Efficacy of EMDR in Body Dysmorphic Disorder and Associated Cognitive-Emotional Features

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Body dysmorphic disorder (BDD) is a severe psychological disorder that significantly impacts functioning and quality of life. Eye movement desensitization and reprocessing (EMDR) presents as an emerging alternate psychological intervention. This study aimed to examine the efficacy of EMDR in BDD symptoms and associated cognitive-emotional features. These features include appearance-based rejection sensitivity, body shame, and self-compassion. Our study utilized a multiple-baseline across-subjects design, monitoring four randomly allocated female patients with BDD over a 10-session/90-minute EMDR treatment phase and two follow-up sessions at 1 and 3 months, respectively. Our results showed that EMDR significantly reduced BDD symptoms (recovery percentage [RP] = 60.54), appearance-based rejection sensitivity (RP = 36.56), and body shame (RP = 54.82) and increased self-compassion (RP = 51.79). Therefore, our study suggests that EMDR may be an effective treatment for BDD patients.

Keywords: body dysmorphic disorder; EMDR; body shame; appearance-based rejection sensitivity; self-compassion

Body dysmorphic disorder (BDD) is a debilitating psychological disorder characterized by a distorted perception of one's appearance. Individuals with BDD obsess over perceived flaws or defects in their appearance, which are often minor or not even noticeable to others. This distorted perception can lead to intense feelings of distress, anxiety, and preoccupation with their appearance. People with BDD may spend excessive amounts of time scrutinizing their appearance in mirrors, seeking reassurance from others about their flaws, or engaging in behaviors like excessive grooming, skin picking, or avoiding social situations due to concerns about their appearance (American Psychiatric Association [APA], 2021). BDD can manifest in various ways, leading to different subtypes based on the specific concerns or areas of focus that individuals have regarding their appearance. While the core features of BDD remain consistent across subtypes, the specific preoccupations and behaviors may vary. Common subtypes include (but are not limited to) muscle dysmorphia (obsession with being inadequately muscular), skin dysmorphia (excessive concern about skin flaws like acne or scars), hair dysmorphia (fixation on hair-related issues such as hair loss or texture), and facial

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dysmorphia (preoccupation with perceived facial flaws like nose shape or symmetry). However, in BDD, any bodily area or feature may be a target for misperception and psychopathological focus (APA, 2021). The person's dissatisfaction with their appearance stems from a gap between their perceived self and their ideal self (i.e., who they aspire to be). Concern over body image begins when a rejected self is created. This rejected self is a reflection of the person's past self that they have rejected and that they strive not to be again. When this stage is reached, body image distortion becomes evident (Seijo, 2018).

When evaluating and diagnosing obsessive-compulsive and related disorders, it is important to consider whether the behavior is ego-dystonic or ego-syntonic. In cases where the behavior is ego-dystonic, as it usually is with obsessive-compulsive behavior, intrusive thoughts are unwanted and the patient perceives them as disturbing. Conversely, when the behavior is ego-syntonic, the thoughts and behaviors are viewed as pleasurable by the person experiencing them (Hart et al., 2018). BDD is very similar to obsessive-compulsive disorder (OCD) in terms of repetitive behaviors, such as checking and seeking reassurance from others to neutralize intrusive thoughts about one's appearance. The most common compulsion in BDD is related to the mirror. Frequently checking one's appearance in the mirror and avoiding looking in the mirror are common behaviors in people with BDD. In both cases, the person has negative associations with the mirror (Conceição Costa et al., 2012).

Concerningly, BDD is a relatively common disorder, with an estimated weighted prevalence of 1.9% in the general population (Veale et al., 2016), and commonly leads to significant impairment in social, occupational, and academic functioning, as well as comorbid psychiatric conditions such as depression, anxiety, and suicidal ideation (Angelakis et al., 2016; Marques et al., 2011; Möllmann et al., 2017). Additionally, BDD is associated with cognitive-emotional features such as appearance-based rejection sensitivity, body shame, and low self-compassion (Allen et al., 2020; Kelly et al., 2014; Park et al., 2010; Weingarden et al., 2017). Appearance-based rejection sensitivity is a psychological construct that refers to the tendency of individuals to anxiously anticipate and overreact to the possibility of being negatively evaluated and socially rejected based on their physical appearance (Park, 2007; Veale & Gilbert, 2014). Appearance-based rejection sensitivity presents as a critical cognitive-emotional driver for those with BDD to focus on and overvalue an aspect of their appearance and has been strongly linked to BDD symptoms in empirical research (Densham et al., 2017; Kelly et al., 2014; Park et al., 2010; Pitiruţ et al., 2024; Zimmer-Gembeck et al., 2022).

Body shame has also been strongly associated with BDD (Linde et al., 2023), with those with BDD typically experiencing higher levels of shame than those without (Weingarden et al., 2016). Body shame refers to a negative emotional response to one's body, often stemming from cultural and social norms about physical attractiveness. It often leads to low self-esteem, body dissatisfaction, sensitivity to body flaws, and depressive symptoms and thus presents as a key risk factor for BDD but may also perpetuate BDD symptoms (Madowitz et al., 2012; Puhl & Luedicke, 2012).

BDD patients also typically display less self-compassion (Allen et al., 2020). Self-compassion can generally be described as treating oneself with kindness, understanding, and nonjudgment in facing difficulties and challenges (Allen et al., 2020; Neff, 2015). Several studies have investigated the relationship between self-compassion and BDD, finding that self-compassion is negatively associated with BDD symptoms (Allen et al., 2020; Foroughi et al., 2019).

Body shame, appearance-based rejection sensitivity, and self-compassion are some of the characteristics that people with BDD have to varying degrees. According to numerous studies, one factor that is significantly prevalent in people with body dysmorphia is sensitivity to rejection based on appearance. People with BDD do not have a compassionate view of their appearance. In Allen et al.'s (2020) study, current cognitive-behavioral models suggest that deficits in self-compassion may play a role in causing BDD as a vulnerability factor. On the other hand, when treating BDD with eye movement desensitization and reprocessing (EMDR), the goal is for clients to no longer feel rejection or shame after successfully reprocessing traumatic and adverse life experiences. Instead, they should feel sorrow for the part of themselves they once rejected. This change in emotions indicates that processing is occurring (Seijo, 2018). In other words, an increase in self-compassion may be observed in individuals undergoing treatment. Therefore, this study has been designed to measure the changes in these associated cognitive-emotional features.

EMDR

EMDR is an integrated psychotherapy approach that includes aspects of diverse theoretical orientations (e.g., psychodynamic, cognitive-behavioral, humanistic, and psychophysiological approaches; Shapiro, 2018). In this therapeutic approach, which is guided by the adaptive information processing (AIP) model, dysfunctionally stored memories are considered to be the primary basis of clinical pathology. The processing of these memories and integration within larger adaptive networks allow for their transmutation and reconsolidation. The standard protocol introduced by Francine Shapiro is a three-pronged approach that focuses on addressing the past, present, and future. This protocol consists of eight phases, which are described in the following order: history taking, preparation, assessment, desensitization, installation, body scan, closure, and reevaluation (Shapiro, 2018).

One of the distinguishing characteristics of EMDR is its use of bilateral stimulation, such as side-to-side eye movements, altering hand taps, or auditory tones that are employed within the desensitization phase (Oren & Solomon, 2012).

Since its initial development, EMDR therapy has been empirically supported by more than 30 randomized controlled trials (RCTs), particularly in the area of posttraumatic stress disorder (PTSD; De Jongh et al., 2019). Shapiro encouraged clinicians to explore EMDR's potential effectiveness in treating conditions other than PTSD, but to do so in an organized method allowing research and replication. Now more than 25 years after the development of EMDR therapy, clinicians have taken EMDR into a wide variety of conditions. However, these variations all have built on the standard protocol. For BDD, the protocol introduced by the experts is the rejected self EMDR therapy protocol (Seijo, 2018), which was used in the present study. This protocol follows the main components and eight phases of the standard protocol, summarized in Table 1; however, there are some differences between this protocol and the standard protocol. The special considerations are explained in the following section. EMDR is a therapeutic approach designed to alleviate symptoms of trauma and PTSD (Shapiro, 2018); however, it has also been proven effective in treating other disorders, namely, addictions, somatoform disorders, sexual dysfunction, eating disorders, disorders of adult personality, mood disorders, reaction to severe stress, anxiety disorders, performance anxiety, OCD, pain, neurodegenerative disorders, mental disorders of childhood and adolescence, and sleep (Scelles & Bulnes, 2021; Valiente-Gómez et al., 2017). The EMDR process involves identifying target memories associated with distressing experiences and subjecting them to bilateral stimulation, typically through side-to-side eye movements. EMDR comprises distinct phases, including desensitization, reprocessing, and installation, during which the therapist guides the client to focus on the traumatic memory and facilitates the integration of adaptive information, ultimately aiming for the resolution of negative emotions and beliefs linked to the targeted memory. EMDR also commonly incorporates a body scan to address residual physical tension. Supported by research as an effective treatment for trauma, EMDR provides a structured and evidence-based approach to help individuals process and overcome the impact of distressing experiences, fostering emotional healing and adaptive coping (Shapiro, 2018).

The Rejected Self EMDR Therapy Protocol Considerations

In phase 1, history taking, to assess body image, it is crucial to consider how individuals perceive the shape of their body, which is the image created in their mind. Therefore, it is important to examine how individuals evaluate their body size and gather information about the emotional aspects involved, such as attitudes toward this self-image. To gather information regarding body dissatisfaction, the following issues should be addressed: information on how body image was experienced in the family of origin; information on how parents related to their bodies, which may have developed into implicit procedural learning; comments that individuals may have received at home about their body; whether individuals were compared with other people about their body; and through whose eyes individuals learned to look at themselves (often, we see ourselves as others saw us or as we were told we were). Then, to gather the history of the rejected self, individuals are instructed to try and identify the part of themselves that they reject—the part they would never want to be again and the part with whom they currently compare themselves. This is the part that the person is ashamed of. In the body image distortion protocol, two types of images can represent the rejected self: past body image distortion and present body image distortion. Some examples of questions to gather more information about body image include the following: How would

TABLE 1. EMDR Standard Protocol

Phase	Description of process for each phase
1. History taking	Obtaining necessary information from the patient and planning the treatment process. The history taking is more succinct than in traditional therapy. It focuses on the critical incident, traumatic antecedents, and the client's resources. While telling the story of the critical incident, the client is invited to identify the sensitive or disturbing moments that will constitute the targets in phases 3–7.
2. Preparation	The clinician educates the client on some techniques (e.g., the safe/calm place, the butterfly hug, and the self-soothing technique) for challenging situations during treatment sessions and between sessions. The clinician also explains the procedures of EMDR to the client.
3. Assessment	The client is invited to imagine rewinding the worst picture of the targeted event. The patient is then asked to name the negative emotion when imagining the picture of the event. The client is invited to provide an SUD score for the negative emotion: "After viewing everything that happened, on a scale from 0 to 10, where 0 is no disturbance, and 10 is the worst disturbance you can imagine, at what level is your disturbance now?" Then, the therapist asks for negative and positive cognitions and rates the validation of cognition using a 1–7 scale. Body sensation (the location in the body where the client experiences the negative emotion when imagining the memory picture) is also identified.
4. Desensitization	During this stage, the client focuses on the visual image of painful scenes, negative cognitions, emotions, and body sensations, while bilateral stimulation occurs through eye movement, tactile, or auditory stimulation.
5. Installation	After phases 3 and 4, a strengthening of the positive cognition is sustainably installed by bilateral stimulation.
6. Body scan	The client focuses on the original memory or image, feels body sensations, and identifies the remaining negative body sensations. When necessary, it was reprocessed by applying more bilateral stimulation.
7. Closure	The client ends the session with a self-soothing exercise and discusses the session's experience.
8. Reevaluation	The clinician reviews the event to identify any remaining disturbance and evaluates different aspects of the memory to find any considerable materials.

Note. SUD = subjective unit of disturbance.

you define your body? What emotions, feelings, or sensations are generated by your body? How satisfied do you feel about your body? What defects do you perceive in your body? Examples of answers are included in case reports.

During the preparation phase, the clinician may inquire about positive experiences or moments in an individual's history where they were able to view themselves without their usual critical eye. If the individual cannot recall any instances, the clinician could prompt them to remember times when others have made positive comments about their appearance at any point in their life. The clinicians may also inquire about supportive relationships, specifically focusing on individuals who have shown the client unconditional love and care regardless of their physical appearance (loving eyes). The ideal figure is another positive resource that refers to a standard of beauty that makes individuals feel okay just the way they are.

In this research, to manage the distress of the participants during the session, the safe/calm place technique was used (Shapiro, 2018), and the positive resources of each participant were also strengthened with bilateral stimulation in the preparation phase for an adequate amount of time, depending on the participant's needs. Additionally, the participants were taught the butterfly hug technique (Artigas & Jarero, 2014) to help manage any disturbances that may arise between sessions and self-soothing.

During the assessment phase, the clinicians can target the "Rejected Self" as a treatment plan focus. The client perceives themselves through the rejected self when looking at their body in the mirror, while also being influenced by their ideal self. When the individual looks in the mirror, they see the rejected self, which represents the part of themselves that has been rejected in the past. The client does not see their real body; instead, they see the rejected self.

This perception is shaped by the difference between the client's real image and their ideal self. The client continually compares their real body with their ideal body as the real body is not the one they desire. This comparison leads to a mismatch between the rejected self and the ideal self-image. The rejected self distorts the client's body image, influenced by the negative comparisons made with their ideal self.

During the desensitization phase, when reprocessing begins, clients will make associations to traumatic and adverse life experiences throughout their lives as they target the rejected self identified in phases 2 and 3. The memories of these traumas maintain the dissociation of the rejected self in the inner world, making this protocol a useful tool for identification. Clinicians may utilize the standard EMDR protocol when traumas appear during reprocessing block and interrupt the flow of the rejected self protocol. These targets are then reprocessed independently with the standard EMDR protocol before continuing with the rejected self protocol to assess if image distortion persists and if the rejected self appears more integrated and processing flows smoothly once again. Additional processing of memories may be necessary as this protocol can uncover adverse life experiences related to the rejected part and the body. Successfully reprocessing traumatic and adverse life experiences typically results in clients no longer feeling rejection or shame but rather sorrow for the part of themselves they once rejected. This shift indicates that processing is occurring. Gradually, defenses begin to weaken, allowing space for other underlying emotions to emerge.

During the installation phase, the client has processed the sorrow for the rejected part of themselves, and the clinician may apply Jim Knipe's Loving Eyes Protocol (Knipe, 2016) to promote increased acceptance of this part and enhance integration. It must be clearly conveyed that the client and the rejected part are the same person. Once this point in the protocol has been reached, the client has undergone an important transformation and is on the path to integration.

The body scan phase is performed exactly as in the standard EMDR protocol. The only difference is that, as has been done throughout this protocol, the client returns to the image of the rejected self and pays attention to whether there is discomfort in any part of the body. The goal is to reprocess until the client feels comfortable with it and the subjective unit of disturbance (SUD) equals 0.

For closure, the clinicians may ask the client if it is okay to leave it as is, or if there is anything else they feel the part needs to hear or the client has to do. If everything is satisfactory, close the session by instructing the client to take note of any thoughts or feelings that arise in the coming days and assure them that the work will continue in the next session. Also during the reevaluation phase, when the client returns for the next session, clinicians may check to see if they still feel the rejected part of themselves, if any feeling of rejection remains, and if they believe the part has been integrated and the rejection processed. It may be necessary to continue working with the protocol over several sessions until the integration of the rejected self is complete (Seijo, 2018).

Theoretical Underpinnings of EMDR: The AIP Model

The AIP model, developed by EMDR's founder Francine Shapiro, serves as a theoretical framework for understanding how memories are processed in the brain and how traumatic experiences can lead to psychological distress (Hill, 2020). According to the AIP model, the brain is an information processing system naturally inclined toward adaptive functioning. Traumatic events may overwhelm this system, resulting in the incomplete processing of memories, particularly when they remain maladaptively stored. The model posits that unprocessed memories contribute to various psychological difficulties. Central to the AIP model is the idea that bilateral stimulation, such as eye movements, can aid in the processing of these memories, leading to resolution and adaptive integration of information. This theoretical foundation forms the basis for EMDR (Hill, 2020).

EMDR for OCD

EMDR therapy for OCD has received increasing attention in the past decade, with emerging evidence demonstrating its effectiveness in reducing OCD symptoms (Marsden et al., 2018; Talbot, 2021). The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision* (*DSM-5-TR*) classifies BDD in the obsessive-compulsive spectrum, with both BDD and OCD sharing essential psychopathologies such as obsessions/intrusive thoughts, compulsive behaviors, and cognitive distortions (e.g., catastrophic thinking, perfectionism, and overestimation of risk; APA, 2021). Additionally, BDD and

OCD both share a strong link with early childhood trauma (Destrée et al., 2021; Longobardi et al., 2022; Malcolm et al., 2021). Given the recent evidence demonstrating the effectiveness of EMDR for OCD and the clinical similarities between OCD and BDD, EMDR may present as an effective treatment for BDD. Despite this, it has gone largely unexamined in the empirical literature. Indeed, to our knowledge, only one small-scale study (n = 7) has assessed the effectiveness of EMDR in BDD, demonstrating that EMDR therapy led to a significant improvement in BDD symptoms, and in five patients this improvement was maintained (Brown et al., 1997). Considering the significant prevalence of BDD, the consequences of extreme cosmetic surgeries, impairment in the individual's social functioning (Bjornsson et al., 2022; Drüge et al., 2021; Laughter et al., 2023; Salari et al., 2022), and the high effect size of EMDR therapy in RCTs for other disorders (Shapiro, 2018), we aimed to investigate the efficacy of EMDR in BDD, including an extensive exploration of cognitive-emotional features of BDD, specifically the sensitivity to appearance-based rejection, body shame, and self-compassion. The current study builds upon the work of Brown et al. (1997), who conducted a case series study examining the effectiveness of EMDR in BDD patients. However, there are some differences between the current study and Brown and colleagues' research. In the current study, the rejected self protocol, which was recently introduced to work with BDD (Seijo, 2018), was utilized. In the current research, the research design, data collection, and analysis methods have been carefully selected and fully explained. This allows for the possibility of replicating the research experimentally with a larger sample size.

Materials and Methods

Participants

Thirty participants aged 20–38 were recruited to participate in our study following a public call across five psychotherapy clinics. All participants were evaluated based on the Yale-Brown Obsessive Compulsive Scale modified for Body Dysmorphic Disorder (BDD-YBOCS) questionnaire and a clinical interview based on the *DSM-5-TR* criteria (First et al., 2023). Resultantly, five patients were diagnosed with BDD. If the participants received any other psychotherapy during treatment sessions, were noncooperative or did not have treatment sessions, showed a high risk of suicide (Beck & Steer, 1991), or attended a cosmetic clinic or cosmetic surgery during treatment, they were excluded from the study. One of our five patients dropped out before the end of the study, meaning our final sample was composed of four female participants. A list of body image memories, negative memories that were related to one's body image, was obtained during the first treatment session. These memories were divided into three categories: the earliest, the most recent, and the worst. The earliest refers to the earliest memory (in terms of the time of occurrence) related to the body image the individual recalled. Recent refers to the last memory (in terms of the time of occurrence) that a person remembers, and the worst is the most painful memory that a person remembers. The BDD subtype of each participant was determined in the first session. In other words, each participant expressed concern about a specific part of their body, such as their skin, hair, nose, mouth, jaws, lips, abdomen, hips, chest, hands, legs, or genitals (see Table 2 for demographic information). All participants provided informed consent before entering into our study. The study was reviewed and approved by the Research Ethic Committee of the Bushehr University of Medical Sciences (reference: IR.BPUMS.REC.1402.069).

Measures

Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder. We used the 12-item BDD-YBOCS to measure the severity of BDD symptoms. The items assess a range of BDD psychopathology, including preoccupation with physical appearance, appearance-related obsessive-compulsive behaviors, insight into appearance beliefs, and avoidance due to BDD symptoms. Each item is rated from 0 to 4, and the total BDD severity score ranges from 0 to 48, with higher scores indicating higher symptom severity. The BDD-YBOCS was first developed by Phillips et al. (1997) and adapted from the YBOCS (Goodman et al., 1989). The BDD-YBOCS has demonstrated excellent interrater and test–retest reliability evidence, good convergent and divergent validity evidence, and high internal consistency for adults (Brito et al., 2015; Phillips et al., 1997, 2014).

Appearance-Based Rejection Sensitivity Scale. We used the 15-item Appearance-Based Rejection Sensitivity ScScale (Appearance-RS) to measure appearance-based rejection sensitivity (Park, 2007). Appearance-RS requires respondents to read 15

TABLE 2. Demographic Characteristics, Body Image Memories, and BDD Subtype

Descriptive characteristics	Case study 1	Case study 2	Case study 3	Case study 4
Gender	Female	Female	Female	Female
Age (years)	22	22	28	38
Education (years)	+12	+12	+12	+12
Body image memories (*n*)				
First/oldest	3	3	2	3
Worst	4	4	3	5
Recent one	3	3	2	3
BDD subtype				
Skin		✓	✓	
Hair				
Nose	✓	✓	✓	
Mouth				
Jaws				
Lips		✓	✓	
Abdomen	✓			✓
Hip				
Chest				✓
Hands				✓
Legs		✓		✓
Genitals				

Note. The symbol (✓) means the patient had a subtype. Education means completed years of formal education. BDD = body dysmorphic disorder; *n* = number.

hypothetical situations involving rejection by others based on appearance. Respondents then rate their anxiety about the situation and their expectations of rejection by others on a rating scale ranging from 1 to 6 for each of the 15 hypothetical situations. Higher scores indicate greater appearance-based rejection sensitivity. Appearance-RS has demonstrated high internal consistency (α = .90) and high test–retest reliability (r = .69) for 6–8 weeks (Park, 2007).

Body Image Shame Scale. We utilized the Body Image Shame Scale (BISS) to measure social shame related to body image (Duarte et al., 2015). The BISS measures externalized and internalized dimensions of body image-related shame and consists of 14 items scored on a 5-point Likert scale (0 = never; 4 = almost always). The BISS has demonstrated high construct reliability, good convergent and discriminant validity evidence (Duarte & Ferreira, 2022), and high internal consistency (α = .92; Duarte et al., 2015).

Self-Compassion Scale-Short Form. To measure self-compassion, we used the 12-item Self-Compassion Scale-Short Form (SCS-SF; Raes et al., 2011). This scale measures three bipolar components across six subscales: self-kindness/self-judgment, mindfulness/overidentification, and common humanity/isolation. The SCS-SF has demonstrated sound test–retest reliability evidence (r = .92) and internal consistency (α = .87; Raes et al., 2011).

EMDR Treatment

EMDR treatment followed the standard three-pronged protocol described in Shapiro's textbook (Shapiro, 2018). The EMDR Fidelity Rating Scale (EFRS; Maxfield et al., 2018) evaluates adherence to EMDR therapy's standard eight-phase treatment approach and three-pronged protocol. The use of EFRS in this study, which both the therapist and the supervisor fill to monitor fidelity in their treatment session, showed very high adherence and acceptable fidelity (95%).

For all four patients, 10 individual 90-minute EMDR sessions were held once per week. The rejected self protocol (Seijo, 2018) was utilized in the research, with the standard protocol being employed where necessary. The SUD was recorded for each target traumatic memory. When the SUD rating of a target memory reached 1 or 0, the memory was considered resolved.

Target Selection for EMDR Processing. All four participants were asked to write down past disturbing memories related to feelings of rejection, shame, and concern about their appearance. During the assessment phase, the clinicians can target the "Rejected Self" as a treatment plan focus. The client perceives themselves through the rejected self when looking at their body in the mirror, while also being influenced by their ideal self. When the individual looks in the mirror, they see the rejected self, which represents the part of themselves that has been rejected in the past. The client does not see their real body; instead, they see the rejected self. This perception is shaped by the difference between the client's real image and their ideal self. The client continually compares their real body with their ideal body as the real body is not the one they desire. This comparison leads to a mismatch between the rejected self and the ideal self-image. The rejected

self distorts the client's body image, influenced by the negative comparisons made with their ideal self.

All these memories and situations were targeted for EMDR processing. Only memories or situations with higher than 5 SUD were targeted for processing. Then, the future template was installed.

Design

We utilized a multiple-baseline, across-subjects design, with patients' start times randomized over 5 weeks. Those who did not start in week 1 were placed in one of the waiting periods of 2, 3, or 4 weeks after the baseline phase. All participants engaged in a 10-session treatment phase and two follow-up sessions at 1 and 3 months, respectively. BDD symptoms, body shame, appearance-based rejection sensitivity, and self-compassion were all measured three times weekly each before the start of treatment to establish reliable baseline measures of psychopathology. These variables were all measured again at the start of each treatment session. The assessment plan is summarized in Table 3.

We used the Reliable Change Index (RCI) to assess clinical significance. RCI is a psychometric criterion used to evaluate whether the change over time of an individual score (i.e., the difference score between two measurements in time) is considered statistically significant (Jacobson & Truax, 1991). The RCI was calculated using the following formula: RCI = (PostScore − PreScore)/*SEM*, where *SEM* reflects the standard error of the difference of the test. An RCI greater than 1.96 indicates statistical significance (Jacobson & Truax, 1991). Based on this index, a 50% reduction in symptoms is considered a treatment success, scores between 25% and 49% a slight improvement, and a reduction in symptom scores below 25% a treatment failure (Poppen, 1989).

Results

Case Study 1: Zahra

Zahra was a 22-year-old, single, female undergraduate student. She had complained of anxiety and dissatisfaction with her overall appearance, especially her facial features. Utilizing the Structured Clinical Interview for *DSM-5-TR* (SCID) interview, she was diagnosed with BDD. Since childhood, Zahra reported being ridiculed by peers based on her physical appearance and had difficulties forming relationships with family and friends throughout her life. She reported that she was shy and generally avoided looking at others directly. She also reported constantly comparing her appearance with others on social media networks. Due to this constant comparison, Zahra avoids posting photos of herself on social media and looking at her reflection in the mirror. When asked "How much satisfaction do you feel in relation to your body?" she replied: "I wish I could change some features in my face." In addition, for more preparation and creating positive resources, Zahra remembered a cousin who saw Zahra as a strong and flawless person. Thinking of her cousin helped evoke positive emotions throughout the process. To start the assessment, Zahra was asked to take a photo of herself and then look at it during therapy session while sharing her thoughts and emotions. Target memories for treatment were containing experiences of social rejection, especially when her peers made fun of her appearance. These situations were related to negative core beliefs (cognitions) such as "I am not desirable" and "I am not lovable." These cognitions persisted in present-day relationships and often drove avoidance of social situations.

After engaging with EMDR, Zahra no longer met the diagnostic criteria for BDD. She reported behavioral improvements such as posting photos of her face on social media and engaging more in social activity with peers. Zahra also reported more adaptive thoughts such as "I have other things to do besides being preoccupied with my appearance." These changes remained at follow-up. Please note that quantitative measures of treatment effect for all four cases are reported in the next section.

Case Study 2: Lena

Lena was a 22-year-old, single, female graduate student reporting dissatisfaction with the color of her skin (she perceived her skin color as too dark) and the shape and size of her nose (she thought she had a big nose). An SCID interview confirmed a diagnosis of BDD. As a child, Lena was teased because of her skin color. She avoided taking pictures of herself and viewing pictures of herself that had been taken by someone else. Lena reported levels of anxiety and rumination about other people's opinions of her physical appearance. Lena was prescribed sertraline to manage her anxiety, but discontinued her medication 7 months before starting EMDR treatment. Lena could not engage in social situations without wearing makeup, and the prospect of leaving the house without makeup caused significant distress. In response to the question "What defects

TABLE 3. Assessment Plan

	B1	B2	B3	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	PT	F1	F2
Clinical interview	✓													✓		
BDD-YBOCS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
A-RS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SCS-SF	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BISS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Note. The symbol (✓) means the test has been done. A-RS = Appearance-Based Rejection Sensitivity Scale; B1 = baseline 1; B2 = baseline 2; B3 = baseline 3; BDD-YBOCS = Yale-Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder; BISS = Body Image Shame Scale; F1 = follow-up 1; F2 = follow-up 2; PT = posttreatment; SCS-SF = Self-Compassion Scale-Short Form; T1 = treatment 1; T2 = treatment 2; T3 = treatment 3; T4 = treatment 4; T5 = treatment 5; T6 = treatment 6; T7 = treatment 7; T8 = treatment 8; T9 = treatment 9;
T10 = treatment 10.

do you perceive in your body?" She replied: "I do not like my skin color." During the session, the therapist asked Lena to look at herself in the mirror and pay attention to her nose and skin color. At the same time, the therapist encouraged her to express the emotions she was experiencing and any related memories that came to her mind, to be utilized as the starting target point of the treatment. Before that, the therapist prompted Lena to reflect on moments when she felt positive about herself.

Target memories for EMDR treatment included childhood experiences of negative evaluation of Lena's skin color. These memories were related to the negative cognitions of "I am worthless" and "I do not deserve to be loved."

At post-EMDR treatment, Lena no longer met the diagnostic criteria for BDD. Additionally, she reported a reprioritization in evaluating her characteristics and focus, stating "I think I should learn more about my personality traits; they are much more important than appearance."

Case Study 3: Parisa

Parisa was a 28-year-old, single, female undergraduate university student. She is now a vocal coach. Her central concern was dissatisfaction with her body shape. Utilizing the SCID (First et al., 2023) interview, she was diagnosed with BDD. Parisa reported significant adverse childhood experiences, including the divorce of her parents when she was young, gaining weight after this experience, and then bullying and social exclusion due to her body shape and weight. Resultantly, Parisa reported high levels of anxiety in social situations, specifically related to the potential of others negatively evaluating her body shape. Parisa reported that in the past she had engaged in substance use to avoid the dissatisfaction related to her body shape. When asked how she would define her body, she responded by saying that she sees herself as being very fat. However, sometimes Parisa found a safe place in her mind that felt positive, which was the moments she spent with her grandfather. The therapist asked Parisa to take a picture of her body, look at it during her session, and express her emotions, along with any memories associated with it. At the beginning of the study, she reported feeling ashamed and disgusted with her body. Notably, she would contract her body involuntarily when in social situations and reported significant preoccupation with thoughts about what other people thought about her appearance. She also reported that her symptoms had significantly negatively impacted her functioning at work, which was dependent on social communication.

Parisa's target memories in EMDR treatment centrally included being ridiculed by her primary school classmates for her body and being rejected by her father. These memories were related to the core beliefs (cognitions) such as "I am not respectable," "I am guilty," and "I am dirty." Post-EMDR treatment, Parisa no longer met the diagnostic criteria for BDD, and she reported an improvement in work functioning.

Case Study 4: Mona

Mona was a 38-year-old, married woman with a master's degree whose central concern was dissatisfaction with her face, skin wrinkles, stomach, and the shape of her knees. The initial SCID interview confirmed a diagnosis of BDD. Mona reported that since she was a child, others have compared her appearance with her sisters and made her

feel unattractive, but now the only person who complimented her and made her feel positive was her colleague. While talking, Mona had intrusive thoughts about her face being ugly. She believed her lips and eyes were very wrinkled and unattractive. When asked "What defects do you perceive in your body" she responded: "I have a big belly and I think my face is full of wrinkles." She was asked to look at her face in the mirror, paying attention to her emotions and associated thoughts. These emotions and cognitions became the target of reprocessing.

Mona also reported an unwillingness to go anywhere without wearing a disposable face mask after the COVID-19 pandemic as she believed that the mask would cover her perceived facial defects. Her knees were slightly deviated from birth, but her concern about this deviation was not proportionate to its actual extent. She also had relationship problems with his husband, and she believed these problems were related to her low self-esteem and sense of being unattractive.

Mona's target memories in EMDR treatment included the first time her aunt pointed out that she had some deficit in her knee and also the memories related to appearance comparison with sisters. At the post-EMDR treatment evaluation, Mona still reported some concerns about her knee, but showed promising behavioral improvements such as going out without a mask. Mona also reported improvements in her relationship with her husband.

Quantitative Indicators of Treatment Effectiveness for All Four Cases

BDD Symptoms. Based on the total recovery percentage across all four cases, BDD symptoms were reduced by 60.54% in the treatment phase (Table 4). This finding indicated clinical significance in treatment outcomes and success (i.e., improvement greater than 50%). In the follow-up phase, the recovery percentage was 46.98%, indicating a slight improvement (between 25% and 49%; Poppen, 1989).

The highest recovery percentage of BDD was related to case 2 (Lena) in the treatment phase (74.03%) and follow-up (58.16%), while the lowest recovery percentage in the treatment phase was related to case 4 (Mona; 44.82%). In the follow-up phase, the lowest recovery percentage was related to case 3 (Parisa; 28.40%). Concerning BDD symptoms, the treatment phase RCI for BDD of cases 1, 2, 3, and 4 was 12.67, 12.4, 7.19, and 6.10, respectively, indicating significant levels of reduction ($p < .05$) across EMDR treatment (see Table 4). Analogous results were found for follow-up scores, with cases 1, 2, 3, and 4 returning RCI scores of 10.09, 9.46, 3.91, and 6.10, respectively ($p < .05$).

Appearance-Based Rejection Sensitivity. The total recovery percentage across all four cases was 36.56% in the treatment phase, showing a slight improvement (between 25% and 49%). In the follow-up phase, it was 30.65%, showing a slight improvement (between 25% and 49%; Poppen, 1989).

Case 2 (Lena) returned the highest recovery percentage of appearance-based rejection sensitivity (65.55%) and follow-up (57.72%), while lowest recovery percentage in the treatment phase (21.82%) and follow-up (17.88%) was related to case 3 (Parisa; Table 5). The RCI for appearance-based rejection sensitivity in the treatment phase was 5.26, 11.31, 3.24, and 3.81 for cases 1, 2, 3, and 4, respectively. Moreover, in the follow-up phase, it was 4.55, 9.96, 2.64, and 2.73 for cases 1, 2, 3, and 4, respectively, indicating a significant reduction in appearance-based rejection sensitivity across all four patients ($p < .05$).

Body Shame. The results showed that the total recovery percentage for body shame was 54.82% in the treatment phase, showing clinical significance in treatment outcomes and success (over 50%). In the follow-up phase, 48.58% showed slight improvement (between 25% and 49%; Poppen, 1989).

The highest recovery percentage of body shame was related to case 2 (Lena) in the treatment phase (68.75%) and follow-up (61.45%), while case 4 (Mona) demonstrated the lowest recovery percentage in the treatment phase (41.17%) and follow-up (33.82%; Table 6). For cases 1, 2, 3, and 4, the RCI for body shame in the treatment phase was 89.5, 99.7, 51.4, and 38.3, respectively. Moreover, in the follow-up phase, the RCI was 16.5, 14.7, 27.4, and 78.2, respectively, indicating a statistically significant reduction in body shame ($p < .05$).

Self-Compassion. The results showed that the total recovery percentage for self-compassion was 51.79% in the treatment phase, showing clinical significance in treatment outcomes and success (over 50%). In the follow-up phase, it was 41.77%, showing a slight improvement (between 25% and 49%; Poppen, 1989).

The highest recovery percentage of self-compassion was related to case 2 (Lena) in the treatment phase (95.65%) and follow-up (71.73%), while the lowest recovery percentage in the treatment phase (17.01%)

TABLE 4. Efficacy of EMDR in BDD Symptoms

Assessment phases	Case study			
	1	2	3	4
Baseline, *M* (*SD*)	37.33 (0.57)	34.66 (0.57)	29.33 (0.57)	29.00 (1.00)
Treatment, *M* (*SD*)	23.40 (6.99)	21.22 (8.82)	21.50 (5.58)	25.40 (6.00)
Posttreatment (score nr)	11	9	14	16
Treatment RCI	12.67	12.67	7.19	6.10
Treatment RP (%)	71.05	74.03	52.26	44.82
Total treatment RP	60.54			
Follow-up, *M* (*SD*)	16.50 (2.12)	14.50 (3.53)	21.00 (5.65)	19.00 (1.41)
Follow-up RCI	10.09	9.46	3.91	6.10
Follow-up RP (%)	56.57	58.16	28.40	44.82
Total follow-up RP (%)	46.98			

Note. BDD = body dysmorphic disorder; *M* = mean; RCI = Reliable Change Index; RP = recovery percentage; score nr = score number; *SD* = standard deviation.

TABLE 5. Efficacy of EMDR in Appearance-Based Rejection Sensitivity

Assessment phases	Case study			
	1	2	3	4
Baseline, *M* (*SD*)	149.66 (0.57)	159.66 (0.57)	137.00 (1.00)	134.33 (0.57)
Treatment, *M* (*SD*)	128.40 (15.18)	87.50 (47.48)	127.80 (10.26)	115.80 (12.91)
Posttreatment (score nr)	101	55	107	99
Treatment RCI	5.26	11.31	3.24	3.81
Treatment RP (%)	32.51	65.55	21.89	26.30
Total treatment RP	36.56			
Follow-up, *M* (*SD*)	107.50 (3.53)	67.50 (9.19)	112.50 (3.53)	109.00 (4.24)
Follow-up RCI	4.55	9.96	2.64	2.73
Follow-up RP (%)	28.17	57.72	17.88	18.85
Total follow-up RP (%)	30.65			

Note. *M* = mean; RCI = Reliable Change Index; RP = recovery percentage; score nr = score number; *SD* = standard deviation.

TABLE 6. Efficacy of EMDR in Body Shame

Assessment phases	Case study			
	1	2	3	4
Baseline, *M* (*SD*)	38.33 (0.57)	48.00 (0.00)	40.66 (0.57)	34.00 (0.00)
Treatment, *M* (*SD*)	20.50 (6.58)	23.70 (14.27)	32.30 (5.37)	27.70 (3.49)
Posttreatment (score nr)	14	15	22	20
Treatment RCI	5.89	7.99	4.51	3.38
Treatment RP (%)	63.47	68.75	45.89	41.17
Total treatment RP	54.82			
Follow-up, *M* (*SD*)	17.00 (1.41)	18.50 (0.70)	23.00 (1.41)	22.50 (0.70)
Follow-up RCI	5.16	7.14	4.27	2.78
Follow-up RP (%)	55.64	61.45	43.43	33.82
Total follow-up RP (%)	48.58			

Note. *M* = mean; RCI = Reliable Change Index; RP = recovery percentage; score nr = score number; *SD* = standard deviation.

TABLE 7. Efficacy of EMDR in Self-Compassion

Assessment phases	Case study			
	1	2	3	4
Baseline, *M* (*SD*)	38.00 (0.00)	23.00 (0.00)	21.33 (0.57)	33.33 (0.57)
Treatment, *M* (*SD*)	38.20 (5.09)	39.20 (7.58)	32.00 (3.94)	33.50 (3.62)
Posttreatment (score nr)	46	45	37	39
Treatment RCI	3.10	6.83	4.86	1.76
Treatment RP (%)	21.05	95.65	73.46	17.01
Total treatment RP	51.79			
Follow-up, *M* (*SD*)	44.00 (1.41)	39.50 (0.70)	35.00 (0.00)	38.50 (0.70)
Follow-up RCI	1.86	5.12	4.24	1.60
Follow-up RP (%)	15.78	71.73	64.08	15.51
Total follow-up RP (%)	41.77			

Note. *M* = mean; RCI = Reliable Change Index; RP = recovery percentage; score nr = score number; *SD* = standard deviation.

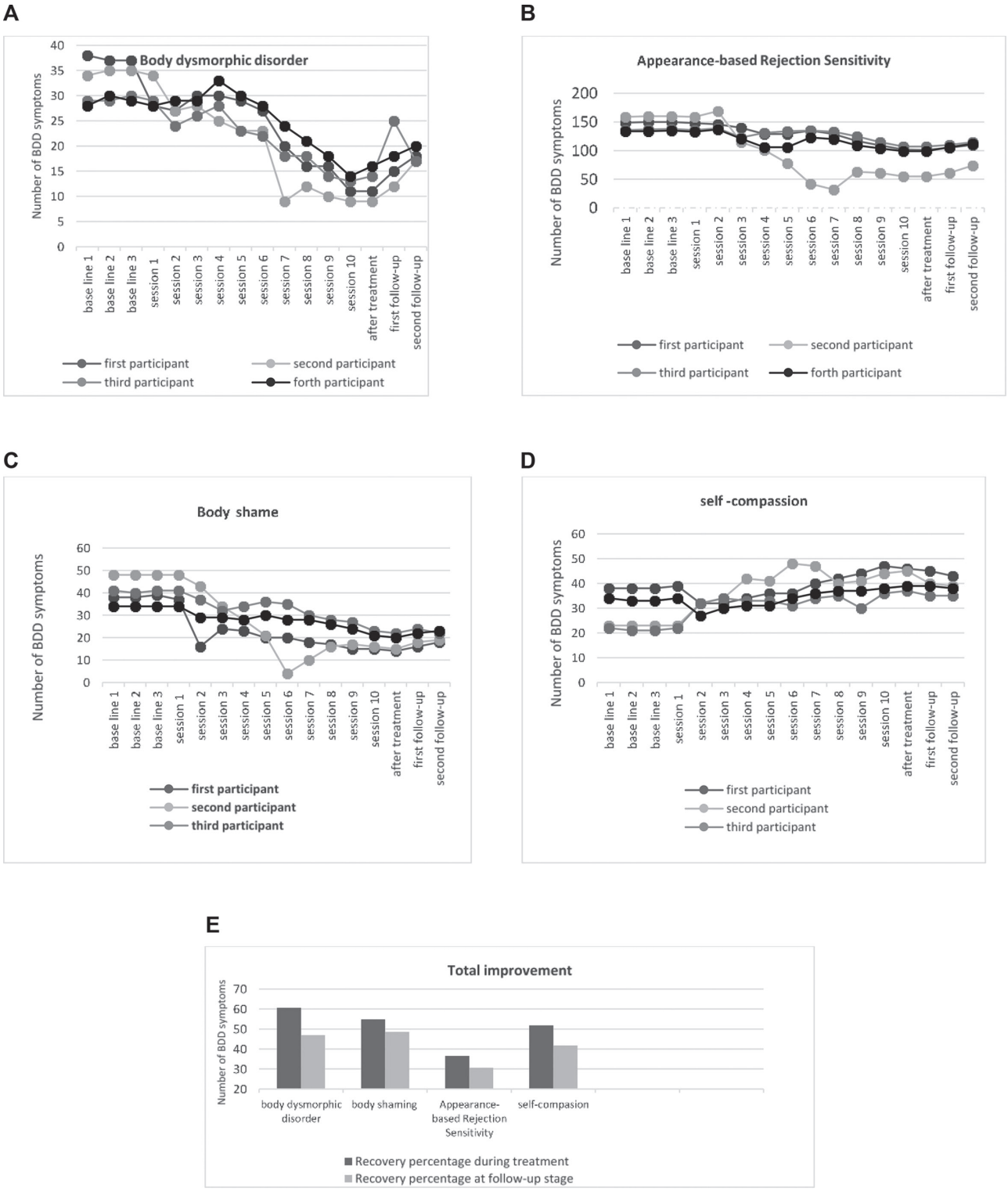

Figure 1. Changes in outcome variables over 10 sessions of EMDR treatment: (A) change in BDD symptoms, (B) change in appearance-based rejection, (C) change in body shame, (D) change in self-compassion, and (E) summary of total changes across all four outcome measures. BDD = body dysmorphic disorder.

and follow-up (15.51%) was related to case 4 (Mona; Table 7). The RCI for self-compassion in the treatment phase was 3.10, 6.83, 4.86, and 1.76 for cases 1, 2, 3, and 4, respectively. Moreover, in the follow-up phase, it was 1.86, 5.12, 4.24, and 1.76 for cases 1, 2, 3, and 4, respectively, indicating a significant increase in self-compassion across all four cases ($p < .05$). Figure 1 summarizes the changes in BDD symptoms and the cognitive-emotional variables across EMDR treatment and follow-up.

Discussion

This study is among the first studies to examine the effectiveness of EMDR in treating individuals with BDD. Overall, our results were promising, showing that EMDR significantly reduced BDD symptoms across all four cases. Notably, symptoms were reduced so that all patients no longer met the *DSM-5-TR* BDD criteria after treatment. This result was consistent with that found by Brown et al. (1997) and helped add to the evidence that EMDR is a viable and effective treatment for BDD.

As the AIP model of EMDR explains, past unprocessed traumatic events often play a role in psychological symptoms (Shapiro & Forrest, 2016). The role of trauma in the etiology of BDD has been explored, and it has been noted that childhood maltreatment and traumatic experiences may potentially play a contributory role to the development of BDD (Didie et al., 2006; Malcolm et al., 2021; Neziroglu et al., 2006; Valderrama et al., 2020). It seems that working with these adverse childhood experiences (especially those related to appearance and body image) in EMDR therapy sessions could help the individual with BDD. The trauma trigger(s) at history taking, which precipitated the BDD symptoms, seems to be the best target for EMDR therapy sessions. Working with these experiences during this study helped reduce emotional distress and BDD symptoms overall. Working with the current triggers of BDD symptoms was the second step the therapist took in this study. Then, working with desirable action in the same situation for the future helps the participant have a future template and seems to make the EMDR effectiveness more constant.

We also found that EMDR significantly reduced related cognitive-emotional symptoms. All participants' appearance-based rejection sensitivity and body shame showed a significant reduction after EMDR, with these changes maintained mainly at follow-up. This is not only a significant finding for those with BDD, but also adds to the evidence on the effectiveness of EMDR in treating body image-related disorders such as eating disorders (for a review of EMDR for eating disorders, see Balbo et al., 2017). The current research findings on the efficacy of EMDR in appearance-based sensitivity align with the findings of Huang and Pfuetze (2021) regarding the effectiveness of this treatment in the social dimensions of the psychological structure of a person. Based on the AIP model, the processing of stored information leads to the adaptive storage of inadaptive information. In this research, we achieved this goal by processing rejection memories.

Exploring the effectiveness of EMDR in addressing body shame among individuals with BDD, as aligned with the insights from Huang and Pfuetze (2021), brings attention to the pivotal role of the amygdala as the emotional epicenter. Dysregulation in the AIP system, as proposed by the model, manifests in the dominance of the amygdala, contributing to deficits in emotional processing. EMDR, however, asserts its influence by prioritizing cognitive processing over emotional processing in the amygdala, facilitating AIP. This shift leads to the amelioration of disorder symptoms, such as anxiety and depression, and a reduction in negative emotions (Shapiro, 2018). Grounded in the AIP model, EMDR operates through memory networks. During EMDR processing, clients are directed to concentrate on a designated target while holding the associated negative cognition, emotions, and body sensations in their minds, engaging in simultaneous eye movements. This target could be a specific memory, a dream image, a person, an actual or imagined event, or a facet of experiences like a body sensation or thought. The targeted picture is surrounded by a network of related experiences. Any undue emotional reactions, such as anger or anxiety, stem from these associations, which may involve specific life experiences or relationships. The processing of these targets and their associated memories is integral to therapeutic resolution, promoting the adaptive reprocessing of information (Shapiro, 2018). In the present investigation, the targeted images encompassed adverse appearance-related memories, with the primary emotional focus being on shame. The systematic processing of these memories throughout treatment sessions markedly diminished feelings of shame and related disturbances.

EMDR was also successful in enhancing self-compassion in all four patients. This result suggests that all patients were able to be kinder and

more nonjudgmental toward themselves, particularly concerning their bodies, after engaging with EMDR therapy. Enhancement of self-compassion may have, in part, stemmed from facing and overcoming challenging states during EMDR therapy itself. Whenever patients face a challenging state during an EMDR session, self-compassion may have been utilized as a mastery resource (Shapiro, 2018), thus allowing for further development and significant improvement of self-compassion.

Limitations of our study are noted. First, our study only examined the effectiveness of EMDR in four cases and did not include a control condition. Larger scale RCTs are required to provide more generalizable evidence on the effectiveness of EMDR in BDD. Second, our study did not include any male patients. This may further limit the generalizability of our results due to notable sex differences in BDD presentations (Malcolm et al., 2021).

Despite these limitations, the findings of this study are highly encouraging and provide one of the first accounts in the academic literature evidencing that EMDR therapy may be an effective treatment for BDD. All four cases experienced significant reductions in BDD symptoms and improvements in associated cognitive-emotional symptoms. Future studies should aim to replicate our results with more extensive and more diverse samples of women and men with BDD. It is also suggested to investigate the effectiveness of EMDR in ego-syntonic symptoms in BDD.

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