinness and restriction of calories. This disorder is currently diagnosed with two subtypes: restricting type and binge-eating/purging type. These subtypes differ in both the behavioral sense and the cognitive sense. Individuals who are diagnosed with the restricting type of anorexia nervosa typically strive for thinness and utilize dieting, restriction of calories, and excessive exercise. Individuals with this subtype of anorexia nervosa have not
engaged in any episodes of binge-eating or purging behaviors. In contrast, individuals who are diagnosed with the binge-eating/purging type of anorexia nervosa regularly engage in binge-eating episodes and/or employ purging behaviors (i.e., self-induced vomiting, misuse of laxatives, misuse of diuretics). The binge-eating/purging type of anorexia nervosa is similar to bulimia nervosa in the sense that both require an episode of binge-eating or purging for diagnosis. However, individuals with a diagnosis of anorexia nervosa, binge-eating/purging type are unable to maintain body weight at or above the minimal normal weight according to age and height. On the contrary, individuals with a diagnosis of bulimia nervosa, according to DSM-IV-TR (2000) criteria, are able to maintain this minimal body weight.

A Review of the Literature

Researchers to date have investigated the different subtypes of anorexia nervosa. DaCosta and Halmi (1992) found that patients with the binge-eating/purging type of anorexia nervosa were more likely to experience lability of mood, impulsivity, and substance abuse problems when compared to patients with the restricting type of this disorder. Beaumont (2002) indicated a worse prognosis for patients who are diagnosed with the binge-eating/purging type of anorexia nervosa. Fisher, Smith, and Anderson (2003) noted that in general, binge/purge behaviors are considered to be more impulsive than restricting behaviors.

Given that it is not uncommon for children who experience sexual abuse to evidence poor affect regulation and impulsive behaviors, it is possible that these children will also display binge-eating/purging behaviors. Based on previous research, it is
reasonable to hypothesize that children who experienced sexual abuse will display more binge-eating and purging behaviors than children who did not experience this form of abuse. It is also reasonable to hypothesize that children who experienced sexual abuse will evidence more binge-eating and purging behaviors than the restrictive behaviors that are often consistent with disordered eating.

To date, a significant amount of research has been conducted to explore the relationship between childhood sexual abuse and disordered eating. van Gerko, Hughes, Hamill, and Waller (2005) examined this relationship and assessed specific eating behaviors and cognitions. The results of this study indicated that women who reported a history of CSA demonstrated a higher level of objective bingeing, vomiting, laxative abuse, and diuretic abuse than women who did not report a history of CSA. In regard to eating cognitions, the women who reported a history of abuse evidenced more shape concerns than the women who did not report abuse. Additional attitudinal scales were examined (restraint, weight concerns, eating concerns); however, these scales did not evidence a significant difference between the two groups. Similar findings were reported by Carter, Bewell, Blackmore, and Woodside (2005). These researchers stated that adults with a diagnosis of anorexia nervosa, binge-eating/purging type were significantly more likely to report a previous history of CSA than individuals with a diagnosis of anorexia nervosa, restricting type.

Although these aforementioned researchers, along with others (Oppenheimer, Howells, Palmer, & Chaloner, 1985; Hall, Tice, Beresford, Wooley, & Klassen, 1989), support the general notion that sexual abuse is associated with eating disturbances, it is important to note that the majority of this research has been conducted with adult
participants. Some researchers have indicated that a longer time span between the experience of abuse and participation in a clinical study may decrease the validity of findings (Wonderlich et. al., 2000, Pope & Hudson, 1992). Adults may experience additional negative life events outside of the experience of CSA. These events may play a significant role in later eating disorder symptoms. Use of a younger population may create a more “pure” study where the findings are not as likely to be confounded by additional events (van Gerko, Hughes, Hamill, & Waller, 2005).

In order to investigate the effects of CSA with adult participants, researchers may need to rely on retrospective accounts of information. This methodology may lead to recall bias where histories of CSA are not accurately reported (Wonderlich et. al., 2000). With use of a younger sample, the more immediate effects of CSA can be explored with the goal that there will be less error associated with additional life events. Furthermore, if the time span between the experience of abuse and investigation of the child’s response is shortened, it is possible that there will be less room for inaccurate retrospective recall.

To date, research with younger participants has been conducted to explore the relationship between CSA and disordered eating; however, the quantity of this research is limited. Wonderlich and colleagues (Crosby, Mitchell, Roberts, Haseltine, DeMuth, et al., 2000) investigated this research and examined the differences between a group of 10 to 15-year-olds that reported a history of sexual abuse and an age-matched comparison group that did not report such a history. These researchers reported that the children who experienced sexual abuse were more likely to indicate weight dissatisfaction, restrict food when emotionally upset, express a pursuit of thin body ideals, and evidence heightened purging behavior when compared to the control group. The children who experienced
sexual abuse also exhibited less perfectionistic tendencies than the control group. These researchers suggested that the instance of sexual abuse may have led these children to develop low self-esteem. This low self-concept may be related to body dissatisfaction. Therefore, these children may utilize food restriction and purging behaviors as a method to reduce this body dissatisfaction.

Wonderlich and colleagues (Crosby, Mitchell, Thompson, Redlin, Demuth, et al., 2000) completed another study to investigate the possible mediating factors that may link childhood sexual abuse with eating disturbance. This study also included a group of 10 to 15-year-olds that reported a history of sexual abuse and an age-matched comparison group that did not report such a history. The group that disclosed sexual abuse reported higher levels of eating disorder behavior, drug abuse, and impulsive behaviors than the group that did not disclose sexual abuse. The researchers noted that behavioral impulsivity was the strongest mediator between a history of sexual abuse and purging/restricting behavior. Drug use was found to be a significant secondary mediator between these variables. Other potential mediating variables included body image disturbance, mood disturbance, self-concept, and perfectionism. A significant mediating effect was not found for these variables.

The concept of mediating factors has been explored by other researchers. Schwartz and Gay (1996) identified possible “adaptive functions” that individuals may recognize with utilization of eating disorder behaviors. These functions included a perception of protection by gaining weight, a method to “disappear” by losing weight, and a method to create an unattractive appearance by gaining or losing weight. It was also proposed that individuals may gain a sense of comfort with food and that the behavior of
eating may provide a way to dissociate from intrusive thoughts, emotions, and images.

Waller (1996) examined the concept of control in regard to sexual abuse and eating disorders. In this study a more external locus of control (low perception of personal control over events in one’s life) was associated with more severe eating disturbance among a group of women with histories of sexual abuse. Waller and colleagues (Meyer, Ohanian, Elliott, Dickson, & Sellings, 2001) examined the possible core beliefs that may mediate the relationship between CSA and symptoms of bulimia in a sample of adult females. This analysis indicated that the core beliefs of abandonment, defectiveness/shame, emotional inhibition, and mistrust/abuse can potentially serve as mediating variables between impact of abuse and frequency of bingeing and purging.

In addition to the aforementioned studies, other researchers have investigated the relationship between CSA and disordered eating; however, not all of this research has been in support of this association. Pope and Hudson (1992) acknowledged the suggestion that CSA may serve as risk factor for later development of bulimia nervosa. These researchers assessed this relationship with an analysis of retrospective studies and did not find a significant relationship between these two factors. Rather, it was proposed that methodological effects may account for the previous statistical findings that support this theory (i.e., lack of blind assessment).

Other researchers who have reviewed the current literature have presented additional challenges to this theory. Finn, Hartman, Leon, and Lawson (1986) investigated this relationship and noted the high base rate of eating disturbance and sexual abuse. This observation lead to the suggestion that the overall high prevalence of both of these factors in the clinical community may create an illusory relationship where
one does not actually exist. Connors and Morse (1993) indicated that sexual abuse is best considered a risk factor for general psychopathology rather than a specific cause for later disordered eating. Wonderlich and colleagues (Brewerton, Jocic, Dansky, & Abbott) supported the notion that CSA is a risk factor for bulimia nervosa; however, significant rates of comorbidity were found. When compared to other clinical populations the rates of CSA among individuals with an eating disorder diagnosis were equal to or less than the rates of CSA among individuals with other psychological disorders.

Meta-analytic reviews have further evaluated this relationship between CSA and disordered eating. Smolak and Murnen (2002) evaluated the methodology of studies that have explored this relationship. It was noted that the strength of this association was strongest for experiments that used abuse status as the independent variable. Furthermore, a stronger relationship was found when a nonclinical group was compared to a clinical sample. Finally, this analysis indicated the importance of specifying what aspects of eating disturbance (e.g., external locus of control, body image disturbance) are presumed to be associated with a history of CSA.

As previously mentioned, CSA can lead to an array of negative outcomes. Based on prior research, it appears that the concept of impulsivity may be an important variable that links CSA to disturbed eating in regard to children. Impulsivity may provide a way to decrease the feelings of distress that are often evidenced by children who experience sexual abuse. However, impulsive behaviors are often viewed as maladaptive and inappropriate as they are thought to be employed in a reckless and incautious manner. The concept of impulsivity has undergone empirical evaluation and researchers have proposed four different pathways that may lead to this behavioral construct: (a) lack of
planning, (b) lack of perseverance, (c) sensation seeking, and (d) urgency (Whiteside & Lynam, 2001). The final pathway, urgency, is of particular interest in regard to the variables of disordered eating and CSA. Fisher, Anderson, and Smith (2004) defined urgency as a “tendency to act rashly in the face of distress” (p. 269). In other words, urgency may underlie behaviors that are carried out in a hasty manner and are employed in an effort to quickly reduce unwanted sensations (i.e., general distress, traumatic memories). This pathway differs from the others listed by Whiteside and Lynam (2001), which appear to reflect an inability to premeditate or plan a behavior, an inability to follow through on plans or behaviors, and a strong desire for excitement and stimulation.

Fisher, Smith, and Anderson (2003) hypothesized that the final pathway, urgency, would show a stronger relationship with bulimia nervosa symptoms than the other pathways. This hypothesis was supported and a positive correlation was found between symptoms of bulimia nervosa and urgency (the tendency to act rashly when distressed). In contrast, the “lack of planning” pathway did not evidence a positive correlation with symptoms of bulimia nervosa among a sample of adult females.

Claes, Vandereycken, and Vertommen (2005) investigated the prevalence of impulsivity-related traits among patients with symptoms of disordered eating. The researchers observed that adult patients who met criteria for bulimia nervosa and anorexia nervosa, binge/purge type evidenced more behaviors consistent with the concept of impulsivity. This finding was supported across all four of the aforementioned pathways of impulsivity. Patients who were diagnosed with bulimia nervosa evidenced higher urgency and sensation seeking and lower premeditation and perseverance than the patients who were diagnosed with anorexia nervosa, restricting type. The scores that were
obtained by patients who were diagnosed with the binge/purge type of anorexia nervosa fell between these two groups. This led the researchers to suggest that the concept of impulsivity be used in the evaluation of clients with symptoms of disordered eating. It was proposed that this concept could be used to help explain the different symptoms that patients develop (i.e., restricting vs. binge-eating/purging subtype of anorexia nervosa), and to facilitate treatment planning.

As previously mentioned, it is not unusual for children who experience sexual abuse to display self-injurious behaviors. These behaviors may be employed in an effort to self-soothe and to regulate feelings of distress. The act of self-injury is also considered an impulsive behavior (Whiteside, Lynam, Miller, & Reynolds, 2008), and it is possible that this behavior may fall into the pathway of urgency as it involves the tendency to act rashly in the face of distress. Researchers to date have noted that binge-eating and purging behaviors are also described as impulsive and are best categorized as behaviors of urgency. In other words, these behaviors are employed in a hasty and reckless manner with the intention to reduce and/or eliminate any feelings of distress. Given this information, it is possible that children who experience sexual abuse will evidence both self-injurious behaviors and binge-eating/purging behaviors as both of these behaviors seem to reduce negative affect. Alternatively, other disordered eating behaviors (e.g., restricting calories) may not provide the same sense of relief. Therefore, it is hypothesized that the mediating variable of impulsivity (in particular the factor of urgency), here conceptualized in the form of self-injurious behaviors, will mediate the presence of CSA to binge-eating and purging behaviors, but not to restricting behaviors.
Current Study

Although previous research has indicated a relationship between CSA and disordered eating, the majority of this evidence is based on adult participants. The current research is limited in terms of studies that include children as participants. It has been noted that CSA may play a role in the development of disordered eating; however, it is important to recognize the other factors that may contribute to this form of psychopathology. Such factors may include biological/hormonal development, social influences, and other negative life events that may become more likely with an increase in age. In the current study the following hypotheses will be explored:

1. Participants who report a history of childhood sexual abuse will evidence higher scores on measures of binge-eating and purging than participants who do not report a history of childhood sexual abuse.

2. Participants who report a history of childhood sexual abuse will evidence self-injurious behaviors, whereas participants who do not report a history of childhood sexual abuse will not evidence such behaviors.

   (a) This behavior will be considered a proxy variable to assess for impulsivity.

Method

Participants

The participants in this study were treated at a clinic for disordered eating between 1999 and 2008. The data that was used for this study was based on information that was gathered during an intake interview and assessment. The principal investigator had no contact with the participants in this study.
A total of 323 participants were included in the study. Of the 323 participants, 281 (87%) were female and 42 (13%) were male. The participants ranged in age from 6 to 18; the mean age was 13.3. The body mass index (BMI) of the participants ranged from 10 to 28; the mean BMI was 17.7. Information in regard to the participants’ diagnoses at intake can be found in Table 1. This table also lists the participant’s body mass index (BMI) and age according to intake diagnosis.

Measures

Demographics. Demographic information included gender, date of birth, height, weight, and BMI.

History of Childhood Sexual Abuse. A parent report was utilized to determine history of sexual abuse. The intake therapist inquired if this experience had been reported to child protective services and if the client had experienced any other sexual interactions outside of the abuse.

Self-injurious Behaviors. A parent report was utilized to determine history of self-injurious behaviors. The intake therapist also inquired about suicidal ideation and other risk factors for self-harm.

Eating Disorder Symptomatology. Eating disorder cognitions and behaviors were assessed with the Rating of Eating Disorder Severity in Children and Adolescents (REDS-C). The REDS-C is a 16 item, semi-structured interview and takes approximately 20 to 30 minutes to administer. This interview included questions pertaining to the presence and frequency of disordered eating behaviors (i.e., bingeing, purging, restricting). Questions also addressed frequency of compulsive exercise, discomfort
Table 1

*Characteristics of participants at intake*

<table>
<thead>
<tr>
<th>Intake Diagnosis (n; % of sample)</th>
<th>Mean Age</th>
<th>Mean BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anorexia Nervosa, Restricting (173; 53.6%)</td>
<td>13.5</td>
<td>16.83</td>
</tr>
<tr>
<td>Anorexia Nervosa, Binge/Purge (71; 22%)</td>
<td>15.31</td>
<td>19.13</td>
</tr>
<tr>
<td>Bulimia Nervosa (22; 6.8%)</td>
<td>15.60</td>
<td>21.84</td>
</tr>
<tr>
<td>EDNOS (32; 9.9%)</td>
<td>12.22</td>
<td>17.74</td>
</tr>
<tr>
<td>Selective Eating (8; 2.5%)</td>
<td>9.96</td>
<td>17.34</td>
</tr>
<tr>
<td>Binge Eating Disorder (3; 1%)</td>
<td>11.68</td>
<td>20.31</td>
</tr>
<tr>
<td>Food Phobia (14; 4.3%)</td>
<td>10.90</td>
<td>14.21</td>
</tr>
</tbody>
</table>
eating in public, severity of weight loss, cognitive drive for thinness, preoccupation with weight/shape, body image disturbance, and denial of seriousness of weight loss. Scores are based on the interviewer’s impression of the severity of each item. The interviewer’s in this sample were certified mental health professionals who were employed by the clinic for disordered eating.

Statistical Analysis.

All analyses were completed using SPSS 16.0; significance was set at an alpha level of 0.05, unless otherwise noted.

Results

Correlation coefficients within the REDS-C

Correlation coefficients were computed among four of the REDS-C items. These items were included in this study as they were used to assess for binge and purge frequency and severity. Using the Bonferroni correction to control for Type I error across the four correlations, a $p$ value of less than .01 ($0.05/4 = 0.01$) was required for significance. The results of the correlational analyses are presented in Table 2. All four of the correlations were statistically significant and were greater than or equal to .45. In general, these results suggest that if children experience eating disorder symptoms in one area of binge-eating or purging, they will also indicate symptoms in other areas.

Childhood sexual abuse and measures of binge-eating and purging

A one-way MANOVA was conducted to evaluate the effect of childhood sexual abuse on the two dependent variables of binge-eating and purging. These variables were derived from items of the REDS-C, where a higher score indicated a higher degree of
Table 2

*Bivariate Correlations among items on the REDS-C (N=323)*

<table>
<thead>
<tr>
<th></th>
<th>Binge quantity</th>
<th>Binge frequency</th>
<th>Purge method</th>
<th>Purge frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binge quantity</td>
<td>.76*</td>
<td>.54*</td>
<td>.50*</td>
<td></td>
</tr>
<tr>
<td>Binge frequency</td>
<td></td>
<td>.45*</td>
<td></td>
<td>.50*</td>
</tr>
<tr>
<td>Purge method</td>
<td></td>
<td></td>
<td></td>
<td>.80*</td>
</tr>
<tr>
<td>Purge frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.01
binge-eating or higher severity of purging. The MANOVA results did not indicate significant differences between the abused and non-abused group on the two dependent measures, Wilks’s $\Lambda = 1.00$, $F(2, 262) = .049$, $p = .952$. The effect size of this analysis was small, $\eta^2 = .000$.

**Childhood sexual abuse and self-injurious behavior**

A two-way contingency table analysis was conducted to evaluate whether children who experienced sexual abuse were more likely to evidence self-injurious behaviors. The two variables were history of childhood sexual abuse with two levels (reported history, no reported history) and history of self-injurious behavior (reported history, no reported history). Childhood sexual abuse and self-injurious behavior were found to be significantly related, Pearson $\chi^2 (1, N = 196) = 12.69$, $p < .05$, Cramér’s $V = .28$. The proportion of children who reported a history of sexual abuse and self-injurious behaviors was .24. The proportion of children who reported a history of sexual abuse and no self-injurious behaviors was .04.

**Self-injurious behavior and measures of binge-eating and purging**

Although no significant differences were found between participants with and without a history of childhood sexual abuse, a MANOVA was conducted to evaluate the difference between participants with and without a history of self-injurious behaviors on the two dependent variables, binge-eating and purging. Significant differences were found among the two groups on the dependent measures, Wilks’s $\Lambda = .94$, $F(2, 190) = 6.17$, $p < .01$. The multivariate $\eta^2$ based on Wilks’s $\Lambda$ was .06. Analyses of variances (ANOVA) on the dependent variables were conducted as follow-up tests to the
MANOVA. Using the Bonferroni correction, each ANOVA was tested at the .025 level. The ANOVA on the binge-eating measure was significant, $F(1, 191) = 11.79$, $p < .05$, $\eta^2 = .06$. The ANOVA on the purging measure was also significant, $F(1,191) = 6.44$, $p < .05$, $\eta^2 = .03$. Table 3 contains the means and standard deviations on the dependent variables for the two groups. The participants who reported self-injurious behavior indicated more frequent episodes of binge-eating as well as larger amounts of food during these episodes. This group also indicated more frequent purge behaviors and utilized more methods to purge.

Table 3

*Mean Binge-eating and Purging Scores for History of Self-injurious Behavior and No History*

<table>
<thead>
<tr>
<th>Group</th>
<th>Binge-eating</th>
<th>Purging</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>History of SIB</td>
<td>2.77</td>
<td>2.26</td>
</tr>
<tr>
<td>No History of SIB</td>
<td>1.53</td>
<td>1.94</td>
</tr>
</tbody>
</table>

Discussion

The first hypothesis of the present study stated that children with a history of sexual abuse will report more binge-eating and purging than children who do not report such a history. This hypothesis was not supported by the analysis. Furthermore, when a measure of restrictive eating and drive for thinness was evaluated, a significant difference
was not found between children who reported sexual abuse and children who did not. Therefore, this study did not support the hypothesis that children with histories of sexual abuse will display more behaviors consistent with binge-eating or purging, nor was there support for a hypothesis that children with histories of sexual abuse will display more restrictive eating behaviors.

The second hypothesis was that children with histories of sexual abuse will evidence self injurious behaviors more so than children without such a history. This statistical analysis that was used to investigate this hypothesis was found to be significant. When a history of childhood sexual abuse and self-injurious behavior was evaluated, 23.7% of the participants reported both behaviors. Other researchers have described disordered eating symptoms as self-injurious (van der Kolk, Perry, & Herman, 1991). It is possible that self-injury and disordered eating behaviors are employed for similar reasons. In other words, some children may employ both of these behaviors as they provide similar sensations of relief. This relief may evidenced by a sense of dissociation from traumatic memories (Zlotnick et al. 1996), or the behaviors may be best considered self-soothe techniques that are used to cope with the negative affect that is associated with abuse.

A second MANOVA was used to investigate the relationship between a history of self-injurious behavior and binge-eating and purging behaviors. This analysis produced statistically significant results. In this sample, children who reported a history of self-injurious behavior reported more binge-eating and purging behaviors. Furthermore, an analysis was conducted to evaluate the relationship between children who reported a history of self-injurious behavior and additional measures of disordered eating. Statistical
support was observed on items assessing cognitive drive for thinness, preoccupation with shape or weight, and body image disturbance. Therefore, the symptoms reported by children with a history of self-injury were not limited to binge-eating and purging behaviors. Rather, these children also tended to report more cognitive symptoms of eating disturbance (i.e., cognitive drive for thinness, body image disturbance) than children without a history of self-injury.

This finding is consistent with previous research. Ross, Heath, and Toste (2009) investigated this phenomenon and found a significant relationship between students who reported non-suicidal self-injurious behavior and eating pathology. The results of this study indicated that students who engaged in self-injurious behavior reported a greater desire for thinness, greater sense of body dissatisfaction, and more bulimic behaviors than students who did not engage in self-injurious behavior. The students who engaged in self-injurious behavior also reported lower feelings of efficacy, a lower sense of affective awareness, greater sense of distrust of others, and greater impulsivity. Paul, Schroeter, Dahme, and Nutzinger (2001) investigated the reports of self-injurious behaviors among a group of women who were admitted to a clinic for eating disorders. These researchers concluded that several of the women in their sample utilized these behaviors (i.e., hitting, cutting) to alleviate emotional discomfort.

It is possible that the participants in the current study utilized self-injurious behaviors for similar reasons. As previously noted self-injury is often conceptualized as an impulsive behavior (Whiteside, Lynam, Miller, & Reynolds, 2008) and can fall under the pathway of urgency as it is employed as a method to immediately reduce a negative affective state. It is possible that participants in the current study experienced extreme
sensations of emotional discomfort and utilized self-injurious behavior as a method to quickly reduce this distress. It is also important to note that a statistically significant relationship was found between history of self-injurious behavior and body image disturbance. It is therefore possible that participants in this study experienced overall negative self perceptions and utilized self-injury as a form of self-punishment (Favazza, 1998).

Although a significant relationship was not found between childhood sexual abuse and measures of disordered eating, it is important to note that a relationship was found between abuse and self-injury. Favaro and Santonastaso (2000) differentiated compulsive and impulsive self-injury. Compulsive self-injury is defined as more closely related to obsessive-compulsive disorder and may include behaviors such as hair-pulling, skin picking, and other behaviors that are utilized to remove a fault. Impulsive behaviors included skin cutting, burning, and laxative use. Childhood sexual abuse was found to be a significant predictor of impulsive self-injurious behavior. van der Kolk et al. (1991) note that histories of childhood sexual abuse are considered highly significant predictors of self-harm and of suicide attempts. Future researchers may benefit from creating a clear operation definition of self-injurious behavior and utilizing a dimensional scale such as was noted by Favaro and Santonastaso.

**Limitations**

The hypothesis that children who reported a history of childhood sexual abuse would report greater binge-eating and purging behaviors was not supported in this analysis. There were several limitations in this study that may partially account for the insignificant results. First, the sample of children who reported sexual abuse was quite
small (N=22). A larger sample may have produced different results. It is important to note that this information was gathered during an intake session. Hall et al. (1989) emphasize the importance of rapport and note that abuse was often not disclosed until the fourth session with a mental health specialist. Second, this information was based on a parent report. A child report may have provided more information in regard to negative past experiences. And finally, a non-psychiatric control group was not included in this study. Rather, all participants in this study were patients at a local clinic for disordered eating. Future researchers who acknowledge these limitations may produce results that indicate a relationship between childhood sexual abuse and disordered eating.

A clear operational definition of self-injurious behavior was not included in this study. Furthermore, measures of general psychopathology were also not included. It is recommended that future researchers assess the degree and type of self-injury as well as areas of distress that are independent of disordered eating. This investigation may allow researchers to further explore the psychological factors that mediate disordered eating and self-injurious behaviors.

**Clinical Implications**

This study notes a significant interaction between self-injurious behavior and childhood sexual abuse. The participants in this study who reported self-injurious behavior also reported more symptoms of disordered eating. It is recommended that clinicians in the field of mental health keep these frequencies in mind when working with children who may have histories of sexual abuse. The results of this study indicate that it is not unusual for children with such histories to display self-injurious behaviors and this indication is also supported by previous researchers.
Although significant results were not found in regard to childhood sexual abuse and symptoms of disordered eating, it is recommended that the limitations of this study be taken into account before drawing any conclusions about this relationship as it may exist in the general population. It is possible that the clinician will need to build a relationship with the child before any histories of abuse are disclosed. Until that time, awareness of possible self-injury and other impulsive behaviors may provide the clinician will information about past traumatic experiences.
References


Appendix

R.E.D.S.

RATING OF EATING DISORDER SEVERITY (R.E.D.S.): The scores on this interview may be a combination of answers obtained directly from the child and report by the parent.

Interviewer: ________________________________

Date: ________________________________

Present at interview: ________________________________

Patient Name: ________________________________ Age: ___ years ___ months
D.O.B. __________

□ Female  □ Male  Tanner stage: B: ____________ PH: ____________

School name: ____________________________________________________

Grade __________________

R.E.D.S. – Child Score:

Confidence Score:
1. **INADEQUATE FOOD INTAKE**

Tell me a little about yourself; give me “a day in the life”…when do you get up? What is your routine? Are you ever do busy that you skip breakfast? What do you eat exactly…not in the last week…but in the few weeks before last week? Which classes are you taking? (younger children: do you have recess?) Who do you eat lunch with? Do you bring it or buy it? What do you eat? Who is home when you get home from school? Do you have a snack? Are you hungry? How much homework do you have? Do you hang out with your friends after school? Who cooks dinner? What do YOU typically prefer to have? (If patient binges, estimate calories on binge day/non-binge day and obtain an average of calories/day)

- 0. Eats adequate amounts to reach or maintain normal body weight.
- 1. Occasionally eats less than adequate amounts.
- 2. Often eats less than adequate amounts.
- 3. Consistently eats inadequate amounts (but at least 1000 kcal/day).
- 4. Consistent marked inadequacy of caloric intake (but at least 500 kcal/day).
- 5. Severe caloric restriction (average intake less than 500 kcal/day).

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2. **DIMINISHED FOOD RANGE**


Summary:

- □ red meat (e.g., pork, lamb, beef)
- □ poultry
- □ catch fish/shellfish
- □ milk/cheese/yogurt
fruit/vegetables
grains (e.g., bread, muffins, cereal, rice, pasta)
desserts (e.g., pie, cake, ice cream)

(NOTE: When rating this item, do not include food that is purged) THE FOLLOWING ARE SOME GUIDELINES IN DETERMINING DEGREE OF RESTRICTING:

0. No restriction of food types whatever.
1. No restriction apart from fat content
2. Mild limitation (perhaps has eaten from at least 5 of the above-listed food categories).
3. Moderate limitation (perhaps has eaten from at least 4 of the above-listed food categories).
4. Marked limitation (perhaps has only eaten from 3 of the above-listed food categories).
5. Severe restriction of food types (has eaten fewer than 3 of the above-listed food categories).

CONFIDENCE RATING: Little/No Confidence Significant Doubts Mild Doubts Moderate Confidence Strong Confidence
(Mark one)

3. DISCOMFORT WHEN EATING IN PUBLIC

Tell me where you like to eat. Are you comfortable eating with your friends? (Ask specifically about members of the opposite sex). Do you prefer to eat at home? In your room? Is there anyone you don’t like to eat with? Do you ever avoid going somewhere because you know people will be eating there? Do you like parties where food is served?

0. Complete comfort when eating in public
1. Small degree of uneasiness when eating in public or around certain people
2. Sometimes avoids eating in public due to discomfort
3. Often avoids eating in public due to discomfort
4. Mostly avoids eating in public due to discomfort
5. Always eats alone due to discomfort.
4. BINGE QUANTITY

Do you know what a binge is?

There are two kinds of binges that sometimes happen to people.

One is where you get really, really hungry or bored and you go in the kitchen or take food out of the kitchen and eat a whole lot—more than you normally ever eat, like the whole bag of chips or the carton of ice cream. (Objective binge) Then you feel bad. Does that ever happen to you?

The other kind of binge is what we call the “rule breaking binge” where you don’t eat a lot of food—it might even be just a grape, but you feel bad because it has broken a rule or a goal you set for yourself, like “I won’t eat before nighttime” or “I will only eat carrots and celery today”.

Has that ever happened to you? (Subjective binge)

0. Has not had subjective or objective binge episodes this month.
1. Subjective binge episodes only (binge eating is confined to small amounts).
2. Binges consist of amounts of food just large enough to be considered objective binge episodes.
3. Objective binges consisting of large amounts of food.
4. Objective binges consisting of extremely large amounts of food.
5. Objective binges consisting of such enormous amounts of food that stomach rupture is at risk.
5. **OBJECTIVE BINGE FREQUENCY**

(Having established which of the two binge types the patient suffers from, you now ask….)

In the last 3 months, how often has this happened to you?

- 0. No objective binge episodes.
- 1. Binge episodes less than twice per week (on average).
- 2. Binge episodes twice a week or more, but less than daily (on average).
- 3. Binge episodes at least daily, but less than twice per day (on average).
- 4. Binge episodes at least twice daily, but less than four times per day (on average).
- 5. Binge episodes four or more times per day (on average).

**CONFIDENCE RATING:**

- Little/No Confidence
- Significant Doubts
- Mild Doubts
- Moderate Confidence
- Strong Confidence

(Mark one)

- 0
- 1
- 2
- 3
- 4

6. **PURGE METHOD**

Have you ever felt so bad about what you have eaten that you felt sick to your stomach and threw it all up? Do you ever throw up to make yourself feel better? Have you ever taken any medicines to help you throw up? Have you ever stuck anything down your throat to make yourself throw up? Have you ever taken pills or medicines to help you get rid of calories or lose weight? Have you ever taken anything to help you go to the bathroom more often?

(NOTE: We define purging as the use of any of the above methods with the intent of eliminating food or preventing absorption of calories (“purging with exercise” covered elsewhere).

- 0. Has never used any method to purge
- 1. Purged only by vomiting once or twice or tried laxatives once or twice, but “didn’t like it and stopped”.
- 2. Purges consistently or frequently only by vomiting or **one** other method (e.g. laxatives)
- 3. Purges consistently or frequently by two methods (e.g. vomiting and laxatives)
- 4. Purges consistently or frequently by two methods whereby one of the methods involves using syrup of ipecac or insulin manipulation
7. **PURGE FREQUENCY**

In the last 3 months, how often do you find yourself throwing up or taking medicine to try and take away some of the food you have eaten? (average over the last 3 months)

0. Never
1. Purged, but less than twice per week (on average).
2. Purged twice per week or more, but less than daily (on average).
3. Purged at least daily, but less than twice per day (on average).
4. Purged at least daily, but less than four times per day (on average).
5. Purged four times per day or more (on average).

CONFIDENCE RATING:

(Mark one)

- [ ] 0
- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4

8. **FREQUENCY OF COMPULSIVE OR COMPENSATORY EXERCISE**

Some people feel bad if they can’t exercise everyday…or if they feel they have eaten too much. Does that ever happen to you?

I understand that you may be interested in being active and fit…is that true? What kinds of things do you do to try and stay fit and get healthy? How about for fun? Do you ever get up early in the morning to work out? How about late at night, especially when you can’t sleep? Do you ever do exercise videos? jumping jacks? Crunches? How many can you do? Do you ever try to make up for eating by “exercising it off”?

On average over the last 3 months, the patient has:

0. Not exercised compensatorily or compulsively
1. Compensatory or compulsive exercise episodes, but less than twice per week (on average).
2. Compensatory or compulsive exercise episodes, twice per week or more, but less than daily (on average).

CONFIDENCE RATING:

(Mark one)

- [ ] 0
- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4
3. Compensatory or compulsive exercise episodes daily, but less than twice per day (on average).
4. Compensatory or compulsive exercise episodes twice a day or more, but less than four times per day (on average).
5. Compensatory or compulsive exercise episodes four times per day or more (on average).

**CONFIDENCE RATING:**

(Mark one)

- Little/No Confidence
- Significant Doubts
- Mild Doubts
- Moderate Confidence
- Strong Confidence

9. ABNORMALLY LOW BODY MASS INDEX

HEIGHT: _____________ WEIGHT: _____________

(NOTE: Body Mass Index (BMI) can be calculated by multiplying the weight in pounds by 700 and diving by the height in inches squared.)

\[ \text{BMI} = \frac{\text{weight (Lbs)} \times 703}{\text{ht. (inches)} \times \text{ht. (inches)}} \]

- 0 = BMI at or above 50% tile for age
- 1 = BMI between 25% tile and 49% tile for age
- 2 = BMI between 10% tile and 24% tile for age
- 3 = BMI between 3% and 9% tile
- 4 = BMI below < 3% tile

**CONFIDENCE RATING:**

Automatically mark “4” strong confidence
10. **SEVERITY OF WEIGHT LOSS**

IBW:

(girls) = 100 # for 5 ft. and 5 # for each subsequent inch in height

(boys) = 106# for 5 ft. and 6 # for each subsequent inch in height

**IF PATIENT BEGAN ILLNESS ABOVE CALCULATED IDEAL BODY WEIGHT USE % PREMORBID WEIGHT NOT % IBW**

Do you have any idea what you weigh today? (Don’t reveal weight) How do you feel about this weight?

If I had a magic wand and could make you any weight in the whole world, what weight would be too low for you—I mean, pick a weight that is so low you would be scared to weight so little. (Then mention a number a few pounds below the one they pick) what if you weighed ____, would that be ok? (If no) What would you do if you weighed that much? So what weight would be too much for you? And what would be just right? * if unable to answer code “0” and mark with “little or no confidence”

0. Can accept a weight 91% of IBW or greater OR pre-morbid weight.
1. Wants to be at a weight 85-90%of IBW OR pre-morbid weight.
2. Wants to be at a weight 80-85% of IBW OR pre-morbid weight.
3. Wants to be at a weight 75-80% of IBW OR pre-morbid weight.
4. Wants to be at a weight 70-75% of IBW OR pre-morbid weight.
5. Wants to be at a weight less than 70% IBW OR pre-morbid weight.
11. COGNITIVE DRIVE FOR THINNESS

Since your parents have brought you here because of concerns about weight, I wonder whether you are concerned about your weight yourself?

0. Able to see herself/himself as needing to gain weight or maintain weight within healthy parameters.
1. Not sure about needing to gain weight, wants guidance.
2. Does not want to gain weight to 90-100% IBW or pre-morbid wt. (which may have been “high”)
3. Strongly antagonistic to gaining weight even to 85% IBW or premorbid wt.
4. Does not want to gain weight at all despite the need for restricting to maintain current wt.
5. Not only refuses to gain weight at all, but insists she/he needs to lose weight regardless of any health consequences to weight loss.

12. PREOCCUPATION WITH SHAPE OR WEIGHT

I imagine there has been a lot of talk going on at your house about weight, shape and food, right? Some kids tell me that at first they didn’t think about food and weight a lot, but that gradually they came to think about it all the time—sometimes so much so that it’s even hard to concentrate at school. Has that happened to you?

0. Infrequent or absent thoughts about shape or weight.
1. Frequent thoughts about shape or weight (but not present daily).
2. Frequent thoughts about shape or weight (at least daily).
3. Preoccupation with thoughts about shape or weight, can’t help talking about it sometimes and comparing other kids to themselves.
4. Obsession with thoughts about shape or weight, compares everyone to him/herself all of the time.
5. Obsessed with thoughts about shape or weight to the exclusion of almost all other thoughts (difficulty with concentration).

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13. **BODY IMAGE DISTURBANCE**

How are you feeling today about your own body? Do you feel you are too thin? Just right? Somewhat too big in places? Too fat?

(If answers the later two) Let’s be specific: how satisfied are you with the shape of your stomach, hips, thighs? How comfortable have you been when you look at yourself in a full length mirror? How comfortable are you in a bathing suit? When was the last time you wore one?

0. No *inappropriate* dissatisfaction, e.g. “I guess I’m ok” or “I’m too skinny” (when this is an appropriate observation) OR “I’m still too big” (when they are still technically overweight).
1. Mild body image dissatisfaction, e.g. “I’m not really happy with my size/shape: or “I could be thinner somewhere, I guess”.
2. Moderate body image dissatisfaction or distortion, e.g. “I’m too fat in the stomach” when this is clearly not true.
3. Global body dissatisfaction (“I hate my body”) or distortion (“I’m too fat” when clearly not true)
4. Global body dissatisfaction (“I hate my body”) and distortion (“I’m too fat” when clearly not true)
5. Delusionally obsessed with large size of body in spite of emaciation and/or engaged in the delusional belief that others are perceiving them as fatter than everyone else.

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14. **DENIAL OF SERIOUSNESS OF WT. LOSS/ FAILURE TO GAIN WT.**

I understand that you have lost weight and that everyone is concerned about this, how do you feel about your weight loss? Did you want to come to the doctor’s? How would you feel about the clinic helping you stop the weight loss and gain some back? Did you know that weight loss can affect the heart? Cause hair to fall out? Stop your growth in height? Stop your periods from coming (for girls)?

0. Has not lost more than a few pounds and has no plans to do so.
1. Generally believes their wt. loss/failure to gain appropriately is not a problem, but willing to listen to advice to the contrary
2. Firmly believes that there are no negative consequences to their own weight loss/ abnormally low body weight, or understands that there may be in the future, but are nonetheless unwilling to comply with weight gain.
3. Firmly believes there are no negative consequences to weight loss/abnormally low body weight despite moderate complications (e.g. amenorrhea, always cold) or understands that there may be, but are nonetheless unwilling to comply with weight gain.
4. Firmly believes there are no negative consequences to weight loss or abnormally low body weight despite severe complications (e.g. hospitalization, edema, heart problems, electrolyte disturbances)

**CONFIDENCE RATING**: (Mark one)

- Little/No Confidence
- Significant Doubts
- Mild Doubts
- Moderate Confidence
- Strong Confidence

15. **SOCIAL IMPACT**

(You may need the parent’s input on this issue, especially with very young children.)

I’m wondering whether or not all this bother and talk about food has made you feel differently about doing things with your friends? Do you hang out with your friends (“play with your friends”, in a younger child) as much as you used to? Are you spending more time alone doing your homework than you used to?

0. No social problem associated with eating disorder.
1. Mild impairment in social relationships, more alone time
2. Moderate social impairment, not calling friends or going places with them
3. Moderate social impairment, has been noticed by school teacher/others outside of family.
4. Marked social impairment, little interaction with former friends/schoolmates
5. Severe social impairment, unable to attend school or needing to be homeschooled.

CONFIDENCE RATING:

(Mark one)

☐ 0  ☐ 1  ☐ 2  ☐ 3  ☐ 4

16. PHYSICAL IMPACT

Now I have some medical questions for you.

Have you noticed that you feel colder than you used to, or that you are cold when other people feel normal or warm? Have you had to wear more clothes to stay warm, especially at night?

Have you had headaches? Stomachaches?

Have you felt dizzy or faint? Had “black-out” spells?

Have you had less energy to do sports or exercise?

Have you ever had a period? When was your last normal seeming period? Have you had any lighter-than-usual-seeming periods?

Have you had chest pain or shortness of breath? Heart racing?

When was the last time you changed shoe sizes?

Do you ever have trouble having bowel movements (“pooping” for a younger child)?

Do you have a hard time falling asleep at night? Do you wake up often during the night?

Do you ever wet the bed? (if yes) Is this new?

Are your hands or feet swollen or puffy during the day?

Have you noticed your skin is drier than it used to be? How about your scalp and hair?

Is your hair falling out?

Do you find yourself drinking a lot of fluids during the day? How about caffeinated beverages?

Have you noticed you bruise more easily than you used to?

Do cuts, scrapes and burns take longer to heal?
0. No physical impairment associated with eating disorder.
1. Mild physical symptoms associated with eating disorder (e.g., fatigue, lassitude, coldness).
2. Moderate physical symptom (one only) associated with eating disorder (e.g., syncope (fainting), amenorrhea, bowel problems).
3. Moderate physical symptoms (two or more) associated with eating disorder (e.g., syncope andamenorrhea, constipation and insomnia, etc.).
4. Major illnesses or complications requiring medical intervention (e.g., dehydration, electrolyte abnormalities, chest pain, black-out spells, edema, new onset enuresis) OR PATIENT CURRENTLY MEETS HOSPITALIZATION CRITERIA
5. Major illness or complication which is life-threatening (e.g., renal failure, cardiac failure) OR PATIENT HAS BEEN ADMITTED TO THE ICU

CONFIDENCE RATING:

Little/No Confidence Significant Doubts Mild Doubts Moderate Confidence Strong Confidence

(Mark one)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4

DIRECTIONS FOR OBTAINING TOTAL SCORE

Add scores of Scales 1 through 16 for total score

DIRECTIONS FOR OBTAINING CONFIDENCE SCORE

Confidence ratings are coded from 0 (little or no confidence) to 4 (strong confidence). Confidence score is calculated by adding all confidence ratings.

1. Inadequate Food Intake
2. Diminished Food Range
3. Discomfort When Eating in Public
4. Binge Quantity
5. Objective Binge Frequency
6. Purge Method
7. Purge Frequency
8. Frequency Of Compulsive Exercise
9. Abnormally Low Body Mass Index
10. Severity of Weight Loss
11. Cognitive Drive For Thinness
12. Preoccupation With Shape Or Weight  ____  ____
13. Body Image Disturbance  ____  ____
14. Denial of Seriousness/Failure to Gain  ____  ____
15. Social Impact  ____  ____
16. Physical Impact  ____  ____

**Total Score of possible 80**  
**Confidence Score of possible 64**

---

**INSTRUCTIONS FOR INTERVIEWERS**

The REDS-child is a rating scale adapted from Dr. Goldner’s original R.E.D.S. for use with children and teens under age 17 with eating disorders (anorexia nervosa, bulimia nervosa, and related disorders).

All sixteen ratings are to be completed during an interview with the patient/subject. However, the interviewer should use additional questions and any other available information (e.g. observed eating behaviors, parental information) in order to derive the most accurate rating possible for each of the sixteen items. In each item, choose only one number (from 0 to 5) which appears most accurate. In a situation where it cannot be determined which of two numbers is most accurate, choose the lower number.

In addition, a confidence rating is required for each of the sixteen items. The confidence rating indicates the level of confidence that the interview estimates in the rating for each item. Choose only one confidence rating in each item and choose the lesser level of confidence in a situation where it cannot be determined which of two confidence ratings is most accurate.

**In order to achieve maximum accuracy in rating item #9 (Abnormal Body Mass Index), a weight scale and height measure should be used in a patient with only a gown, but no other clothing.**

Permission to reproduce or employ the R.E.D.S. for clinical or research purposes must be obtained by contacting:

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