Development of the body image concern inventory

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Abstract

Development of the Body Image Concern Inventory (BICI), a measure designed to assess dysmorphic concern, is described. A panel of expert raters supported the construct validity of the measure, and four college student samples (Ns = 184, 200, 56, 40) supported the internal consistency of the BICI. In addition, in studies 1 and 3, concurrent validity was established through comparison of the BICI to extant self-report and interview measures of dysmorphic symptomatology. Convergent validity patterns were assessed through comparison with measures of obsessive–compulsive and eating disorder symptomatology in studies 2 and 4. Finally, the results of study 4 supported that the BICI discriminated individuals with a diagnosis of Body Dysmorphic Disorder or bulimia (disorders that frequently involve high levels of dysmorphic concern) from those with subclinical symptoms. Results suggest that the BICI is a reliable, valid, and user-friendly tool for assessing dysmorphic concern, with utility in both research and clinical settings.

Keywords: Dysmorphic concern; Body dysmorphic disorder; Assessment; Eating disorders

1. Introduction

Dysmorphic concern includes intense concern about, and preoccupation with, a perceived defect in appearance, excessive checking or camouflaging of the defect, social avoidance, and reassurance seeking. Individuals with body dysmorphic disorder, defined in the DSM-IV as a
preoccupation with an imagined or exaggerated defect in appearance that leads to distress or impairment in functioning, often have very high levels of dysmorphic concern (American Psychiatric Association, 1994; Phillips, 1991). Indeed, Phillips, McElroy, Keck, Pope, and Hudson (1993) found high levels of dysmorphic concern in a sample of individuals with Body Dysmorphic Disorder (BDD). Seventy-three percent engaged in excessive mirror checking, 63% camouflaged their defect, and 97% avoided social or occupational activities due to their concern about their appearance.

Dysmorphic concern also appears common among individuals with eating disorder symptomatology (Jolanta & Tomasz, 2000; Rosen & Ramirez, 1998). Looking at these symptoms among individuals with clinical levels of eating disordered symptomatology, in a study of individuals with bulimia or anorexia, Rosen and Ramirez (1998) found very high levels of these concerns—including appearance dissatisfaction, checking behavior, and camouflaging behaviors. In fact, they found that individuals with eating disorders had levels of dysmorphic concern that were not reliably different from individuals with body dysmorphic disorder. Similarly, Reas, Whisenhunt, Netemeyer, and Williamson (2002) found that individuals with eating disorders engaged in significantly more body checking behaviors than college women without eating disorders.

Dysmorphic concern may be related to obsessive–compulsive symptomatology as well. First, these concerns are clearly obsessional in nature and the behaviors (e.g., checking of the defect, camouflaging behavior) are often repetitive and compulsive (McKay, Neziroglu, & Yaryura-Tobias, 1997). The high rates of comorbidity between BDD and OCD similarly support a relationship between these two areas of symptomatology (Altamura, Paluello, Mundo, Medda, & Mannu, 2001; Bienvenu et al., 2000; Hardy & Cotterill, 1982; McKay et al., 1997; Phillips et al., 1993; Phillips, Gunderson, Mallya, McElroy, & Carter, 1998; Simeon, Hollander, Stein, Cohen, & Aronowitz, 1995; Solyom, DiNicola, Phil, Sookman, & Luchins, 1985).

1.1. Assessment measures for dysmorphic concern

Unfortunately, the study of dysmorphic concern has received little research attention. One reason for this may be the lack of solid psychometric instruments to assess this symptomatology, including self-report measures. Looking at extant self-report measures, a modified version of an interview measure, the Body Dysmorphic Disorder Examination-Self-Report (BDDE-SR; Rosen & Reiter, 1996, 1994) has been developed. While possessing good psychometric properties, this measure is somewhat time-consuming to complete. Another shortcoming of this measure is that it asks participants to answer Likert items regarding the part of their appearance with which they are most dissatisfied, which does not take into account the multiple appearance concerns that individuals with dysmorphic concerns often report (Phillips, 1996; Phillips & Crino, 2001; Phillips et al., 1993).

There are two additional self-report measures that show promise in assessing body dysmorphic symptomatology and dysmorphic concern. The first is the Dymorphic Concern Questionnaire (Jorgensen, Castle, Roberts, & Groth-Marnat, 2001; Oosthuizen, Castle, & Lambert, 1998). This six-item measure of dysmorphic concern was developed utilizing psychiatric inpatients with psychotic and mood disorders. Results support the internal consistency and convergent validity of this measure in this population. While these results are encouraging, the measure needs to be validated in other populations, particularly if it is to be used in large-scale studies in non-clinical
populations. The second measure is the Body Dysmorphic Disorder Questionnaire. This measure consists of a series of yes/no questions focused on the diagnostic criteria of BDD (Phillips, 1996). The author reports that this measure has excellent sensitivity and specificity regarding a diagnosis of BDD. While this measure appears useful for diagnostic purposes, it does not comprehensively assess dysmorphic concern.

Finally, extant measures of eating disordered and obsessive–compulsive symptoms do not comprehensively assess dysmorphic concern. Some measures tap one aspect of dysmorphic concern such as body dissatisfaction, checking behaviors, or avoidance but do not comprehensively assess this symptomatology (e.g., Fairburn & Cooper, 1993; Garner, Olmstead, & Polivy, 1983; Mazzeo, 1999; Mazure, Halmi, Sunday, Romano, & Einhorn, 1994; Reas et al., 2002; Rosen, Srebnik, Saltzberg, & Wendt, 1991). In addition, these measures tend to focus on dissatisfaction and checking in relation to weight and shape concerns and eating behaviors, and thus, may not capture the symptomatology of individuals whose concerns center around other aspects of their appearance (e.g., Fairburn & Cooper, 1993; Garner et al., 1983; Mazzeo, 1999; Reas et al., 2002; Rosen et al., 1991). Importantly, these measures, in particular, the Body Image Avoidance Questionnaire, may not make the connection between the checking or avoidance behavior and dissatisfaction with appearance; i.e., they do not specify in the measure that these behaviors are done in response to dissatisfaction with appearance (Rosen et al., 1991). Finally, extant measures of obsessive–compulsive symptoms do not focus on checking behaviors specifically related to one’s appearance and, similarly, do not assess other aspects of dysmorphic concern (e.g., Foa et al., 2002; Freund, Steketee, & Foa, 1987; Goodman et al., 1989; Hodgson & Rachman, 1977; Kaplan, 1994; Sanavio, 1988).

1.2. Present studies

The goal of the present studies was to develop a brief self-report measure of dysmorphic concern, the Body Image Concern Inventory (BICI) that would be useful as a quick, comprehensive measure in research and clinical settings. This measure could have application to the study of dysmorphic concern in such disorders as body dysmorphic disorder and eating disorders, as well as the relations among symptom patterns at the clinical and subclinical level. Four studies of undergraduates at two southeastern universities were conducted to assess the internal consistency and concurrent validity of the BICI, as well as to assess patterns of convergent validity. Study 1 was designed to assess the internal consistency as well as initial concurrent validity of the BICI through comparison with an extant self-report measure of BDD and dysmorphic concern. Study 2 was designed to assess patterns of convergent validity of the BICI through comparison with two related areas of symptomatology, obsessive–compulsive and eating disordered symptoms. The factor structure of the BICI was also explored to more fully establish the internal consistency of the measure. In study 3, the concurrent validity of the BICI was further established through comparison with an interview measure of body dysmorphic symptomatology. The goal of the final study was to assess the validity of the BICI among individuals with disorders that often have elevated levels of dysmorphic concern, as well as to assess the ability of the BICI to differentiate individuals with clinical levels of dysmorphic concern (i.e., those with a current diagnosis of an eating disorder or BDD) from those with subclinical levels of symptomatology.
1.3. Questionnaire construction and content validation

Twenty-five potential items were selected by the authors based on a review of the case study literature of body dysmorphic symptomatology and previous instruments designed to assess dysmorphic concern (Phillips, 1991, 1996; Phillips et al., 1997; Rosen & Reiter, 1996). Several of the items were designed to tap dissatisfaction with, and concern about, appearance. Items assessing for checking and camouflaging behavior, reassurance seeking, social concerns and avoidance related to appearance were also included. For each item, respondents were asked to rate how often they had the described feeling or performed the described behavior on a Likert scale anchored by 1 = “never” and 5 = “always”.

For these initial studies of the BICI, undergraduate samples were utilized. Use of undergraduates seemed appropriate given suggestive evidence that disorders characterized by high levels of dysmorphic concern may have an elevated prevalence in this population. For example, studies of college students have found a prevalence of BDD from 4% to 5% (Bohne, Keuthen, Wilhelm, Deckersback, & Jenike, 2002; Bohne et al., 2002; Cansever, Uzun, Doenmez, & Ozsahin, 2003). Numerous studies have also found high prevalence rates of eating disorders among college students, with prevalence rates for bulimia ranging from 2.2% to 5.1% of women (Heatherton, Nichols, Mahamed, & Keel, 1995; Mintz & Betz, 1988; Pyle, Halvorson, Neuman, & Mitchell, 1986; Pyle, Neuman, Halvorson, & Mitchell, 1991; Striegel-Moore, Silberstein, Frensch, & Rodin, 1989). In addition, one study found that 1.2% of college women had a weight that was clearly in the anorexic range and another 14% had a weight that was suggestive of anorexia (Mintz & Betz, 1988).

The questionnaire was initially piloted on a convenience sample of 40 undergraduates at a medium-sized southeastern university who were approached in their dorm rooms. Five items with item-total correlations below 0.40 were subsequently eliminated. The 20 remaining items were then administered to a separate convenience sample of 70 undergraduates at this same university who were similarly approached in their dorm rooms. In this sample, the items possessed item-total correlations ranging from 0.46 to 0.83, with a mean of 0.70.

Next, to assess the content validity of these items, six experts who had published research on body dysmorphic symptomatology were asked to rate the 20 items on a Likert scale (anchored by 1 = “not at all” and 5 = “completely”) in terms of their relevance to and representativeness of this area of symptomatology. In general, expert ratings of the items were quite high; the mean ratings for relevance and representativeness were both 4.4. However, one item received both relevance and representativeness ratings below 3.5 (with no ratings of 5); consequently, it was removed from the scale. The 19 remaining items constituted the BICI examined in the present series of studies.

2. Study 1: internal consistency and preliminary concurrent validity

The goal of study 1 was to establish the concurrent validity of the BICI through comparison with an extant self-report measure of BDD and dysmorphic concern, the BDDE-SR, as well as to determine the internal consistency of the BICI.
2.1. Method

One hundred and eighty-four undergraduates at a medium-sized southeastern university participated for extra course credit. The majority of these participants were women (approximately 80%). These participants were tested in small groups of no more than 20, with the BICI and BDDE-SR administered in counterbalanced order.

The BDDE-SR, a 30-item self-report measure consisting of Likert-format items designed to assess for the presence of body dysmorphic disorder and its associated symptoms, has been found to possess good test–retest reliability and internal consistency (Rosen & Reiter, 1994). In the present study, the alpha of the BDDE-SR was 0.94. Supporting the validity of the BDDE-SR, it has been found to correlate moderately to highly with several other questionnaires related to appearance dissatisfaction (Rosen & Reiter, 1994).

2.2. Results and discussion

Scores on the BICI encompassed the entire possible range (19–95, \( M = 50.4, SD = 14.2 \)). Results supported the internal consistency of the BICI, with a Cronbach’s alpha of 0.93 and item-total correlations from 0.32 to 0.73, with a mean of 0.62 (see Table 1). While items 15 and 19 did not correlate above 0.4 with the total in this sample, these items were found to perform adequately in all other samples, and were given acceptable ratings by the panel of experts; thus, they were retained in the final version of the questionnaire. Results also provided preliminary validity evidence for the BICI. The concurrent validity between the BICI and the BDDE-SR, after removing seven overlapping items from both scales (items 1, 7, 10, 11, 12, 16, and 19 from the BICI) was high, \( r = 0.83, p < 0.01 \).

3. Study 2: convergent validity and exploratory factor analysis

The goal of study 2 was to assess the convergent validity of the BICI through comparison with measures of obsessive–compulsive and eating disordered symptoms. The factor structure of the BICI was also explored.

3.1. Method

Two hundred undergraduates at this same medium-sized university participated in small groups for extra course credit. The majority of participants were women (approximately 80%). Participants were administered the BICI as well as self-report measures of obsessive–compulsive and eating disordered symptomatology in counterbalanced order.

Participants were administered a modified version of the Padua inventory, a 60-item self-report measure designed to assess obsessive and compulsive symptoms (Sanavio, 1988). Previous research has shown that this is a reliable and internally consistent measure. In addition, supporting the convergent validity of the Padua, scores on this measure have been found to correlate highly with other measures of obsessive–compulsive symptomatology (Sanavio, 1988). For the present study, on the recommendation of the local IRB, six items (items 46, 47, 49–51,
and 56) were removed from the Padua inventory that contained violent content or content related to self-harming behaviors. The alpha of this modified version was high (0.96). Scores on three of the Padua subscales were calculated: control over mental activities, contamination, and checking (alphas = 0.91, 0.89, and 0.89, respectively).

Participants were also administered the Drive For Thinness and Bulimia subscales of the Eating Disorder Inventory (EDI). These two subscales are designed to assess anorectic and bulimic behaviors (Garner et al., 1983). The EDI has been found to be an internally consistent measure. Supporting the convergent validity of this measure, the Bulimia and Drive For Thinness subscales correlate moderately high with measures of body dissatisfaction and dietary restraint. Additionally, using scores on these two subscales as a criterion, 88% of anorexic and non-anorexic women were correctly classified (Garner et al., 1983). The abbreviated EDI used in the present study had an overall alpha of 0.89 (Drive For Thinness, $\alpha = 0.86$, Bulimia, $\alpha = 0.85$).

### 3.2. Results and discussion

Supporting the convergent validity of the BICI, it correlated moderately highly with the eating disorder measure, the abbreviated EDI ($r = 0.62$, $p < 0.01$), as well as with each of its subscales (Drive For Thinness, $r = 0.58$; Bulimia, $r = 0.51$; both $p$'s $< 0.01$). This moderately high

<table>
<thead>
<tr>
<th>Item #</th>
<th>Item</th>
<th>Corr.</th>
<th>Factor I</th>
<th>Factor II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am dissatisfied with some aspect of my appearance</td>
<td>0.72</td>
<td>0.66</td>
<td>0.54</td>
</tr>
<tr>
<td>2</td>
<td>I spend a significant amount of time checking my appearance in the mirror</td>
<td>0.55</td>
<td>0.60</td>
<td>0.42</td>
</tr>
<tr>
<td>3</td>
<td>I feel others are speaking negatively of my appearance</td>
<td>0.63</td>
<td>0.51</td>
<td>0.65</td>
</tr>
<tr>
<td>4</td>
<td>I am reluctant to engage in social activities when my appearance does not meet my satisfaction</td>
<td>0.60</td>
<td>0.44</td>
<td>0.68</td>
</tr>
<tr>
<td>5</td>
<td>I feel there are certain aspects of my appearance that are extremely unattractive</td>
<td>0.72</td>
<td>0.60</td>
<td>0.62</td>
</tr>
<tr>
<td>6</td>
<td>I buy cosmetic products to try to improve my appearance</td>
<td>0.56</td>
<td>0.62</td>
<td>0.46</td>
</tr>
<tr>
<td>7</td>
<td>I seek reassurance from others about my appearance</td>
<td>0.53</td>
<td>0.64</td>
<td>0.36</td>
</tr>
<tr>
<td>8</td>
<td>I feel there are certain aspects of my appearance I would like to change</td>
<td>0.68</td>
<td>0.66</td>
<td>0.59</td>
</tr>
<tr>
<td>9</td>
<td>I am ashamed of some part of my body</td>
<td>0.73</td>
<td>0.72</td>
<td>0.59</td>
</tr>
<tr>
<td>10</td>
<td>I compare my appearance to that of fashion models or others</td>
<td>0.59</td>
<td>0.68</td>
<td>0.43</td>
</tr>
<tr>
<td>11</td>
<td>I try to camouflage certain flaws in my appearance</td>
<td>0.71</td>
<td>0.79</td>
<td>0.59</td>
</tr>
<tr>
<td>12</td>
<td>I examine flaws in my appearance</td>
<td>0.72</td>
<td>0.75</td>
<td>0.59</td>
</tr>
<tr>
<td>13</td>
<td>I have bought clothing to hide a certain aspect of my appearance</td>
<td>0.74</td>
<td>0.74</td>
<td>0.56</td>
</tr>
<tr>
<td>14</td>
<td>I feel others are more physically attractive than me</td>
<td>0.62</td>
<td>0.53</td>
<td>0.50</td>
</tr>
<tr>
<td>15</td>
<td>I have considered consulting/consulted some sort of medical expert regarding flaws in my appearance</td>
<td>0.32</td>
<td>0.31</td>
<td>0.39</td>
</tr>
<tr>
<td>16</td>
<td>I have missed social activities because of my appearance</td>
<td>0.59</td>
<td>0.48</td>
<td>0.69</td>
</tr>
<tr>
<td>17</td>
<td>I have been embarrassed to leave the house because of my appearance</td>
<td>0.70</td>
<td>0.69</td>
<td>0.62</td>
</tr>
<tr>
<td>18</td>
<td>I fear that others will discover my flaws in appearance</td>
<td>0.59</td>
<td>0.48</td>
<td>0.78</td>
</tr>
<tr>
<td>19</td>
<td>I have avoided looking at my appearance in the mirror</td>
<td>0.39</td>
<td>0.32</td>
<td>0.48</td>
</tr>
</tbody>
</table>
correlation with eating disorder symptoms was expected given previous research indicating high levels of dysmorphic concern among those with eating disorders (Rosen & Ramirez, 1998). However, the correlation was significantly smaller than the correlation between the BICI and the BDDE-SR in study 1 ($Z = 4.52, p < 0.01$), suggesting that the BICI is not only tapping eating disorder symptomatology.

Also supporting the convergent validity of the BICI, it correlated moderately and positively with the Padua inventory ($r = 0.40, p < 0.01$), as well as with each of the Padua’s subscales (Control Over Mental Activities, $r = 0.45$; Checking, $r = 0.25$; Contamination, $r = 0.25$; all $p$’s $< 0.01$). Supporting the notion that the BICI is not measuring general obsessionality, the correlations with the Padua were moderate and significantly lower than the correlation with BDDE-SR in study 1 ($Z = 7.44, p < 0.01$). These results are summarized in Table 2. Thus, the pattern of correlations of the BICI with the measures is consistent with what would be predicted, with the BICI being more highly correlated with a measure assessing the same construct than with measures assessing related constructs.

To explore the factor structure of the BICI, data from Studies 1 and 2 were combined to produce a larger sample ($n = 384$) and a principal axis factor analysis was conducted using oblique (direct oblimin) rotation. An oblique rotation was chosen given the likelihood that factors would be correlated (Floyd & Widaman, 1995). This analysis yielded two interpretable factors with eigenvalues greater than unity based on item loadings of 0.3 or higher; together, these factors explained 51.8% of the total variance. The primary factor was made up of 12 items related to dissatisfaction and shame regarding one’s appearance, as well as checking and camouflaging of a perceived defect, and accounted for 44.4% of the total variance. The second factor consisted of seven items related to interference with functioning due to appearance concerns; it accounted for 7.5% of the total variance. Cronbach’s alphas for the two scales were 0.92 and 0.76, respectively. Thus, the factor structure of the BICI appears consistent with the content areas it was designed to tap. Factor analysis revealed one primary factor that consists of items related to dissatisfaction with one’s appearance as well as checking and camouflaging of a perceived defect and a second, smaller factor related to interference with functioning due to appearance concerns, including

<p>| Table 2 |</p>
<table>
<thead>
<tr>
<th>Correlation of BICI with Padua and EDI</th>
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<tbody>
<tr>
<td><strong>BICI</strong></td>
</tr>
<tr>
<td><strong>Padua</strong></td>
</tr>
<tr>
<td>Contamination</td>
</tr>
<tr>
<td>Control over mental activities</td>
</tr>
<tr>
<td>Checking</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td><strong>EDI</strong></td>
</tr>
<tr>
<td>Drive for Thinness</td>
</tr>
<tr>
<td>Bulimia</td>
</tr>
<tr>
<td>Thinness + Bulimia total</td>
</tr>
<tr>
<td><strong>BDDE-SR</strong></td>
</tr>
</tbody>
</table>

*p < 0.01.
social interference. However, all items that loaded on the second factor also loaded significantly on the first factor (see Table 1), and the two factors were highly correlated ($r = 0.69$). Thus, although a two-factor solution was interpretable, it is probably more parsimonious to think of the BICI as tapping a single construct of dysmorphic concern.

4. Study 3: concurrent validity and utility as a brief instrument

The goal of study 3 was to further establish the concurrent validity of the BICI through comparison with the BDD-YBOCS, an interview measure of body dysmorphic symptomatology. In addition, to establish the brevity of the BICI, the time required to complete the measure was recorded and compared with the BDDE-SR.

4.1. Method

Fifty-six undergraduates at a second large southeastern university participated in small groups of no more than six. These participants were nearly all women (approximately 90%). Extra course credit was awarded for participation.

All 56 participants were administered the BICI and the first 13 participants also completed the BDDE-SR (order counterbalanced with BICI); the time it took for participants to complete each measure was unobtrusively recorded. In a subsequent session within 2 weeks of the first session, 25 participants, 7 of whom were chosen for their higher than average score on the BICI (the rest were randomly selected), were administered the BDD-YBOCS by the first author, who was blind to their score on the BICI. The BDD-YBOCS is a 12-item, semi-structured interview designed to assess the severity of body dysmorphic symptomatology (Phillips et al., 1997). The interview has good internal consistency ($\alpha = 0.87$ in this study) and acceptable discriminant validity; it is also sensitive to changes in body dysmorphic symptomatology (Phillips et al.).

4.2. Results and discussion

As expected, the BICI took significantly less time to administer than the BDDE-SR, ($t(12) = 15.5, p < 0.01$). It took participants an average of 2.1 min ($SD = 0.6$ min) to complete the BICI as compared to 12.4 min ($SD = 2.6$ min) for the BDDE-SR. This supports the brevity of the BICI. Supporting the validity of the BICI as a measure of dysmorphic concern, scores on the measure were correlated significantly with the clinical interview, the BDD-YBOCS ($r = 0.60$, $p < 0.01$). This correlation is similar to that previously found between the BDDE-SR and the BDD-YBOCS ($r = 0.63$; Veale et al., 1996).

5. Study 4: validity in a symptomatic sample

The goal of study 4 was to conduct preliminary research regarding the ability of the BICI to differentiate those with clinical disorders marked by high levels of dysmorphic concern from those...
with subclinical symptoms as well as to validate convergent validity patterns in a symptomatic sample.

5.1. Method

Forty undergraduates (6 men, 34 women) at the second university participated in a study for individuals with body image or eating concerns. Participants with significant symptomatology were recruited through use of fliers posted around campus; these fliers were posted both in places frequented by students enrolled in psychology courses (e.g., psychology department building), as well as those likely to be frequented by individuals with body image concerns (e.g., fitness center locker rooms). The fliers recruited participants who were concerned about their appearance, checked their appearance, and who had missed social activities because of their appearance concerns. Participants received extra course credit as compensation.

Participants were administered the body dysmorphic disorder and eating disorders modules of the Structured Clinical Interview for the DSM-IV (First, Gibbon, Spitzer, & Williams, 1996) by the first author to assess for current and past body dysmorphic and eating disordered symptomatology. Following the interview, participants were administered several self-report measures placed in packets in random order. They received the BICI as well as the BDDE-SR (Rosen & Reiter, 1994) to assess for dysmorphic concern. They also received the Drive for Thinness and Bulimia subscales of the EDI to assess disordered eating symptomatology (Garner et al., 1983) and the modified Padua Inventory to assess obsessive–compulsive symptomatology (Sanavio, 1988). Following completion of the questionnaires, participants were given feedback regarding their reported symptomatology in the interview and provided with information regarding affordable counseling options in the area.

5.2. Results and discussion

Based on their responses to the SCID, five participants met DSM-IV criteria for current body dysmorphic disorder, four met criteria for bulimia, 20 reported subclinical body dysmorphic symptoms, and seven reported subclinical eating disordered symptoms (primarily bulimic symptoms). Two of the individuals with bulimia also reported clinical levels of body dysmorphic symptomatology. One participant reported a history of body dysmorphic disorder, one reported a history of anorexia, six reported a history of bulimia, and seven reported a history of subclinical eating disordered symptoms (primarily anorexic symptoms). Participants reported a variety of areas of appearance concerns, including dissatisfaction with their overall body weight, the size or shape of particular body parts (thighs, stomach, breasts), muscle tone or definition, skin defects (acne, reddish tone to face), genitalia, facial features, and toes. The most commonly reported concerns were the size and shape of particular body parts. This is not surprising given the prevalence of disordered eating symptoms in the sample, as well as the emphasis on body size/physical fitness in the high school and college environment in which the participants’ symptoms developed.

Supporting the ability of the BICI to differentiate those with clinical disorders marked by high levels of dysmorphic concern from individuals with subclinical symptoms of these disorders, participants with a current diagnosis of BDD or bulimia scored significantly higher on this
measure than those with subclinical concerns ($t(38) = 5.26, p < 0.01$). The size of this effect using Cohen’s $d$ was large (Cohen, 1988; $d = 1.99$, clinical symptoms $M = 80.1$, $SD = 9.0$; subclinical symptoms $M = 62.5$, $SD = 8.8$). Additionally, the BICI had reasonable specificity (67%) and excellent sensitivity (96%), using a score of over 72 as a cut-off for clinical concerns (the cut-off represents a $T$-score of 67 based on the samples in studies one and two). Four individuals with subclinical body dysmorphic or eating disordered symptoms were incorrectly identified as having clinical concerns; however, it should be noted that the score of these participants on the BICI was just above the cut-off value. Additionally, one individual with bulimia was incorrectly identified as having subclinical symptoms. Thus, the BICI appears to differentiate those with clinical levels of disorders marked by high levels of dysmorphic concern from individuals with subclinical levels of these disorders.

Supplemental analyses were also conducted to replicate earlier concurrent and convergent validity findings in a sample with elevated dysmorphic concern. Replicating concurrent validity findings from study 1, the BICI correlated significantly with the BDDE-SR, after removing overlapping items from both measures ($r = 0.78, p < 0.01$). Additionally, as was found in study 2, the BICI correlated significantly with the EDI ($r = 0.55, p < 0.01$) as well as its two subscales (Drive for Thinness, $r = 0.57, p < 0.01$; Bulimia, $r = 0.37, p < 0.05$). In addition, as in study 2, the correlation between the BICI and EDI was significantly smaller than the correlation between the BICI and BDDE-SR, $t(37) = 5.88, p < 0.01$. Surprisingly, there was no significant relationship between scores on the BICI and scores on the Padua inventory or any of its subscales, with correlations all below 0.2. Indeed, individuals with a current clinical diagnosis did not score significantly higher on the Padua than individuals without a diagnosis.

6. General discussion

The BICI appears to be an internally consistent and valid brief instrument for assessing dysmorphic concern. Item-total correlations, as well as the alpha of the BICI, support its internal consistency and homogeneity of content. Supporting the content validity of the BICI as a measure of dysmorphic concern, its items were rated as relevant to and representative of body dysmorphic symptomatology by a panel of experts. Further supporting the validity of the BICI, it correlated well with two existing measures of dysmorphic concern. The BICI also correlated moderately to moderately highly with measures of related areas of symptomatology. However, these correlations were smaller in size than the correlation of the BICI with the other self-report BDD/dysmorphic concern measure, suggesting that the BICI differentiates dysmorphic concern from other related areas of symptomatology.

Importantly, the BICI appears to be a highly useful brief measure, taking just a few minutes to complete. The brevity of this instrument makes it easier to administer to large samples or to administer simultaneously with a number of measures. Despite its brevity, the BICI provides a fairly comprehensive assessment of dysmorphic concern, with items related to body dissatisfaction, checking and camouflaging behavior, and interference due to symptoms—such as discomfort with and avoidance of social activities, as opposed to only focusing on symptoms of body dissatisfaction. Therefore, the BICI could serve as a useful research tool for assessing levels of
dysmorphic concern as well as studying the relationships among dysmorphic concern and other symptom patterns.

Further research regarding this instrument is warranted, however. This should include studies focused on the ability of the BICI to successfully differentiate among different forms of psychopathology in individuals seeking treatment. This research would ensure that the BICI is not simply tapping symptoms of general distress.\(^1\) There is also a need to use this instrument in other populations with elevated dysmorphic concern. This is particularly necessary given that the areas of dissatisfaction most often reported in these undergraduate samples were body size and shape concerns. Thus, it is not currently established how well the item content of the BICI assesses dysmorphic concern among individuals whose symptoms focus on dissatisfaction with other aspects of their appearance. Similarly, there is a need to further investigate the ability of this measure to assess dysmorphic concern in men, as the current studies involved primarily women. In addition, further research regarding the ability of the BICI to differentiate individuals with clinical levels of dysmorphic concern (i.e., those suffering from BDD or eating disorders) from those with subclinical levels of dysmorphic concern is warranted, given the small sample size employed in study 4. Finally, for further evidence of the BICI’s usefulness as a clinical tool, its ability to discriminate changes in symptomatology as a result of treatment for BDD or eating disorders would be useful. However, the current studies support that the BICI is an efficient, useful instrument for assessing the severity of dysmorphic concern and hopefully will lead to more needed research regarding this area of symptomatology.

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References


\(^1\)In a preliminary study, 72 women seeking treatment at a university counseling center did not have elevated scores on the BICI, \(M = 56.6\). In addition, women who reported body image or eating issues on a screening measure used by the counseling center scored significantly higher on the BICI than those who did not report these concerns.


