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# Adverse Childhood Experiences Among Adolescents With Body Dysmorphic Disorder: Frequency and Clinical Correlates

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## ABSTRACT

Increasing empirical attention has been given to the role of adverse childhood experiences (ACEs) in the development and maintenance of body dysmorphic disorder (BDD). Yet, current research has predominantly focused on adult and nonclinical BDD samples, and little is known about relevance of ACEs in adolescent BDD. The present study examined (a) the frequency of ACEs in adolescents with a primary diagnosis of BDD ($n = 50$) versus obsessive compulsive disorder (OCD) ($n = 50$) and (b) the clinical profile of ACE-exposed youth with BDD. ACEs were ascertained through a systematic search of electronic patient records, as well as through a parent- and self-report screening item for exposure to traumatic events. Results showed higher rate of peer victimisation (74% vs. 38%) and child maltreatment (44% vs. 24%) among BDD versus OCD youths; sexual abuse was the most common type of child maltreatment documented in the BDD group (28%) according to patient records. Parent-reported exposure to traumatic events was also significantly higher in the BDD than the OCD group (40% vs. 18%, respectively). Clinical presentation and treatment outcomes did not differ between those with versus without a history of ACEs. The current study is the first to demonstrate that a range of ACEs are common in adolescent BDD. Our findings highlight the importance of screening for these experiences. Although further research is needed, our findings also indicate that adolescents with BDD who have a history of ACEs are broadly similar in their clinical presentation to those without, and benefit from BDD-focused treatment.

## 1 | Introduction

Body dysmorphic disorder (BDD) is characterised by a persistent and excessive preoccupation with perceived flaw(s) in appearance, which appear slight or unobservable to others. This preoccupation leads to significant distress and/or interference, time-consuming repetitive behaviours (e.g., excessive mirror checking, grooming and comparing appearance to others) and avoidance (APA 2013). BDD is a common condition, with an estimated prevalence ranging between 1.7 and 2.9 in adults (Buhlmann et al. 2010; Rief et al. 2006; Koran et al. 2008), and onset during adolescence (Bjornsson et al. 2013; Rautio, Gumpert, et al. 2022). Twin studies have shown that genetic factors account for approximately 40%–45% of the variance in BDD symptoms, with the remaining variance being accounted for by nonshared environmental influences (López-Solà et al. 2014; Monzani et al. 2012). Environmental risk factors for BDD have been underresearched; however, increasing empirical attention has been given to the putative role of adverse childhood experiences (ACEs) in the development

**Summary**

- Adverse childhood experiences (ACEs)—including peer victimisation and child maltreatment—have been implicated in the development and maintenance of BDD. No studies thus far have examined ACEs in adolescent BDD.
- Rates of ACEs were higher in adolescent BDD compared to OCD. Peer victimisation and sexual abuse were the most common adverse events identified through patient records. Parent-reported exposure to traumatic events (as assessed using the trauma-screening item of the Developmental and Well-Being Assessment, DAWBA) was also higher in the BDD versus the OCD group.
- Adolescents with BDD who have a history of ACEs were broadly similar in their clinical presentation to those without and benefit equally from BDD-focused treatment.
- The higher rates of ACEs in adolescent BDD compared to OCD highlight the importance of screening for these experiences. Further research however is needed to fully elucidate on the impact and putative mechanisms of ACEs on development, maintenance and treatment of adolescent BDD in larger, treatment-seeking samples.

and maintenance of BDD (Longobardi, Badenes-Ribera, and Fabris 2022). ACEs refer to traumatic events that occur before the age of 18, which can have a negative and lasting impact on a child's physical or psychological health and development. They include, but are not limited to, exposure to different forms of child maltreatment (i.e., physical, emotional or sexual abuse and neglect), family dysfunction such as witnessing domestic violence (Kalmakis and Chandler 2014; Karatekin and Hill 2019) and peer victimisation (i.e., teasing and bullying). As described below, a number of studies on BDD have noted significant associations between the condition and peer victimisation or child maltreatment (Longobardi, Badenes-Ribera, and Fabris 2022).

A substantial number of cross-sectional studies have shown higher rates of peer victimisation among individuals with BDD compared to healthy and clinical comparison groups (Buhlmann et al. 2007; Lavell et al. 2018; Mastro et al. 2016; Neziroglu et al. 2018; Veale et al. 2015; Webb et al. 2015; Weingarden and Renshaw 2016; Weingarden et al. 2017). A handful of studies have also demonstrate a positive correlation between peer victimisation and BDD severity (Webb et al. 2015; Weingarden and Renshaw 2016; Wolke and Sapouna 2008), with preliminary results in nonclinical samples showing worse psychosocial outcomes among those exposed to such events, including greater functional impairment, more severe depressive symptoms and lower self-esteem and overall quality of life (Weingarden and Renshaw 2016; Weingarden et al. 2017; Wolke and Sapouna 2008). More recently, a survey study of 165 participants with probable BDD found teasing/bullying to be the most commonly described event triggering the onset of BDD, reported by 47% of those participants who cited a specific event (Weingarden et al. 2017). On this note, at the core of BDD is a negative distorted image of their appearance that is anecdotally often linked to past aversive memories of being teased or bullied (Osman et al. 2004; Veale et al. 2015; Willson, Veale, and Freeston 2016). Taken together, the existing empirical research among adults and nonclinical samples strongly implicates early teasing and bullying experiences as common adverse events that contribute to the onset and presentation of BDD.

A handful of other studies in clinical and nonclinical samples have also shown high rates of childhood maltreatment and family dysfunction in BDD compared to controls (Buhlmann, Marques, and Wilhelm 2012; Didie et al. 2006; Malcolm et al. 2021; Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006; Valderrama et al. 2020). Indeed, the proportion of individuals with BDD who report having experienced at least one type of childhood maltreatment (sexual, physical, emotional or neglect) has been found to be as high as 84.6% (Malcolm et al. 2021). Although rates vary substantially across studies, between 14% and 59% of BDD patients report historical physical abuse or neglect (Malcolm et al. 2021; Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006) whilst 22%–34% reported being a victim of childhood sexual abuse (Didie et al. 2006; Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006; Semiz et al. 2008). Research findings also show higher rates of emotional abuse and neglect among BDD compared to adults with OCD (Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006), with rates ranging between 28% and 69% (Didie et al. 2006; Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006). Despite the high rates of childhood maltreatment reported in the adult BDD literature, relatively little is known about the clinical correlates of BDD patients with such a history. Didie et al. (2006) found that adults with BDD and a history of maltreatment were more likely to have attempted suicide. In this study, emotional and physical abuse were also associated with a lifetime substance use disorder and mood disorder, respectively (Didie et al. 2006). In another study, severe maltreatment was correlated with greater severity of BDD symptoms, anxiety and suicidal ideation (Malcolm et al. 2021). No study to date however has examined the association between childhood maltreatment and treatment outcomes for BDD.

The research on ACEs in BDD was recently synthesised in a meta-analysis, which included 27 studies and nearly 10,000 participants (Longobardi, Badenes-Ribera, and Fabris 2022). The pooled effect sizes indicated a positive association between ACEs and BDD symptomatology, with estimates ranging from $r = 0.22$ for child maltreatment to $r = 0.42$ for peer victimisation (Longobardi, Badenes-Ribera, and Fabris 2022). The review also brought to light several key limitations in the current research. First, most studies to date draw from adult samples, and only few included or focused on adolescents (e.g., Fabris, Badenes-Ribera, and Longobardi 2021, Mastro et al. 2016, Neziroglu et al. 2018, Webb et al. 2015 and Webb, Zimmer-Gembeck, and Mastro 2016). BDD typically emerges during this period of development (Bjornsson et al. 2013; Rautio, Jassi, et al. 2022), and the limited research on ACEs in adolescent BDD—as opposed to later on in adulthood—constitutes a gap in the literature. This is a critical time to explore ACEs as it allows a timely recollection of early adverse events, compared to asking individuals about them decades later; it has also implications for understanding how these events impact on presentation and course of the illness over time. Second, the majority of studies are limited to

nonclinical samples, where BDD diagnoses were solely based on self-reported questionnaires; it cannot be assumed that findings will generalise to a clinically diagnosed sample of people with BDD. Third, only two studies to date have included a clinical control group (Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006; Neziroglu et al. 2018), limiting our conclusions on the frequency and impact of ACEs in adolescent BDD relative to other psychiatric controls. Fourth, no studies have examined clinical correlates and CBT outcomes for youth with BDD with and without a history of ACEs. This is an essential step to promote early intervention and refine appropriate therapeutic interventions that may help shift the course of the disorder. Lastly, studies have largely relied on retrospective self-reports of adverse events, with no corroborative reports from other sources, raising concerns around the potential impact of misinterpretation or biased information processing in BDD, particularly when recalling social adversity such as teasing and bullying experiences (Buhlmann, Winter, and Kathmann 2013; Webb et al. 2015).

Our study is aimed at addressing the above-mentioned limitations by examining ACEs in a clinically diagnosed group of adolescents with BDD, utilising multiple sources of information to help broaden our understanding of ACEs in BDD. Specifically, the study is aimed (1) at examining the rates of child- and parent-reported ACEs in adolescents with diagnosed BDD versus OCD. In the present study, OCD was chosen as the comparison group on the basis of BDD being classified as an obsessive-compulsive spectrum disorder in DSM-5 (APA 2013) (and therefore, its many similarities with OCD, including obsessional thinking and ritualistic behaviours) as well as to replicate previous research on ACEs in adults with BDD versus OCD (Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006); (2) at examining the clinical characteristics and treatment outcomes for ACE-exposed youth with BDD. Based on previous findings in adult samples (Buhlmann et al. 2007; Longobardi, Badenes-Ribera, and Fabris 2022; Webb et al. 2015; Weingarden et al. 2017), we hypothesised higher rates of self- and parent-reported ACEs among youths with BDD compared to OCD patients. In line with findings from previous research on ACEs (Didie et al. 2006; Weingarden et al. 2017), we also hypothesised greater BDD symptom severity and impairment among BDD youths exposed to ACEs.

## 2 | Methods

### 2.1 | Sample

Participants included 100 youth aged between 11 and 18 years referred to the National and Specialist OCD, BDD and Related Disorders Clinic for Young People at the Maudsley Hospital in South East London, England. The sample consisted of consecutively referred adolescents who attended an assessment at our clinic between 2019 and 2021 and received a primary diagnosis of BDD and/or OCD. The BDD/OCD diagnosis was confirmed by a specialist multidisciplinary team during a comprehensive 3-h assessment, which consisted of clinical interviews with the adolescents and their parent/carers including a full psychiatric history, developmental history and mental state examination. Clinician-, self- and parent-reported measures were collected at assessment and at the end of treatment. Inclusion criteria were met if adolescents received a diagnosis of BDD and/or OCD at initial assessment; there were no specified exclusion criteria. Power analysis was conducted to determine the appropriate sample size to detect differences at a 0.05 alpha level. The final sample included 50 adolescents who met DSM criteria for BDD and 50 adolescents who met DSM criteria for OCD (American Psychiatric Association 2013). A subsample of BDD patients ($n = 21$, 42%) received CBT for BDD at the clinic according to a validated protocol (Mataix-Cols 2015; Rautio, Jassi, et al. 2022) with/without medication for their symptoms. The remaining patients were referred elsewhere or were either waiting for or currently in treatment. Approval for the study was granted by the South London and Maudsley Child and Adolescent Mental Health Service Audit Committee.

### 2.2 | Measures

The *Yale-Brown Obsessive-Compulsive Scale Modified for BDD for Adolescents* (BDD-YBOCS-A) (Phillips et al. 1997) is a 12-item semistructured, clinician-administered interview that assesses BDD symptom severity. Each item is rated on a 0–4 scale; the total score ranges from 0 to 48, with higher scores reflecting higher symptom severity. A recent study (Monzani et al. 2022) found the BDD-YBOCS-A to be a reliable and valid measure of BDD severity in children and adolescents with BDD.

The *Children's Yale-Brown Obsessive-Compulsive Scale* (*CY-BOCS*) (Scahill et al. 1997) is the gold standard measure for assessing OCD symptom severity in children and adolescents. The CY-BOCS is an interviewer rated, semistructured clinical interview, with sound psychometric properties (Scahill et al. 1997; Storch et al. 2004). It comprises 10 items rated on a 0–4 Likert scale, assessing time, interference, distress, resistance and control associated with obsessions and compulsions. Total OCD severity score ranges from 0 to 40, with scores of 30 and above suggestive of severe OCD symptoms.

The *Children's Global Assessment Scale* (CGAS) (Shaffer et al. 1983) is a validated and reliable measure of overall global functioning rated by clinicians (Shaffer et al. 1983). Scores range from 0 to 100, with 1 representing the most impaired child and scores above 70 representing healthy functioning. The CGAS has shown strong psychometric properties (Bird et al. 1987; Rey et al. 1995).

The *Mood and Feeling Questionnaire Child Version* (*MFQ-C*) (Burleson Daviss et al. 2006) is a 33-item self-reported measure of depressive symptoms in children and adolescents aged between 6 and 19 years. The MFQ has demonstrated strong psychometric properties (Sund, Larsson, and Wichstrøm 2001, Wood et al. 1995, Burleson Davis et al., 2006) in paediatric clinical and nonclinical samples. Total scores range from 0 to 66, with higher scores indicating greater depressive symptoms.

The *Work and Social Adjustment Scale-Youth* (*WSAS-Y*) (Jassi et al. 2020) is a brief self-reported global measure of functional impairment. The WSAS-Y consists of five items, which are rated on a 9-point Likert scale (Jassi et al. 2020). Total scores range from 0 to 40, with higher scores indicating higher severity. The internal consistency of the WSAS-Y was found to be excellent

across time points in a study of 525 children and adolescents with OCD and related disorders (Jassi et al. 2020).

The *Development and Well-Being Assessment* (DAWBA) (Goodman et al. 2000) is an online diagnostic instrument that comprises various questionnaires screening for a range of mental health conditions in young people aged 5–17, including post-traumatic stress disorder (PTSD). It draws together information from multiple informants to predict the likelihood of a psychiatric diagnosis based on ICD-10 (World Health Organization 1993) and DSM-IV (American Psychiatric Association 1994) criteria, with established validity and reliability (Goodman et al. 2000).

In screening of adverse childhood experiences (ACEs), patient records—including risk assessment reports, full assessment reports and progress clinical notes—were retrospectively examined by two senior clinicians to extract data on ACEs in our sample. Predefined key search terms were selected based on previously published systematic reviews on ACEs (e.g., 'abuse', 'trauma', 'neglect', 'sexual', 'physical', 'verbal', 'emotional', 'teasing' and 'bullying'); truncated words were used to capture variations in phrasing in patient records (for complete list of search terms, see Table S1).

The PTSD screening question from the DAWBA, which was completed at assessment by all young people and parents in the study, was utilised as a secondary procedure to assist identifying the proportion of young people in our sample exposed to traumatic events. Specifically, we analysed responses to the following PTSD screening question: 'The next section is about events or situations that are exceptionally stressful, and that would really upset almost anyone. For example, being caught in a burning house, being abused, being in a serious car crash or seeing family or friends being mugged at gunpoint. During [your/ your child's] lifetime has anything like this happened to [you/your child]?'. Data on childhood maltreatment (including the individual forms of maltreatment) and peer victimisation obtained via patient records and the DAWBA PTSD screener were examined and reported separately; this methodology avoided double counting of positive responses by subjects and comparison of rates and effects of specific forms of ACEs in adolescent BDD.

Twenty percent of data was reviewed by a second, independent rater to establish interrater agreement on identification of ACEs. Interrater agreement metrics were excellent, with an intraclass correlation of 0.96. Cases of disagreements were discussed for consensus.

### 2.3 | Statistical Analysis

Statistical analysis was conducted using SPSS 28.0. Demographic differences between the OCD and BDD groups were tested using chi-squared tests for categorical data, and Student's *t* tests were used to assess continuous data. Rates of ACEs (teasing/bullying, physical, sexual, emotional abuse, neglect and witnessing extreme domestic violence) were compared using chi-squared tests. Research has consistently reported *sex* differences in the rates and patterns of childhood adversity (see Haahr-Pedersen et al. 2020), with females being more likely than males to report exposure to sexual abuse. As such, logistic regression was applied to control for sex when examining the association between ACEs and diagnosis. Finally, those with a history of ACEs were compared to those without a history of ACEs in terms of clinical characteristics and treatment outcomes using Student's *t* tests.

## 3 | Results

### 3.1 | Sample

Demographic and clinical characteristics of the sample are presented in Table 1. There were no significant differences in terms of age at assessment and age of onset of their primary diagnosis between youths with BDD and OCD. The mean BDD-YBOCS-A total score for the BDD group was 34.10 (SD = 5.12), whilst the CGAS mean score was 40.12 (SD = 8.43), corresponding to severe BDD and major functional impairment. Similarly, youths in the OCD group presented with severe OCD (CY-BOCS M = 30.10, SD = 4.55) and major impairment in functioning (CGAS M = 37.92, SD = 6.91). Participants with BDD however were more likely to be female (90%) ($p < 0.001$), to present with comorbid secondary OCD (26%) ($p < 0.001$) and to score higher on a measure of depression ($p = 0.01$), compared to participants with OCD.

### 3.2 | Rates of ACEs in Youth With BDD Versus OCD

Figure 1 depicts rates of ACEs among youths with BDD versus OCD. As expected, peer victimisation was more common in BDD relative to the OCD control group. Indeed, patient records identified $n = 37$ (74%) of young people with BDD with a history of teasing/bullying compared to $n = 19$ (38%) of OCD patients. A significantly higher rate of child maltreatment in BDD versus OCD was also identified through patient records (44% vs. 24%, respectively). Moreover, $n = 9$ (18%) youths in the BDD group had experienced multiple forms of child maltreatment compared to only $n = 1$ (2%) of OCD patients, representing a significant group difference. As shown in Table 2, in the BDD group, the most frequent type of child maltreatment identified through patient records was sexual abuse (28%), followed by domestic violence (18%), emotional abuse (14%), physical abuse (12%) and neglect (0%). Whilst exposure to childhood maltreatment was overall more likely among youths with BDD than OCD, the difference fell short of significance with respect to the different types of maltreatment identified, with the exception of sexual abuse. Indeed, there was a statistically significant difference in the rate of sexual abuse, with 28% of BDD youths having been exposed to sexual abuse compared to 8% of youths with OCD. Surprisingly, low levels of neglect were identified through patient records, with only the OCD group ($n = 2$, 4%) presenting with such a history. When adjusting for gender, the strength of the association was attenuated and became nonsignificant for all types of ACEs, except for peer victimisation (see Table S2).

Finally, a similar pattern of results was found in relation to the DAWBA PTSD screening item; indeed, a significantly higher proportion of parents of young people with BDD reported their child being exposed to traumatic events compared to parents

**TABLE 1** | Demographic and clinical characteristics of the paediatric BDD ($n = 50$) and OCD ($n = 50$) sample.

| | BDD | | OCD | | | |
|---|---|---|---|---|---|---|
| **Demographics** | ***N*** | **%** | ***N*** | **%** | **Chi-square** | ***p*** |
| Girls | 45 | 90 | 24 | 48 | 20.61 | **<0.001** |
| Ethnicity/White British | 34 | 68 | 36 | 72 | 16.84 | 0.20 |
| Dual diagnosis | 13 | 26 | 1 | 2 | 12.26 | **<0.001** |
| | **Mean** | **SD (range)** | **Mean** | **SD (range)** | **Student's *t*** | |
| Age at assessment | 15.80 | 1.37 (11–17) | 15.34 | 1.61 (10–18) | −1.53 | 0.12 |
| Age of onset | 11.71 | 2.00 (6–15) | 10.79 | 3.01 (3–15) | 1.77 | 0.08 |
| CY-BOCS | — | — | 30.10 | 4.55 (16–38) | — | — |
| BDD-YBOCS-A | 34.10 | 5.12 (19–44) | — | — | — | — |
| CGAS | 40.12 | 8.43 (24–61) | 37.92 | 6.91 (23–49) | −1.42 | 0.15 |
| MFQ-C | 42.00 | 13.07 (14–62) | 33.76 | 12.84 (7–54) | 2.51 | **0.01** |
| WSAS | 25.27 | 8.38 (5–40) | 27.33 | 9.00 (9–40) | −0.93 | 0.36 |

Abbreviations: BDD-YBOCS-A, Yale-Brown Obsessive-Compulsive Scale Modified for BDD for Adolescents; CGAS, Children's Global Assessment Scale; CY-BOCS, Children Yale-Brown Obsessive-Compulsive Scale; MFQ-C, Mood and Feeling Questionnaire Child Version; SD, standard deviation; WSAS, Work and Social Adjustment Scale.

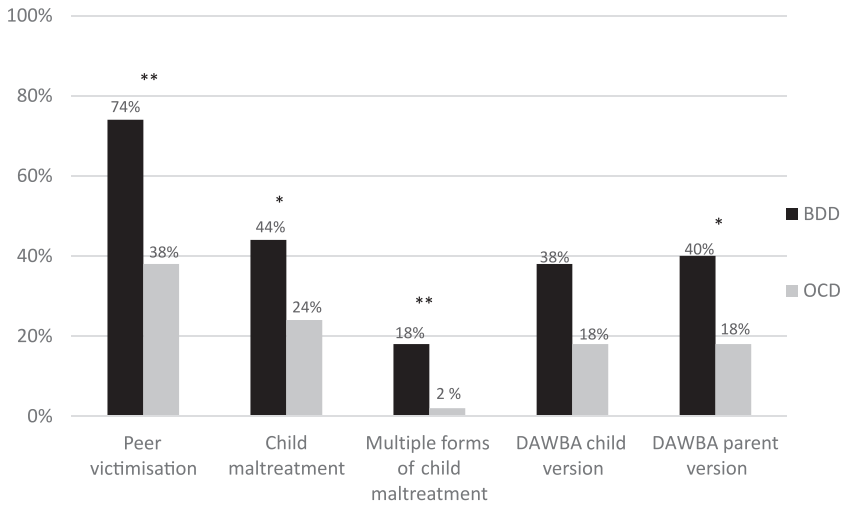


**FIGURE 1** | Rates of childhood adverse experiences among young people with BDD ($n = 50$) and OCD ($n = 50$).

**TABLE 2** | Rates of childhood maltreatment identified via patient records of young people with BDD ($n = 50$) versus OCD ($n = 50$).

| | BDD ($N = 50$) | | OCD ($N = 50$) | | | |
|---|---|---|---|---|---|---|
| **Forms of childhood maltreatment** | ***N*** | **%** | ***N*** | **%** | **Chi-square** | ***p*** |
| Physical | 6 | 12 | 2 | 4 | 2.26 | 0.13 |
| Sexual | 14 | 28 | 4 | 8 | 6.77 | **0.009** |
| Emotional | 7 | 14 | 5 | 10 | 0.37 | 0.53 |
| Neglect | 0 | 0 | 2 | 4 | 2.73 | 0.09 |
| Witnessing domestic violence | 9 | 18 | 6 | 12 | 0.70 | 0.40 |

of OCD patients (40% vs. 18%, respectively). Similarly, a non-significantly larger proportion of BDD versus OCD youths self-endorsed exposure to traumatic events on the DAWBA (38% vs. 18%). Of note and in line with research on poor multi-informant agreement in mental health, adolescents with BDD and OCD and their parents exhibited modest percent agreement in their reports of traumatic events, with percent estimates ranging between 51.3% for BDD and 57.5% for OCD.

### 3.3 | Clinical Characteristics of Youths With BDD With and Without History of ACE

The clinical characteristics of those with and without a history of peer victimisation and childhood maltreatment are presented in Tables 3 and 4, respectively. Results show that those with a history of peer victimisation had an earlier age at BDD onset than those without (11.4 vs. 12.6 years). Overall, however, there were no statistically significant differences in terms of clinical features between BDD patients with and without a history of ACEs; indeed, both groups had comparable scores on measures of BDD (BDD-YBOCS-A), depression (MFQ-C) and functional impairment (CGAS and WSAS-Y).

A subsample of BDD patients ($n = 21$, 42%) received CBT for BDD; mean pre- and posttreatment BDD-YBOCS-A scores for those with and without a history of peer victimisation and childhood maltreatment are shown in Tables 3 and 4, respectively. No differences in response to CBT were found between those with and without ACEs (all $p > 0.05$).

## 4 | Discussion

The current study represents the first investigation of ACEs in a clinical sample of adolescents with BDD. We examined the frequency with which a variety of ACEs were reported and examined whether ACEs were more common among adolescents with a primary diagnosis of BDD compared to OCD. Lastly, we compared the clinical profile of adolescents with BDD with versus without a history of ACEs.

In relation to our first aim, consistent with our hypothesis, we found that experiences of teasing or bullying were more commonly documented in the clinical records of adolescents with BDD compared to those with OCD, and this association remained significant even when adjusting for gender. Our finding is in keeping with previous studies and a recent meta-analysis showing a moderate to large association of teasing and bullying victimisation and BDD symptoms ($r = 0.20–0.48$) (Buhlmann et al. 2007; Longobardi, Badenes-Ribera, and Fabris 2022; Webb et al. 2015). Interestingly, the only previous study to compare bullying in children with BDD versus OCD found contrasting results, with the OCD group scoring higher on a measure of bullying than the BDD group (Neziroglu et al. 2018). However, in this study, OCD was assessed using a clinician-administered

**TABLE 3** | Clinical characteristics and treatment outcomes of BDD youths with and without a history of peer victimisation as identified via patient records ($N = 50$).

| Sociodemographic characteristics | Participants without history of peer victimisation ($N = 13$) | | Participants with history of peer victimisation ($N = 37$) | | | |
|---|---|---|---|---|---|---|
| | ***N*** | **%** | ***N*** | **%** | **Chi-square** | ***p*** |
| Gender (girls) | 13 | 100 | 32 | 86.5 | 1.95 | 0.16 |
| Dual diagnosis | 4 | 31 | 9 | 25 | 0.16 | 0.68 |
| | **Mean** | **SD** | **Mean** | **SD** | **Student's *t*** | ***p*** |
| Age at assessment | 15.54 | 1.12 | 15.89 | 1.44 | −0.79 | 0.42 |
| BDD age of onset | 12.58 | 1.31 | 11.43 | 2.11 | 2.23 | ***0.03*** |
| Clinical characteristics | | | | | | |
| BDD-YBOCS-A | 33.85 | 4.33 | 34.19 | 5.42 | −0.20 | 0.41 |
| CGAS | 42.08 | 8.10 | 39.42 | 8.55 | 0.97 | 0.33 |
| MFQ-C | 41.44 | 13.53 | 42.15 | 13.16 | −0.14 | 0.88 |
| WSAS | 27.00 | 6.91 | 24.78 | 8.79 | 0.69 | 0.49 |

| Treatment response | Participants without history of peer victimisation ($N = 6$) | | Participants with history of peer victimisation ($N = 15$) | | | | |
|---|---|---|---|---|---|---|---|
| | **Mean** | **SD** | **Mean** | **SD** | **Student's *t*** | ***p*** | ***d*** |
| BDD-YBOCS-A pretreatment | 34.33 | 4.92 | 35.00 | 4.25 | −0.30 | 0.38 | −0.15 |
| BDD-YBOCS-A posttreatment | 19.83 | 7.16 | 21.53 | 10.15 | −0.37 | 0.35 | −0.18 |

Abbreviations: BDD, body dysmorphic disorder; BDD-YBOCS-A, Yale-Brown Obsessive-Compulsive Scale Modified for BDD for Adolescents; CGAS, Children's Global Assessment Scale; *d*, effect sizes (Cohen's *d*); MFQ-C, Mood and Feeling Questionnaire Child Version; SD, standard deviation; WSAS, Work and Social Adjustment Scale.

**TABLE 4** | Clinical characteristics and treatment outcomes of BDD youths with and without a history of childhood maltreatment as identified via patient records ($N = 50$).

| Sociodemographic characteristics | Participants without history of childhood maltreatment ($N = 28$) | | Participants with history of childhood maltreatment ($N = 22$) | | | |
|---|---|---|---|---|---|---|
| | *N* | % | *N* | % | Chi-square | *p* |
| Gender (girls) | 24 | 85.7 | 21 | 95.5 | 1.29 | 0.25 |
| Dual diagnosis | 10 | 35.7 | 3 | 14.3 | 2.82 | 0.09 |
| | **Mean** | **SD** | **Mean** | **SD** | **Student's *t*** | ***p*** |
| Age at assessment | 15.71 | 1.21 | 15.91 | 1.57 | −0.49 | 0.62 |
| BDD age of Onset | 11.93 | 1.66 | 11.45 | 2.36 | 0.81 | 0.41 |
| BDD-YBOCS-A | 33.50 | 5.41 | 34.86 | 4.72 | −0.93 | 0.17 |
| CGAS | 40.04 | 8.70 | 40.23 | 8.29 | −0.07 | 0.93 |
| MFQ-C | 41.59 | 12.96 | 42.45 | 13.52 | −0.21 | 0.83 |
| WSAS | 25.59 | 8.34 | 24.89 | 8.65 | 0.26 | 0.79 |

| Treatment response | Participants without history of childhood maltreatment ($N = 10$) | | Participants with history of childhood maltreatment ($N = 11$) | | | | |
|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Student's *t* | *p* | *d* |
| BDD-YBOCS-A pretreatment | 35.50 | 5.29 | 34.18 | 3.57 | 0.67 | 0.25 | 0.29 |
| BDD-YBOCS-A posttreatment | 20.30 | 9.70 | 21.73 | 9.24 | −0.34 | 0.36 | −0.15 |

Abbreviations: BDD, body dysmorphic disorder; BDD-YBOCS-A, Yale-Brown Obsessive-Compulsive Scale Modified for BDD for Adolescents; CGAS, Children's Global Assessment Scale; *d*, effect sizes (Cohen's *d*); MFQ-C, Mood and Feeling Questionnaire Child Version; SD, standard deviation; WSAS, Work and Social Adjustment Scale.

diagnostic instrument, whereas BDD symptoms were assessed using a self-report measure which may have captured the broader BDD continuum including subthreshold cases and general appearance concerns. Therefore, the higher rate of bullying that was found in children with OCD may be reflective of greater severity of psychopathology, rather than differences between OCD and BDD per se. Notably, in the current study, approximately three-quarters of the BDD sample had experienced teasing or bullying, according to their clinical records. To our knowledge, this is the first study to report the frequency of peer victimisation in adolescents with a confirmed diagnosis of BDD and highlights that this is a highly common experience in this population.

Also, in relation to our first aim, we found that experiences of child maltreatment were more commonly documented in the BDD group than the OCD group. Just under half of adolescents with BDD had a history of at least one form of child maltreatment recorded in their clinical records, and approximately one in five had experienced multiple forms of child maltreatment. The current study represents the first investigation of abuse in a clinical sample of adolescents with BDD and highlights the need for careful assessment and screening of childhood maltreatment. Our novel findings are broadly consistent with those from adult samples. For example, a previous study conducted in adults with BDD found that 38% retrospectively reported experiencing some form of childhood abuse (Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006), which is comparable with the 44% identified in the current study. However, it should be noted that previous findings have been mixed, with some studies reporting rates of childhood abuse as high as 79%–85% in BDD (Didie et al. 2006; Malcolm et al. 2021). Variation in estimates across studies is likely to reflect methodological differences (e.g., in sample characteristics and methods of assessing abuse). Indeed, meta-analytic data have demonstrated that the strength of association between ACEs and BDD is significantly influenced by certain methodological factors, such as the source of participant recruitment and sex distribution (Longobardi, Badenes-Ribera, and Fabris 2022). In the current study, in addition to reviewing clinical records to determine history of ACEs, we also examined parent's and adolescents' responses to a structured PTSD screening item. The frequency of parent- and self-reported traumatic events was higher in the BDD versus the OCD group, although this difference only reached statistical significance in relation to parent-report. Nevertheless, the pattern of results was similar across parent-report, self-report and clinical record review, thereby strengthening the reliability of our findings.

Examination of specific forms of child maltreatment identified via patient records indicated that sexual abuse was most common in our BDD sample, documented in 28% of cases. This is comparable to findings from previous studies conducted among adults with BDD, which have found that between 22% and 35% report a history of sexual abuse (Buhlmann, Marques, and Wilhelm 2012; Didie et al. 2006; Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006; Semiz et al. 2008). Importantly, in the current study, sexual abuse was significantly more common in the BDD versus OCD group, consistent with a previous

study conducted with adults (Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006). This is in line with the suggestion that sexual abuse may be a risk factor for bodily awareness and body shame, which in turn may be a precursor for BDD (Longobardi, Badenes-Ribera, and Fabris 2022; Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006). In the current study, the association between sexual abuse did not remain significant when adjusting for sex, although the magnitude of the effect remained substantial (OR = 3.27) raising the possibility that the nonsignificant result reflects limited statistical power.

In the current study, we found nonsignificantly higher rates of emotional abuse (14% vs. 4%), physical abuse (10%) and witnessing violence (18% vs. 12%) in BDD versus OCD. This is the first study directly comparing rates of child maltreatment between adolescents with BDD versus OCD, with findings broadly keeping with the only other study using a clinical control group in adults (i.e., Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006). However, in contrast to the previous study, the elevated rate of emotional abuse in the BDD versus OCD group did not reach statistical significant. Also of note, in the current study, a history of neglect was not documented for any adolescents with BDD, which is in contrast to previous research in which emotional and physical neglect have been reported in up to 80% and 60% of adults with BDD, respectively (Malcolm et al. 2021). The absence of recorded neglect in the current study may reflect a higher threshold for classification whereby only relatively severe neglect was documented in patient records, and/or referral biases to the service (e.g., adolescents experiencing neglect may have been more likely to be referred to social care and related services).

In relation to our second aim, we found that adolescents with BDD who had a history of ACEs were broadly similar in their clinical presentation to those who had no documented history of peer victimisation or child maltreatment. The only difference observed was that adolescents with BDD who had a history of peer victimisation had an earlier age at BDD onset than those without. In the current study, it was not possible to establish temporal relationships between adverse experiences and BDD onset. Thus, it is possible that bullying or teasing in childhood may be a catalyst for earlier BDD onset, but it is equally plausible that those with earlier onset BDD may be more vulnerable to subsequent teasing and bullying. Indeed, previous research has shown that the relation between bullying and emotional symptoms is bidirectional (Boyes et al. 2014; Forrest et al. 2020).

Within the current BDD sample, there were no significant differences between those with versus without ACEs with respect to age at assessment, ethnicity, sex distribution, pretreatment BDD severity, impairment or depressive symptoms. We also did not observe any difference in posttreatment severity for those with versus without ACEs. Given that baseline BDD severity was also comparable, this indicates that those with ACEs present similarly and improve to a similar extent to those without. To our knowledge, this is the first study to examine BDD treatment outcomes in those with versus without ACEs. Although replication in larger samples is needed, our findings encouragingly suggest that adolescents with BDD who have a history of peer victimisation or childhood maltreatment can benefit from BDD-focused treatment. In our sample, it is plausible that modifications were made to the standard BDD treatment protocol to account for the history of ACEs. Further research should examine the frequency of CBT adaptations, their nature and whether they are necessary (i.e., do they enhance treatment outcomes?).

Taken together, our findings on clinical profile and treatment outcomes are in contrast with previous studies showing that, among adults with BDD, a history of ACEs is associated with greater symptom severity, comorbid psychopathology and other psychosocial outcomes (Didie et al. 2006; Malcolm et al. 2021; Weingarden et al. 2017). Discrepancies may reflect different methodological differences across studies, including use of continuous scales to assess ACEs, which capture greater variance and may therefore be better powered to detect effects (Malcolm et al. 2021). However, similar findings to this study have been previously reported in OCD (e.g., Vazquez et al. 2022, Visser et al. 2014, Shavitt et al. 2010, Fricke et al. 2007 and Benarous et al. 2017) (see Destrée et al. 2021 for a review). Vazquez et al. (2022) for instance recently examined the association between ACEs and OCD symptom severity and CBT response in a sample of 142 children and adolescents with OCD. Comparably to our findings, severity scores and CBT treatment outcomes did not significantly differ across participants with and without exposure to ACEs, suggesting that CBT for OCD is effective regardless of exposure to ACEs. The authors discuss these results in the context of differences in the assessment of ACE exposure. Indeed, some studies have measured adversity by utilising presence/absence of a PTSD diagnosis (e.g., Lafleur et al. 2011); it is possible that exposure to ACE in itself, without developing PTSD symptomatology, does not significantly impact on OCD presentation and/or treatment outcomes. In contrast, exposure to ACEs with the subsequent development of PTSD symptoms or diagnosis may be associated with increased OCD severity and impairment as well as poorer treatment outcomes. Similar parallelism could be drawn to explain our findings.

A number of other factors ought to be considered too when interpreting our results. Firstly, although various measures were used to assess for BDD severity (i.e., YBOCS-BDD-A), depression (i.e., MFQ) and global functioning (i.e., CGAS), additional measures would have allowed a broader examination of the clinical profile of those exposed to ACEs that may have been overlooked in this study. Second, our (dichotomous) screening method used to identify ACEs does not take into account the potential impact of the frequency (or cumulative effect), severity or duration of ACEs on clinical presentation, nor does it take into account the developmental timing of the adversity—which recent studies (e.g., Hawes and Allen 2023) highlight as an important factor in fully understanding their impact. Notwithstanding the foregoing, our preliminary results also raise the possibility that the BDD presentations and treatment outcomes of young people exposed to ACEs may be less adversely impacted by their ACEs, compared to adults. It is possible that young people have had less time to experience the effects of the adverse event. If this were true, future research investigating ACEs at this stage would be crucial as it may provide opportunity to mitigate the effect of ACEs and possibly reduce the long-term impact on BDD presentation and recovery. Further longitudinal studies are needed to examine this topic further, including research on larger treatment-seeking samples. Research on ACEs

also suggests that trauma exposure confers risk for revictimisation as well as for development of internalising and externalising problems that are dose dependent. Consequently, further examination of ACEs during childhood/adolescence is important as it may provide opportunity to mitigate the effect to ACEs and possibly reduce longer term outcomes that may have been observed in adult BDD studies, by preventing cumulative and subsequent ACE exposure through early detection and intervention. The value of the current findings—though preliminary—is to highlight the importance of efforts to conduct early screening for ACEs among young BDD sufferers to better inform theories on genesis/maintenance and treatment of BDD and understand the mechanisms of action.

The current study has several strengths including its unique focus on adolescents, inclusion of a clinical control group, the use of a multi-informant approach to examine ACEs and the use of multiple methods to assess ACEs, encompassing clinical note review and a structured PTSD screener. However, findings should be considered in the context of several limitations. First, we did not use a validated measure of ACEs, and it is possible that not all adolescents and parents were systematically asked about peer victimisation and childhood maltreatment, leading to underestimation. For example, emotional abuse was only evident in 14% of BDD cases, whereas previous studies have identified a history of emotional abuse in 28% (Neziroglu, Khemlani-Patel, and Yaryura-Tobias 2006) to 62% (Malcolm et al. 2021) of adults with BDD using self-report measures. Another limitation of the current study is the poor concordance for child and parent reports of ACEs via the DAWBA. Low multi-informant agreement is common in child and adolescent psychiatry and psychopathology (De Los Reyes and Kazdin 2005), including discrepancies between child and parent reports of negative life events (e.g., Johnston et al. 2003). Despite informant discrepancy, this remains the first study to incorporate both child and parent reports of ACEs in BDD. The divergent perspectives on ACEs in our sample highlight the importance of considering multiple perspectives as well as the importance for future research to examine the use and interpretation, including strengths and limitations, of multiple reporters of ACEs in BDD. Third, the current study did not include a healthy control group which would have enabled us to test whether frequencies of ACEs are elevated in BDD relative to the general population. However, inclusion of an OCD group as a clinical comparison served as a more stringent control and enabled us to gauge specificity of effects. Fourth, some adolescents in the current study had a dual diagnosis of OCD and BDD. However, we conducted sensitivity analyses excluding those with comorbid BDD and OCD, and results remained largely unchanged. Fifth, the lack of data on treatment adaptations to address ACEs is an important limitation of the current study in that it does not allow one to assess their respective impact on the treatment outcomes in this study and more broadly whether adaptations are necessary to standard CBT protocols for BDD. More research is therefore needed in this area to support our understanding of the impact of ACEs on treatment outcomes of young people with BDD. Notwithstanding, the study forms part of a developing empirical grounding that highlights the high rates of ACEs in BDD, relative to OCD, and the importance of assessment and further evaluation of ACEs to gather a better understanding of their impact on BDD presentation and treatment as well as their mechanisms of action. Finally, the study was conducted in specialist clinical setting which receives referrals of relatively severe and complex cases. Data on socioeconomic status was not collected for this study; furthermore, the majority of the sample consisted of largely White, British families. Our findings may therefore not be generalisable to families from differing ethnic and socioeconomic backgrounds. Future work on this topic should seek to replicate the current findings in other settings and to collect further demographic data, to determine whether they generalise.

In summary, the current study is the first to demonstrates that a range of ACEs are common in adolescents with BDD and that experiences of peer victimisation and sexual abuse are more common in adolescents with BDD relatively to youths with OCD. Our findings are consistent with the suggestion that ACEs may play a role in the development and/or maintenance of BDD and highlight the importance of screening for these experiences. Our findings also indicate that adolescents with BDD who have a history of ACEs are broadly similar in their clinical presentation to those without and benefit from BDD-focused treatment. Further, longitudinal research is needed to shed light on the mechanisms underpinning the association between ACEs and BDD.


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### Ethics Statement

Ethical approval for the study was granted by the South London and Maudsley Child and Adolescent Mental Health Service Audit Committee.

### Conflicts of Interest

The authors declare no conflicts of interest.

### Data Availability Statement

Research data are not shared.

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## Supporting Information

Additional supporting information can be found online in the Supporting Information section.