



Perfectionism dimensions, appearance schemas, and body image disturbance in community members and university students

Simon B. Sherry^{a,*}, Jennifer L. Vriend^{a,1}, Paul L. Hewitt^{b,2}, Dayna L. Sherry^{c,3},
Gordon L. Flett^{d,4}, Andrea A. Wardrop^b

^a Department of Psychology, Dalhousie University, Life Sciences Centre, 1355 Oxford Street, Halifax, Nova Scotia, Canada, B3H 4J1

^b Department of Psychology, University of British Columbia, D.T. Kenny Building, 2136 West Mall, Vancouver, British Columbia, Canada, V6T 1Z4

^c Department of Psychology, Queen Elizabeth II Health Sciences Centre, 1278 Tower Road, Halifax, Nova Scotia, Canada, B3H 2Y9

^d Department of Psychology, York University, Behavioural Sciences Building, 4700 Keele Street, Toronto, Ontario, Canada, M3J 1P3

ARTICLE INFO

Article history:

Received 5 April 2008

Received in revised form 10 December 2008

Accepted 17 December 2008

Keywords:

Perfectionism

Self-presentation

Schema

Body image

Body dissatisfaction

Reassurance seeking

Body image investment

ABSTRACT

The present study examined the relationship between a self-presentational style involving an extreme need to conceal perceived imperfections from others and body image disturbance (BID). Findings from both a community and a university sample indicated that nondisplay of imperfection (i.e., concerns over behavioral displays of imperfections to others) predicted BID beyond self-imposed perfectionistic expectations and other contributors to BID. Mediation analyses suggested that dysfunctional appearance schemas represent one possible mechanism through which nondisplay of imperfection influences BID. In contrast to earlier work on perfectionism and BID, which emphasized the role of self-imposed perfectionistic expectations, the current study offers a novel view of the connection between perfectionism and BID. That is, rather than striving to achieve perfection, the present study suggests that individuals with BID are characterized by a strong need to avoid appearing imperfect to others.

© 2008 Elsevier Ltd. All rights reserved.

Introduction

Perfectionism is thought to play an important role in many forms of psychological distress. In particular, the fear of others' scrutiny, unrealistic expectations, and intense self-criticism that characterize perfectionism seem conducive to body image disturbance (BID; i.e., distress, impairment, and dissatisfaction tied to appearance-related concerns). Indeed, it seems perfectionism is linked to a chronic pattern of BID (Bardone-Cone, Cass, & Ford, 2008).

The current study examines the relation between perfectionism and BID.⁵ Case histories and theoretical accounts suggest a key role

for perfectionism in BID (Sherry, Lee-Baggeley, Hewitt, & Flett, 2007). Consistent with this work, there is evidence linking perfectionism to BID (Hewitt, Flett, & Ediger, 1995). As research suggests perfectionism may be best understood as a multi-dimensional construct (e.g., Frost, Marten, Lahart, & Rosenblate, 1990), it is meaningful to inquire what specific dimensions of perfectionism are tied to BID.

Research on perfectionism and BID has mostly involved two multidimensional models of trait perfectionism (Frost et al., 1990; Hewitt & Flett, 1991). These models focus on static and enduring structural elements of perfectionism, including dispositions, attitudes, and motives involving a need for the self or others to be perfect. Studies examining the link between trait perfectionism and BID generally suggest that increased self-oriented perfectionism (i.e., demanding perfection of oneself), socially prescribed perfectionism (i.e., perceiving that other people are demanding perfection of oneself; Hewitt & Flett, 1991), concern over mistakes (i.e., reacting negatively to mistakes and regarding mistakes as failures), and doubts about actions (i.e., feeling uncertain about the quality and 'correctness' of one's performance; Frost et al., 1990) are linked to increased BID (Bardone-Cone, Joiner, et al., 2008; Bartsch, 2007; Hanstock & O'Mahony, 2002). Although these studies have advanced our knowledge of perfectionism and BID, extant work has focused mainly on the impact of *trait perfectionism* on BID. There are, however, other important aspects of perfectionism.

* Corresponding author. Tel.: +1 902 494 8070; fax: +1 902 494 6585.

E-mail addresses: simon.sherry@dal.ca (S.B. Sherry), Jenn.Vriend@dal.ca (J.L. Vriend), phewitt@psych.ubc.ca (P.L. Hewitt), Dayna.Sherry@cda.nshealth.ca (D.L. Sherry), gflett@yorku.ca (G.L. Flett).

¹ Tel.: +1 902 494 3417.

² Tel.: +1 604 822 5827.

³ Tel.: +1 902 473 4686.

⁴ Tel.: +1 416 736 2100x44575.

⁵ In the present study, we conceptualize and assess BID as a dimensional construct lying along a continuum wherein individuals differ in terms of the severity of their BID. The current study also involves a relatively unselected group of community members and university students whose level of BID may be described, on average, as subclinical or as subsyndromal in nature.

In the present study an alternative view of the relation between perfectionism and BID is proposed and tested. We assert persons with BID are typified by a self-presentational style wherein they attempt to defensively conceal their perceived imperfections from others. That is, instead of *striving to achieve perfection*, we propose that persons with BID are characterized by a strong need to *avoid appearing imperfect to others*. In what follows, perfectionistic self-presentation is defined and prior work linking this self-presentational style to BID is discussed.

Hewitt et al. (2003) argue perfectionistic self-presentation involves a tendency to promote one's supposed perfection to others and/or to hide one's perceived imperfections from others. Whereas trait perfectionism encompasses dispositions, attitudes, and motives reflecting a need for the self or others to obtain perfection, perfectionistic self-presentation involves the outward expression of perfectionism in the public domain. An extreme need to appear perfect, or to avoid appearing imperfect, in the eyes of others is thus central to perfectionistic self-presentation.

According to Hewitt et al. (2003), perfectionistic self-presentation involves three dimensions: perfectionistic self-promotion (i.e., promoting one's supposed perfection to others), nondisclosure of imperfection (i.e., concerns over verbal disclosures of imperfections to others), and nondisplay of imperfection (i.e., concerns over behavioral displays of imperfections to others). Evidence also indicates dimensions of perfectionistic self-presentation are differentially related to various outcomes beyond trait perfectionism (Hewitt & Flett, 1991).

There are, at present, several empirical studies suggesting a link between perfectionistic self-presentation and aspects of body dissatisfaction (Penkal & Kurdek, 2007; Rudiger, Cash, Roehrig, & Thompson, 2007). In the current study, we extend this literature by examining dimensions of perfectionistic self-presentation in relation to BID (i.e., a broader construct including not only body dissatisfaction, but also appearance-related impairment and distress). Various theoretical accounts suggest BID is linked to a strong desire to conceal perceived bodily imperfections from others (Sherry, Lee-Bagglely, et al., 2007). In terms of Hewitt et al.'s model (2003), persons with BID appear preoccupied with concealing their perceived bodily imperfections from others in a manner consistent with nondisplay of imperfection. Indeed, some investigators argue BID is closely tied to an excessively cautious self-presentational style wherein an attempt is made to conceal perceived imperfections from others (Hewitt et al., 1995).

Although the above literature suggests a potential link between nondisplay of imperfection and BID, it is unclear if nondisplay of imperfection is tied to BID beyond other hypothesized contributors to BID (e.g., reassurance seeking). Persons with BID fear rejection and thus are likely to seek reassurance about how others truly feel about them (Reas & Grilo, 2004). In the present study, we examined BID in relation to excessive reassurance seeking, which involves a tendency to repeatedly ask others for reassurance of one's worth (Joiner & Metalsky, 2001). Although persons with BID often seek reassurance from others, they seldom believe reassurance provided by others. Failed attempts to be reassured are thought to increase insecurities about social acceptance and physical attractiveness, which may exacerbate BID (Reas & Grilo, 2004). In the current study, we test if nondisplay of imperfection predicts BID beyond reassurance seeking. As reassurance seeking and nondisplay of imperfection are both aversive interpersonal behaviors (Hewitt et al., 2003) with hypothesized links to BID, reassurance seeking may be seen as a suitable and a stringent control variable.

If nondisplay of imperfection is tied to BID, a possible next step is to find mechanisms explaining this link. We propose a mediational model wherein nondisplay of imperfection brings about dysfunctional appearance schemas and dysfunctional

appearance schemas result in BID. Persons high in nondisplay of imperfection exhibit a defensive self-presentational style involving a strong need to conceal their perceived imperfections from others (Hewitt et al., 2003). We assert this self-presentational style is conducive to a dysfunctional cognitive pattern that focuses attention on physical imperfections and that biases perceptions of one's body and others' views of one's body. Specifically, we believe nondisplay of imperfection plays a role in generating dysfunctional appearance schemas, which are distorted assumptions about the meaning, importance, and influence of one's physical appearance (Cash & Labarge, 1996). We also contend such distorted cognitions contribute to BID. Our proposed mediational model thus builds on research suggesting maladaptive cognitions about physical appearance predispose BID (Cash, 2002; Cash, Melnyk, & Hrabosky, 2004; Sarwer, Gibbons, & Crerand, 2004).

The first aim of the present study is to offer evidence linking perfectionistic self-presentation to BID. To our knowledge, no empirical research has tested this link. The present study also involved a community and a university sample. Extant studies of perfectionism and BID involve patient or university samples, making community members an understudied group. Community members and university students investigated in the present study also belonged to fitness facilities. We focused on members of fitness facilities, as evidence suggests that exercise-oriented individuals have higher levels of perfectionism and BID (Ricciardelli & McCabe, 2004).

Consistent with earlier work (Cash, Melnyk, et al., 2004), it is anticipated that perfectionistic self-promotion, nondisplay of imperfection, and nondisclosure of imperfection are positively correlated with appearance schemas and with BID. Among dimensions of perfectionistic self-presentation, nondisplay of imperfection is hypothesized to uniquely predict BID. Building on previous research (Bartsch, 2007), BID was also anticipated to positively correlate with socially prescribed perfectionism and with reassurance seeking.

In addition, nondisplay of imperfection was expected to predict BID beyond gender, body mass index (BMI), reassurance seeking, and trait perfectionism. As we are proposing a novel relation (i.e., nondisplay of imperfection is linked to BID), it is important to test if nondisplay of imperfection contributes incrementally to our understanding of BID beyond other hypothesized predictors of BID. As reviewed above, trait perfectionism and reassurance seeking are suitable control variables, as they reliably predict BID. Gender and BMI are also suitable control variables, as women and persons with an elevated BMI often report higher BID (Bartsch, 2007).

The second aim of the present study is to examine one potential mechanism through which nondisplay of imperfection influences BID. Various sources suggest a link between nondisplay of imperfection and BID (Sherry, Lee-Bagglely, et al., 2007), but little is known about mechanisms linking nondisplay of imperfection to BID. We begin to fill this void by testing a mediational model wherein dysfunctional appearance schemas are expected to mediate the link between nondisplay of imperfection and BID. This model has the potential to advance our understanding of the link between nondisplay of imperfection and BID by identifying appearance schemas as one possible mechanism through which nondisplay of imperfection influences BID.

Method

Participants

Sample 1 involved 96 community members (44 women; 52 men) who belonged to the South Slope Family YMCA, a fitness facility operated by the Young Men's Christian Association (YMCA).

This facility is located in a suburban area of Vancouver, British Columbia, Canada. Community members averaged 27.7 years of age ($SD = 9.8$) and had an average BMI of 25.0 ($SD = 4.1$), where the mean BMI for women was 23.5 ($SD = 4.0$) and the mean BMI for men was 26.2 ($SD = 3.8$). In Sample 1, 60.4% of participants reported that their ethnicity was Caucasian; 13.5% as Asian; 7.3% as East Indian; 10.4% as “other;” 8.3% of participants did not report their ethnicity. Participants reported living in Canada for an average of 25.33 years ($SD = 10.8$). With regard to relationship status, 59.4% of participants were single; 15.6% were married; 5.2% were divorced; 13.5% were cohabiting; 5.2% of participants reported being in “other” sorts of relationships; and 1.0% of participants did not report their relationship status. Community members also reported exercising an average of 7.3 h per week ($SD = 4.1$).

Sample 2 involved 118 university students (56 women; 62 men) who belonged to the Birdcoop Fitness Centre, which is run by the University of British Columbia (UBC). This facility is located on the campus of UBC in Vancouver, British Columbia, Canada. University students averaged 22.7 years of age ($SD = 7.0$) and had an average BMI of 23.7 ($SD = 3.7$), where the average BMI for women was 21.9 ($SD = 2.9$) and the average BMI for men was 25.3 ($SD = 3.6$). In Sample 2, 57.6% of participants reported that their ethnicity was Caucasian; 11.0% as Asian; 7.6% as East Indian; 20.3% as “other;” 3.4% of participants did not report their ethnicity. Participants reported living in Canada for an average of 19.9 years ($SD = 9.1$). In terms of relationship status, 82.2% of participants were single; 5.9% were married; 1.7% were divorced; 4.2% were cohabiting; and 5.9% of participants reported being in “other” sorts of relationships. Finally, university students reported exercising an average of 8.2 h per week ($SD = 4.3$).

Measures

All measures in the present investigation were scored so that higher scores signify higher levels of a construct. Both community members and university students completed a measure of demographics and the following self-report questionnaires:

Perfectionistic Self-Presentation Scale (PSPS; Hewitt et al., 2003)

The PSPS is a 27-item scale involving three subscales: perfectionistic self-promotion (10 items; e.g., “I try always to present a picture of perfection”), nondisclosure of imperfection (7 items; e.g., “Admitting failures to others is the worst possible thing”), and nondisplay of imperfection (10 items; e.g., “I hate to make errors in public”). Two items in the perfectionistic self-promotion subscale specifically relate to appearance-related concerns (e.g., “I do not really care about being perfectly groomed” [reverse scored]). All PSPS items are rated on a 7-point scale ranging from 1 (*disagree*) to 7 (*agree*). Scores for perfectionistic self-promotion, nondisclosure of imperfection, and nondisplay of imperfection range from 10 to 70, 7 to 49, and 10 to 70, respectively. Research supports the discriminant validity, predictive validity, incremental validity, and factorial stability of the PSPS (Hewitt et al., 2003; Sherry, Hewitt, Flett, Lee-Baggley, & Hall, 2007). As an example of the convergent validity of the PSPS, all three dimensions of perfectionistic self-presentation are correlated with fear of negative evaluation, with correlations ranging from .40 to .62 (Hewitt et al., 2003). Alpha reliabilities for the PSPS subscales are typically .75 or higher (Hewitt et al., 2003). In the present study, alpha reliabilities for the PSPS subscales were as follows: perfectionistic self-promotion (Sample 1 $\alpha = .85$; Sample 2 $\alpha = .86$), nondisclosure of imperfection (Sample 1 $\alpha = .68$; Sample 2 $\alpha = .76$), and nondisplay of imperfection (Sample 1 $\alpha = .85$; Sample 2 $\alpha = .87$). The alpha reliability for nondisclosure of imperfection in Sample 1 is lower than in previous studies (Hewitt et al., 2003). The

three-week test-retest correlation for perfectionistic self-promotion, nondisclosure of imperfection, and nondisplay of imperfection are .83, .74, and .84, respectively (Hewitt et al., 2003).

Depressive Interpersonal Relationships Inventory-Reassurance Seeking Subscale (DIRI-RS; Joiner & Metalsky, 2001)

The DIRI-RS is a 4-item measure assessing the tendency to habitually and excessively seek reassurance from other people regarding whether they truly care (e.g., “Do you find yourself often asking the people you feel close to how they truly feel about you?”). Items are rated on a 7-point scale ranging from 1 (*no, not at all*) to 7 (*yes, very much*). DIRI-RS scores range from 4 to 28. Studies have supported the discriminant validity, predictive validity, incremental validity, factorial stability, and ecological validity, of the DIRI-RS (Haefel, Voelz, & Joiner, 2007; Joiner & Metalsky, 2001). In terms of convergent validity, there is, for example, research showing that the DIRI-RS is highly correlated with dependency ($r = .49$; Joiner & Metalsky, 2001). Alpha reliabilities for the DIRI-RS are usually high, ranging from .85 to .90 (Joiner & Metalsky, 2001). In the current study, the alpha reliabilities for the DIRI-RS were also high (Sample 1 $\alpha = .88$; Sample 2 $\alpha = .88$). The five-week test-retest correlation for the DIRI-RS is .77 (Haefel et al., 2007).

Appearance Schemas Inventory (ASI; Cash & Labarge, 1996)

The ASI is a 14-item scale assessing distorted beliefs and assumptions about the importance, influence, and meaning of physical appearance in one’s life (Cash & Labarge, 1996). Participants consider items such as: “By controlling my appearance, I can control many of the social and emotional events in my life.” Items are rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). ASI scores range from 14 to 70. Evidence supports the discriminant validity, predictive validity, and factorial stability of the ASI (e.g., Cash & Labarge, 1996; Labarge, Cash, & Brown, 1998). Research also supports the convergent validity of the ASI, including evidence that the ASI is strongly correlated with public self-consciousness ($r = .58$; Cash & Labarge, 1996). The alpha reliability for the ASI is also usually greater than .80 (Cash & Labarge, 1996). Consistent with such findings, in the present study, alpha reliabilities for the ASI were high (Sample 1 $\alpha = .86$; Sample 2 $\alpha = .84$). Although there is a revised version of the ASI, our study was conducted before the Appearance Schemas Inventory-Revised was published (Cash, Melnyk, et al., 2004).

Body Image Rating Scale (BIRS; Mayville, Katz, Gipson, & Cabral, 1999)

The BIRS is a 14-item measure of BID. This scale assesses the frequency and the intensity of distress, impairment, and dissatisfaction tied to appearance-related concerns. Participants rate items such as: “It _____ when I think that I am in a situation where others are evaluating my physical appearance.” This item is rated on a 9-point scale ranging from 1 (*does not bother me*) to 9 (*frightens me*). All BIRS items are rated on scale from 1 to 9, meaning BIRS total scores span from 14 to 126. As suggested by S. B. Mayville (personal communication, October, 2001), item 13 of the BIRS was removed due to its potentially controversial item content. Thus, whereas Mayville et al. (1999) used a 15-item scale, the current study, and Mayville, Williamson, White, Netemeyer, and Drab (2002), used a 14-item scale. There is evidence supporting the validity and the reliability of the BIRS, including research involving exercise-oriented individuals (Mayville et al., 2002). In terms of convergent validity, Sherry, Hewitt, and Flett (2008) found that the BIRS is highly correlated with the Body Satisfaction Scale ($r = .54$; Slade, Dewey, Newton, Brodie, & Kiemle, 1990) and with the body dissatisfaction subscale of the Eating Disorder Inventory ($r = -.56$; Garner, Olmstead, & Polivy, 1983).

Table 1

Means, standard deviations, alpha reliabilities, and bivariate correlations for dimensions of perfectionistic self-presentation, reassurance seeking, appearance schemas, and body image disturbance in community members.

Variable	1	2	3	4	5	6
1. Self-promotion	–	.55***	.73***	.26**	.63***	.51***
2. Nondisclosure		–	.59***	.14*	.51***	.48***
3. Nondisplay			–	.31**	.65***	.58***
4. Reassurance				–	.30**	.48***
5. Appear. schemas					–	.66***
6. BID						–
<i>M</i>	37.72	21.98	37.70	8.45	2.49 ^a	49.63
<i>SD</i>	10.13	6.47	10.77	4.41	0.65	21.69

Note: Self-promotion = perfectionistic self-promotion; nondisclosure = nondisclosure of imperfection; nondisplay = nondisplay of imperfection; reassurance = reassurance seeking; appear schemas = appearance schemas; BID = body image disturbance.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

^a Item mean; all other means represent subscale totals.

Mayville et al. (1999) also reported that the BIRS is highly correlated with the Body Dysmorphic Disorder Examination-Self-Report ($r = .86$; Rosen & Reiter, 1996). Alpha reliabilities for the BIRS are usually .85 or higher (Mayville et al., 2002). In the current study, alpha reliabilities for the BIRS were high (Sample 1 $\alpha = .93$; Sample 2 $\alpha = .92$). The two-week test-retest correlation for the BIRS is .86 (Mayville et al., 1999).

The following scale was administered only to the university sample.

Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991)

The MPS is a 45-item scale involving three, 15-item subscales: self-oriented perfectionism (e.g., “One of my goals is to be perfect in everything I do”), socially prescribed perfectionism (e.g., “My family expects me to be perfect”), and other-oriented perfectionism (e.g., “If I ask someone to do something, I expect it to be done flawlessly”). Other-oriented perfectionism is not measured in the present study, as neither theory nor evidence suggests it is tied to BID (Hanstock & O’Mahony, 2002). MPS items are rated on a 7-point scale ranging from 1 (*disagree*) to 7 (*agree*). Subscale scores range from 15 to 105. Evidence supports the factorial stability,

Table 2

Means, standard deviations, alpha reliabilities, and bivariate correlations for dimensions of perfectionistic self-presentation, dimensions of trait perfectionism, reassurance seeking, appearance schemas, and body image disturbance in university students.

Variable	1	2	3	4	5	6	7	8
1. Self-promotion	–	.65***	.75***	.48***	.50***	.25**	.58***	.45***
2. Nondisclosure		–	.59***	.21*	.45***	.13	.40***	.34***
3. Nondisplay			–	.37***	.40***	.15	.53***	.52***
4. Self-oriented				–	.30***	.09	.23*	.16
5. Socially prescribed					–	.32***	.33***	.38***
6. Reassurance						–	.39***	.46***
7. Appear. schemas							–	.57***
8. BID								–
<i>M</i>	40.11	22.58	41.05	71.17	51.59	9.65	2.62 ^a	55.48
<i>SD</i>	10.51	6.90	11.17	13.84	13.28	5.08	0.64	22.24

Note: Self-promotion = perfectionistic self-promotion; nondisclosure = nondisclosure of imperfection; nondisplay = nondisplay of imperfection; self-oriented = self-oriented perfectionism; socially prescribed = socially prescribed perfectionism; reassurance = reassurance seeking; appear schemas = appearance schemas; BID = body image disturbance.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

^a Item mean; all other means represent subscale totals.

discriminant validity, predictive validity, and incremental validity of the MPS (e.g., Hewitt & Flett, 2004). Alpha reliabilities for the MPS subscales are usually .80 or higher (Hewitt & Flett, 1991). As an example of the convergent validity of the MPS, self-oriented perfectionism is strongly correlated with conscientiousness ($r = .51$), whereas socially prescribed perfectionism is moderately correlated with neuroticism ($r = .38$; Sherry, Hewitt, et al., 2007). In the current study, alpha reliabilities for the MPS subscales were as follows: self-oriented perfectionism ($\alpha = .87$) and socially prescribed perfectionism ($\alpha = .87$). The three-month test-retest correlations for self-oriented perfectionism and for socially prescribed perfectionism are .88 and .75, respectively (Hewitt & Flett, 1991).

Procedure

Participation was anonymous, confidential, and voluntary. Research assistants invited potential participants to participate as they entered or exited the fitness facility. Participants signed a consent form before participating. Participants completed their questionnaire package at home, and participants received email reminders to return their questionnaire package. Overall, 43% of community members and 56% of university students who accepted our invitation to participate returned a questionnaire package. After participating, participants were debriefed.

Results

Descriptive statistics and bivariate correlations

Means for all scales (see Tables 1 and 2) are within one standard deviation of previous research involving community and university samples (e.g., Cash, Thériault, & Annis, 2004; Hewitt et al., 2003; Hewitt & Flett, 1991; Joiner & Metalsky, 2001). Correlations involving both samples were positive and in the expected direction. For community members (see Table 1), dimensions of perfectionistic self-presentation were significantly correlated. In addition, perfectionistic self-promotion and nondisplay of imperfection (but not nondisclosure of imperfection) were significantly correlated with reassurance seeking. Dimensions of perfectionistic self-presentation were also significantly related to appearance schemas and to BID in the anticipated manner. And, as expected, reassurance seeking and BID were significantly related. Lastly,

reassurance seeking was significantly correlated with appearance schemas and appearance schemas were significantly correlated with BID.

In university students (see Table 2), perfectionistic self-presentation dimensions were significantly linked. Perfectionistic self-promotion, nondisclosure of imperfection, and nondisplay of imperfection were also significantly correlated with self-oriented and socially prescribed perfectionism. In addition, self-oriented and socially prescribed perfectionism were significantly overlapping. As with community members, perfectionistic self-promotion (but not nondisclosure of imperfection) was significantly correlated with reassurance seeking. In contrast to community members, however, nondisplay of imperfection was unrelated to reassurance seeking. As expected, dimensions of perfectionistic self-presentation were correlated with appearance schemas and BID, thereby replicating findings from community members. Furthermore, self-oriented perfectionism was significantly correlated with appearance schemas, but not with reassurance seeking or with BID. Consistent with expectations, socially prescribed perfectionism was significantly linked to BID. Moreover, socially prescribed perfectionism was significantly correlated with appearance schemas and reassurance seeking. As with community members, the hypothesized connection between reassurance seeking and BID was also found. Lastly, reassurance seeking and appearance schemas and appearance schemas and BID were significantly correlated in a manner congruent with community members.

Hierarchical multiple regression analyses

In all analyses, gender was coded so that men = 1 and women = 2. Hierarchical multiple regression analyses predicting BID in community members involved two steps. Step 1 was significant ($\Delta R^2 = .33$, $\Delta F = 15.41$, $p < .001$) and involved gender ($\beta = .35$, $p < .001$), BMI ($\beta = .14$, $p > .05$), and reassurance seeking ($\beta = .43$, $p < .001$). Step 2 was also significant ($\Delta R^2 = .27$, $\Delta F = 19.69$, $p < .001$) and involved the addition of perfectionistic self-promotion ($\beta = .14$, $p > .05$), nondisclosure of imperfection ($\beta = .26$, $p < .01$), and nondisplay of imperfection ($\beta = .22$, $p < .05$). As expected, these analyses suggested nondisplay of imperfection was uniquely linked to BID beyond variables in Step 1. Finally, and somewhat unexpectedly, these analyses suggested nondisclosure of imperfection was uniquely related to BID beyond variables in Step 1.

Hierarchical multiple regression analyses predicting BID in university members also involved two steps. Step 1 was significant ($\Delta R^2 = .32$, $\Delta F = 10.35$, $p < .001$) and involved gender ($\beta = .24$, $p < .05$), BMI ($\beta = .14$, $p > .05$), reassurance seeking ($\beta = .30$, $p < .001$), self-oriented perfectionism ($\beta = .07$, $p > .05$), and socially prescribed perfectionism ($\beta = .23$, $p < .01$). Step 2 was also significant ($\Delta R^2 = .17$, $\Delta F = 12.07$, $p < .001$) and involved the addition of perfectionistic self-promotion ($\beta = .04$, $p > .05$), nondisclosure of imperfection ($\beta = .02$, $p > .05$), and nondisplay of imperfection ($\beta = .44$, $p < .001$). As expected, these analyses also indicated nondisplay of imperfection was uniquely tied to BID beyond gender, BMI, reassurance seeking, self-oriented perfectionism, and socially prescribed perfectionism. In both samples, nondisplay of imperfection thus displayed incremental validity beyond several other competing predictors.

Mediational analyses

Mediational analyses tested if the link between nondisplay of imperfection and BID was mediated by appearance schemas. Mediation was tested using the framework proposed by Baron and Kenny (1986). A mediator (i.e., appearance schemas) is said to

explain part (or all) of the link between a predictor (i.e., nondisplay of imperfection) and a criterion (i.e., BID) when (a) the link between the predictor and the criterion is significant; (b) the link between the predictor and the mediator is significant; (c) the link between the mediator and the criterion is significant; (d) the link between the mediator and the criterion is significant when controlling for the influence of the predictor; (e) the strength of the link between the predictor and the criterion significantly decreases after taking into account the influence of the mediator.

As hypothesized, appearance schemas partially mediated the link between nondisplay of imperfection and BID in both samples. In community members, (a) the link between nondisplay of imperfection and BID was significant ($R^2 = .47$, $F = 26.95$, $p < .001$; $\beta = .56$, $p < .001$); (b) the link between nondisplay of imperfection and appearance schemas was significant ($R^2 = .43$, $F = 23.31$, $p < .001$; $\beta = .65$, $p < .001$); (c) the link between appearance schemas and BID was significant ($R^2 = .54$, $F = 35.54$, $p < .001$; $\beta = .62$, $p < .001$); (d) the link between appearance schemas and BID was significant after controlling for the influence of nondisplay of imperfection ($R^2 = .58$, $F = 31.36$, $p < .001$; $\beta = .44$, $p < .001$); (e) the strength of the link between nondisplay of imperfection and BID significantly decreased after taking into account the influence of appearance schemas ($R^2 = .58$, $F = 31.36$, $p < .001$; $\beta = .27$, $p < .001$). A Sobel (1982) test suggested that, in community members, appearance schemas significantly mediated the link between nondisplay of imperfection and BID ($z = 4.21$, $p < .001$). Appearance schemas also mediated 51.1% of the total effect of nondisplay of imperfection on BID.

As hypothesized, in university students, (a) the relation between nondisplay of imperfection and BID was significant ($R^2 = .40$, $F = 25.43$, $p < .001$; $\beta = .53$, $p < .001$); (b) the relation between nondisplay of imperfection and appearance schemas was significant ($R^2 = .32$, $F = 17.62$, $p < .001$; $\beta = .52$, $p < .001$); (c) the relation between appearance schemas and BID was significant ($R^2 = .42$, $F = 27.03$, $p < .001$; $\beta = .55$, $p < .001$); (d) the relation between appearance schemas and BID was significant when controlling for the influence of nondisplay of imperfection ($R^2 = .50$, $F = 27.76$, $p < .001$; $\beta = .37$, $p < .001$); (e) the strength of the relation between nondisplay of imperfection and BID significantly decreased after taking into account the influence of appearance schemas ($R^2 = .50$, $F = 27.76$, $p < .001$; $\beta = .34$, $p < .001$). Appearance schemas significantly mediated the relation between nondisplay of imperfection and BID ($z = 3.79$, $p < .001$; Sobel, 1982). It was also found that appearance schemas mediated 36.3% of the total effect of nondisplay of imperfection on BID.

Discussion

Case studies and theoretical accounts suggest that persons with BID are heavily invested in presenting a perfect image to others and are intensely concerned about hiding their perceived imperfections from others (e.g., Sherry, Lee-Baggley, et al., 2007). The present study is, to our knowledge, the first empirical research to show that a perfectionistic self-presentational style is tied to BID. The current study used a community and a university sample to show concerns over behavioral displays of imperfections contributed incrementally to the prediction of BID beyond other hypothesized contributors to BID. In addition to showing a robust link between nondisplay of imperfection and BID, the present study is consistent with work suggesting a link between socially prescribed perfectionism and BID (Bartsch, 2007) and reassurance seeking and BID (Reas & Grilo, 2004). Appearance schemas were also found to partially mediate the link between the nondisplay of imperfection and BID in both samples, making the present study the first (of which we are aware) to identify a potential mechanism through which nondisplay of imperfection influences BID.

Discrepancies from prior studies and expected results were also found and these results, along with our other findings, are considered below.

The present study contributes to our understanding of the link between trait perfectionism and BID. A small, positive, nonsignificant link was observed between self-oriented perfectionism and BID in university students. This result differs from work suggesting a stronger link between these two variables (Hanstock & O'Mahony, 2002). Additional research is needed to identify moderating variables (e.g., self-criticism) that alter the strength of the link between self-oriented perfectionism and BID. Consistent with hypotheses, socially prescribed perfectionism and BID were significantly correlated in the present study. Our more finely grained multiple regression analyses also converged with work (Hanstock & O'Mahony, 2002) suggesting socially prescribed perfectionism is more strongly tied to BID than self-oriented perfectionism. Rather than striving to meet self-imposed excessive expectations, persons with BID appear predisposed to perceive unrealistic demands from, and harsh criticism by, others (see Bartsch, 2007). Persons high on socially prescribed perfectionism also report being preoccupied with and feeling pressured by socio-cultural ideals for physical appearance (Sherry, Hewitt, Lee-Baggeley, Flett, & Besser, 2004). The internalization and the pursuit of such hard-to-reach ideals may contribute to the BID experienced by persons high on socially prescribed perfectionism.

In contrast to the extant empirical literature on perfectionism and BID, which suggests BID is tied to a dispositional tendency to strive to achieve either self-imposed or externally based perfectionistic expectations (Bartsch, 2007), the present study indicates BID is accompanied by a strong need to avoid appearing imperfect to others. Despite suggestions that persons with BID are preoccupied with and perfectionistic about the way in which they present themselves to others (Sherry, Lee-Baggeley, et al., 2007), our study is the first (that we know of) to quantify the link between perfectionistic self-presentation and BID.

Our research also complements work suggesting persons high in BID appear concerned with concealing their perceived imperfections from others (Hewitt et al., 1995). We found support for our prediction that nondisplay of imperfection is uniquely tied to BID beyond trait perfectionism and other hypothesized contributors to BID. An inability to accept or to display minor physical imperfections may play a key role in BID. The aversion to imperfections, lack of self-acceptance, and concern over others' scrutiny typifying high nondisplay of imperfection may result in a strong desire to conceal minor physical imperfections from others. Our study thus joins research suggesting that psychological symptoms (e.g., BID) may be linked to self-presentational concerns and embedded in patterns of social relations (Schlenker & Leary, 1982).

Our findings may also shed light on the poor social functioning and the problems in treatment typical of persons with BID (e.g., Castle, Molton, Hoffman, Preston, & Phillips, 2004). Concealing perceived imperfections from others may contribute to social problems by reducing the open self-disclosure that is conducive to positive social bonds. High levels of nondisplay of imperfection in patients with BID may also undermine therapeutic relationships, with a reluctance to display or to disclose imperfections impeding the formation of an alliance. Finally, regression analyses involving our community sample (but not our university sample) indicated nondisclosure of imperfection may contribute to BID. This result was not expected, but fits with evidence suggesting persons with BID tend to be reticent (Ross & Wade, 2004).

In the present study, appearance schemas partially mediated the link between nondisplay of imperfection and BID in both samples, suggesting that appearance schemas may represent one pathway through which nondisplay of imperfection influences BID. These results suggest that persons high in nondisplay of

imperfection are heavily invested in their physical appearance, including a tendency to preferentially process appearance-related information (Cash & Labarge, 1996). Our mediational analyses also suggest schemas involving distorted appearance-related attitudes contribute to BID. Overall, our results point toward rigidly held and chronically activated dysfunctional appearance schemas as a key contributor to the link between nondisplay of imperfection and BID. Though appearance schemas were a substantial mediator in both samples, our results also suggest a pattern of multifactorial causation where the link between nondisplay of imperfection and BID is influenced by other (currently unknown) factors.

With culturally sanctioned beauty practices (e.g., wearing facial cosmetics) typically including a focus on concealing or eliminating bodily imperfections, North America may provide a cultural backdrop conducive to the mediational sequence observed in the present research. Persons high in nondisplay of imperfection may be especially receptive to family, peer, and media messages that emphasize the value and the importance of physical appearance and that result in the chronic activation of dysfunctional appearance schemas. Such attention to and overvaluation of appearance-related information may, in turn, provoke BID, especially amid a culture milieu where physical imperfections are seen as appearance flaws.

The present study also supports work suggesting the presence of reassurance seeking tendencies in persons with BID (Reas & Grilo, 2004). Although most work in this area focuses on seeking reassurance related to perceived physical flaws, in the current study a more general form of reassurance seeking was measured (Joiner & Metalsky, 2001). Our results showed a strong correlation between reassurance seeking and BID in both samples, suggesting that persons with BID tend to habitually and to excessively ask if others care about them.

Although nondisplay of imperfection and reassurance seeking are both interpersonally aversive behaviors, the former involves avoiding others, whereas the latter involves approaching others. The current study suggests persons with BID tend to engage in both of these behaviors. Others have also noted the co-occurrence of avoidance and approach behaviors in persons with BID (e.g., Latner, 2008). Such individuals may engage in avoidance behaviors (e.g., camouflaging imperfections) or approach behaviors (e.g., reassurance seeking) depending on situational factors. It is also possible that there is an underlying factor accounting for the seemingly paradoxical co-existence of avoidance and approach behaviors in persons with BID. Concealing flaws and seeking reassurance may both represent outward behavioral manifestation of a distressing inner sense of imperfection and inadequacy.

Finally, women in the present study reported higher levels of BID. This result was observed in both samples, even after controlling for other hypothesized contributors to BID. Although there remains much to learn about gender differences and similarities in BID, the present study thus suggests women may exhibit higher levels of BID (see also Bartsch, 2007).

Additional studies are needed to address shortcomings and to explore possibilities not dealt with in the current research. Our cross-sectional and correlational design fails to illuminate questions regarding causality. As mediation is optimally tested as a process that unfolds over time (Maxwell & Cole, 2007), longitudinal research is needed to clarify whether nondisplay of imperfection represents an antecedent, concomitant, or consequence of BID. In addition, although our central findings were observed in a community and a university sample, it is unclear if these findings extend to patients with more extreme levels of BID (e.g., individuals diagnosed with body dysmorphic disorder). Our relatively low response rate also introduces questions about the generalizability of our findings and the representativeness of our sample.

In future, alternative scales should also be used to establish that findings from the current study do not depend on a given scale. For example, appearance schemas might be measured with Cash, Melnyk, et al.'s (2004) Appearance Schemas Inventory-Revised, whereas BID might be measured with Cash, Phillips, Santos, Hrabosky's (2004) Body Image Disturbance Questionnaire. Studies involving measures of appearance-related reassurance seeking are also needed, as research suggests this form of reassurance seeking may be especially common among persons with BID (e.g., Reas & Grilo, 2004). In addition, the present study focused on public, external manifestations of perfectionism. Future research should also consider BID in relation to private, internal manifestations of perfectionism (e.g., automatic thoughts with perfectionistic themes; Flett, Hewitt, Blankstein, & Gray, 1998). Such self-critical cognitions may arise from or contribute to an internal aversion to perceived physical imperfections.

The current study nonetheless represents a key first step in understanding the relation between perfectionistic self-presentation and BID. Our results suggest (a) nondisplay of imperfection contributes incrementally to our knowledge of BID and (b) the link between nondisplay of imperfection and BID is partially mediated by dysfunctional appearance schemas.

References

- Bardone-Cone, A., Cass, K., & Ford, J. (2008). Examining body dissatisfaction in young men within a biopsychosocial framework. *Body Image*, 5, 183–194.
- Bardone-Cone, A., Joiner, T., Crosby, R., Crow, S., Klein, M., le Grange, D., et al. (2008). Examining a psychosocial interactive model of binge eating and vomiting in women with bulimia nervosa. *Behaviour Research and Therapy*, 46, 887–894.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Bartsch, D. (2007). Prevalence of body dysmorphic disorder symptoms and associated clinical features among Australian university students. *Clinical Psychologist*, 11, 16–23.
- Cash, T. F. (2002). Cognitive behavioral perspectives on body image. In T. F. Cash & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 38–46). New York: Guilford Press.
- Cash, T. F., & Labarge, A. S. (1996). Development of the Appearance Schemas Inventory: A new cognitive body-image assessment. *Cognitive Therapy and Research*, 20, 37–50.
- Cash, T. F., Melnyk, S. E., & Hrabosky, J. I. (2004). The assessment of body image investment: An extensive revision of the Appearance Schemas Inventory. *International Journal of Eating Disorders*, 35, 305–316.
- Cash, T. F., Phillips, K., Santos, M., & Hrabosky, J. (2004). Measuring 'negative body image': Validation of the Body Image Disturbance Questionnaire in a nonclinical population. *Body Image*, 1, 363–372.
- Cash, T. F., Thériault, J., & Annis, N. M. (2004). Body image in an interpersonal context: Adult attachment, fear of intimacy, and social anxiety. *Journal of Social & Clinical Psychology*, 23, 89–103.
- Castle, D., Molton, M., Hoffman, K., Preston, N., & Phillips, K. (2004). Correlates of dysmorphic concern in people seeking cosmetic enhancement. *Australian and New Zealand Journal of Psychiatry*, 38, 439–444.
- Flett, G., Hewitt, P., Blankstein, K., & Gray, L. (1998). Psychological distress and the frequency of perfectionistic thinking. *Journal of Personality and Social Psychology*, 75, 1363–1381.
- Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, 14, 449–468.
- Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). The development and validation of a multidimensional eating disorder inventory for anorexia and bulimia. *International Journal of Eating Disorders*, 1, 15–34.
- Haefel, G. J., Voelz, Z. R., & Joiner, T. E., Jr. (2007). Vulnerability to depressive symptoms: Clarifying the role of excessive reassurance seeking and perceived social support in an interpersonal model of depression. *Cognition & Emotion*, 21, 681–688.
- Hanstock, T. L., & O'Mahony, J. F. (2002). Perfectionism, acne and appearance concerns. *Personality and Individual Differences*, 32, 1317–1325.
- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts. *Journal of Personality and Social Psychology*, 60, 456–470.
- Hewitt, P. L., & Flett, G. L. (2004). *Multidimensional Perfectionism Scale: Technical manual*. Toronto, ON, Canada: Multi-Health Systems.
- Hewitt, P. L., Flett, G. L., & Ediger, E. (1995). Perfectionism traits and perfectionistic self-presentation in eating disorder attitudes, characteristics, and symptoms. *International Journal of Eating Disorders*, 18, 317–326.
- Hewitt, P. L., Flett, G. L., Sherry, S. B., Habke, M., Parkin, M., Lam, R. W., et al. (2003). The interpersonal expression of perfection: Perfectionistic self-presentation and psychological distress. *Journal of Personality and Social Psychology*, 84, 1303–1325.
- Joiner, T. E., Jr., & Metalsky, G. I. (2001). Excessive reassurance seeking: Delineating a risk factor involved in the development of depressive symptoms. *Psychological Science*, 12, 371–378.
- Labarge, A. S., Cash, T. F., & Brown, T. A. (1998). Use of a modified Stroop task to examine appearance-schematic information processing in college women. *Cognitive Therapy and Research*, 22, 179–190.
- Latner, J. D. (2008). Body checking and avoidance among behavioral weight-loss participants. *Body Image*, 5, 91–98.
- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods*, 12, 23–44.
- Mayville, S., Katz, R. C., Gipson, M. T., & Cabral, K. (1999). Assessing the prevalence of body dysmorphic disorder in an ethnically diverse group of adolescents. *Journal of Child and Family Studies*, 8, 357–362.
- Mayville, S. B., Williamson, D. A., White, M. A., Netemeyer, R. G., & Drab, D. L. (2002). Development of the muscle appearance satisfaction scale: A self-report measure for the assessment of muscle dysmorphia symptoms. *Assessment*, 9, 351–360.
- Penkal, J. L., & Kurdek, L. A. (2007). Gender and race differences in young adults' body dissatisfaction. *Personality and Individual Differences*, 43, 2270–2281.
- Reas, D., & Grilo, C. (2004). Cognitive-behavioral assessment of body image disturbances. *Journal of Psychiatric Practice*, 10, 314–322.
- Ricciardelli, L., & McCabe, M. (2004). A biopsychosocial model of disordered eating and the pursuit of muscularity in adolescent boys. *Psychological Bulletin*, 130, 179–205.
- Rosen, J. C., & Reiter, J. (1996). Development of the body dysmorphic disorder examination. *Behaviour Research and Therapy*, 34, 755–766.
- Ross, M., & Wade, T. (2004). Shape and weight concern and self-esteem as mediators of externalized self-perception, dietary restraint and uncontrolled eating. *European Eating Disorders Review*, 12, 129–136.
- Rudiger, J. A., Cash, T. F., Roehrig, M., & Thompson, J. K. (2007). Day-to-day body-image states: Prospective predictors of intra-individual level and variability. *Body Image*, 4, 1–9.
- Sarwer, D. B., Gibbons, L. M., & Crerand, C. E. (2004). Treating body dysmorphic disorder with cognitive-behavior therapy. *Psychiatric Annals*, 34, 934–941.
- Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin*, 92, 641–669.
- Sherry, S. B., Hewitt, P. L., Flett, G. L. (2008) [Psychometric data regarding the Body Image Rating Scale (Mayville, Katz, Gipson, & Cabral, 1999)]. Unpublished raw data.
- Sherry, S. B., Hewitt, P. L., Flett, G. L., Lee-Baggley, D. L., & Hall, P. A. (2007). Trait perfectionism and perfectionistic self-presentation in personality pathology. *Personality and Individual Differences*, 42, 477–490.
- Sherry, S. B., Hewitt, P. L., Lee-Baggley, D. L., Flett, G. L., & Besser, A. (2004). Perfectionism and thoughts about having cosmetic surgery performed. *Journal of Applied Biobehavioral Research*, 9, 244–257.
- Sherry, S. B., Lee-Baggley, D. L., Hewitt, P. L., & Flett, G. L. (2007). Perfectionism as a contraindication for cosmetic surgery. *European Journal of Plastic Surgery*, 29, 357–359.
- Slade, P., Dewey, M., Newton, T., Brodie, D., & Kiemle, G. (1990). Development and preliminary validation of the Body Satisfaction Scale (BSS). *Psychology and Health*, 4, 213–320.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In Leinhardt, S. (Ed.), *Sociological methodology*. 1982 (pp.290–312). Washington, DC: American Sociological Association.