

An Experimental Test of the Role of Appearance-Related Safety Behaviors in Body Dysmorphic Disorder, Social Anxiety, and Body Dissatisfaction

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Individuals with appearance concerns engage in “safety behaviors” (SBs) aimed at checking, hiding, fixing, and reducing threat associated with their perceived flaw in appearance. Appearance-related SBs are important in contemporary accounts of body dysmorphic disorder (BDD), though they are also relevant to social anxiety (SAD) and eating disorders. The present study examined the extent to which appearance-related SBs contribute to the development of disorder-specific symptoms and maladaptive cognitions. Female undergraduates without clinically elevated appearance concerns ($N = 99$) were randomly assigned to 1 week of (a) increasing the frequency and duration of appearance-related SBs (SB+), (b) decreasing these behaviors (SB–), or (c) a control in which they increased their academic studying behaviors. Generally, SB+ participants demonstrated greater BDD symptoms, SAD symptoms, body dissatisfaction, disorder-relevant threat interpretations, beliefs about the importance of appearance, and reactivity to an in vivo appearance-related task following the manipulation, relative to the other groups, with some exceptions. The SB– and control conditions largely did not differ from one another in these outcomes. SB+ participants also reported greater anxiety and depressive symptoms postmanipulation relative to other conditions. Groups no longer differed from one another at a follow-up assessment. Overall, these findings suggest that engagement in appearance-related SBs may play an instrumental role in symptoms and maladaptive cognitions across a range of disorders.

General Scientific Summary

Appearance-related safety behavior (mirror checking, camouflaging) is common in individuals with body dysmorphic disorder, social anxiety, and/or weight and shape concerns. This experimental study suggests that these behaviors may play a crucial role in the development and maintenance of symptoms and underlying cognitions across these conditions.

Keywords: safety behavior, body dysmorphic disorder, social anxiety, eating disorders

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Excessive concern about physical appearance, specifically a perceived flaw in appearance (most commonly, skin, hair, or facial features), is the defining feature of body dysmorphic disorder (BDD; American Psychiatric Association [APA], 2013). Individuals with BDD tend to endorse overvalued ideas about the impor-

tance and consequences of appearance when evaluating their identity, how others feel about them, and their value to society (Veale, 2002). Individuals with BDD use safety behaviors (SBs), or compulsive appearance-related rituals and social avoidance, to reduce perceived threat associated with appearance concerns (APA, 2013). Some of the most common SBs include mirror gazing, touching disliked body areas to check or inspect them, excessive grooming, seeking reassurance from others, comparing their features with others', researching potential solutions, and strategically camouflaging their perceived flaw with makeup or clothing (Veale & Riley, 2001).

Concerns about physical appearance also feature prominently in other disorders, as do associated appearance-related SBs, though the purpose and motivation behind these behaviors have nuanced phenomenological differences across disorders. For instance, body-image disturbance is one of the core features of eating disorders (EDs) such as anorexia nervosa and bulimia nervosa (APA, 2013). Individuals with EDs experience appearance-related perceptual and cognitive distortions anchored to overvaluation of weight and shape, and fear of being or becoming fat; distortions of

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this nature perpetuate maladaptive attitudes and behavior characteristic of EDs (Linardon et al., 2018). Individuals with EDs tend to engage in dysfunctional SBs such as body checking or fixing (e.g., inspecting body shape and size, pinching fat, measuring body parts, covering their body with oversized clothing or strategic body postures), reassurance seeking, excessive exercise, and behavioral avoidance (e.g., avoiding situations or clothing that would reveal their body). These SBs are performed in an attempt to manage distress associated with weight and shape concerns (Legenbauer et al., 2017).

Preoccupation with physical appearance is also common in social anxiety disorder (SAD) and is considered a core concern in the disorder (Moscovitch et al., 2013). Similar to BDD and EDs, these concerns are thought to drive problematic behavioral patterns, including social avoidance and SBs designed to conceal perceived self-attribute flaws (Moscovitch, Orr, Rowa, Reimer, & Antony, 2009). SBs anchored to physical appearance concerns in this population can include averting eye contact when interacting with others, applying makeup to conceal blushing, wearing clothing that hides body areas of concern (e.g., jacket to cover underarm sweat, scarf to cloak flushed neck and chest area), checking these body areas, or seeking reassurance from others about how they look or have conducted themselves. Appearance-related SBs in SAD are motivated by self-portrayal concerns and underlying fear of social judgment or public embarrassment (Moscovitch et al., 2013).

Generally, *safety behavior* refers to behavioral strategies (specific actions, objects, or avoidance) deemed necessary to detect, prevent, or minimize a feared outcome (Helbig-Lang & Petermann, 2010; Salkovskis, 1991). When faced with potential threat, the *judicious* use of SBs can be adaptive (e.g., wearing a seatbelt). However, *excessive* SBs can become problematic in the context of psychopathology and are commonly observed across anxiety and compulsive disorders (e.g., social anxiety, panic, health anxiety, obsessive-compulsive, and related disorders; APA, 2013). These types of behaviors typically offer short-term relief from anxiety or tension but may function to reinforce and perpetuate the target concern in the long term. SBs may be harmful in that they lead the individual to misattribute their safety to engagement in the behavior and undermine the individual's ability to cope with perceived threat without the use of safety strategies (Salkovskis, 1991). The attention required to assess the availability of safety aids and/or use SBs may divert attention away from evidence that could disconfirm threat beliefs (Powers, Smits, & Telch, 2004; Sloan & Telch, 2002). Engagement in certain SBs may also directly enhance the perception of threat by transmitting implicit danger signals (i.e., sensorimotor information communicated to the limbic system) that continue to activate alarm responses (Sloan & Telch, 2002).

Cognitive-behavioral treatments for anxiety and related disorders typically have patients fade out (remove and extinguish) their use of SBs. Exposure-based treatments in which patients are instructed to drop their use of SBs may be superior to exposure alone (Kim, 2005). An SB fading treatment (i.e., identification and assessment of false safety aids followed by planned reduction of these behaviors over the course of treatment sessions) was also found to be effective in reducing anxiety symptoms in a mixed-anxiety sample (i.e., panic disorder, SAD, and generalized anxiety disorder; Schmidt et al., 2012).

Recent studies have begun investigating the direct role of disorder-relevant SBs in the development of symptoms and maladaptive cognitions via experimental manipulations. For instance, Deacon and Maack (2008) had participants high and low in contamination fear spend 1 week engaging in a range of contamination-related SBs on a daily basis. Following the manipulation, all participants reported increased threat overestimation and contamination anxiety, regardless of initial contamination symptoms. As an extension of this work, Olatunji, Etzel, Tomarken, Ciesielski, and Deacon (2011) recruited an unselected sample and assigned participants to either an SB condition, in which they engaged in excessive health-related behaviors each day, or a behavior-monitoring control, in which they tracked their natural use of SBs. Following the instructional week and relative to the control group, individuals in the SB group endorsed greater levels of health-related anxiety, hypochondriacal beliefs, and behavioral avoidance of perceived contaminants. Further, van Uijen and Toffolo (2015) investigated whether checking behavior contributed to the development of OC symptoms. Participants were assigned to one of three conditions: purposefully increasing checking behaviors, monitoring their natural/typical use of checking behaviors, or a no-instruction control. Individuals assigned to increase checking reported greater checking-related threat overestimation relative to the other conditions. Of note, general anxiety and depression did not increase following the manipulation across any of these three studies, suggesting specificity of the effect of SBs.

Taken together, research suggests that engagement in SBs contributes to the development and exacerbation of disorder-specific cognitions and behavior. Use of experimental manipulations to assess this phenomenon moves beyond descriptive data offered by self-report questionnaires and allows for the testing of more specific hypotheses regarding the directionality of these relationships. Given that individuals with disordered appearance concerns (e.g., those with BDD, EDs, SAD) engage in frequent appearance-related SBs, it is possible that a similar mechanism underlies the phenomenology of these disorders. Further, it is possible that fading these behaviors yields a reduction in symptomatology. However, the specific effects of SBs on cognitions, symptoms, and behavioral indicators of appearance concerns remain untested.

Current Study

The current study sought to examine the influence of appearance-related SBs on symptoms and threat interpretations characteristic of individuals with body-image concerns. Female undergraduates without clinically elevated appearance concerns were recruited and randomly assigned to spend 1 week either (a) increasing the frequency and duration of appearance-related SBs (SB+), (b) decreasing out these behaviors (SB-), or (c) increasing their academic studying behaviors (control). Though our hypotheses were relevant to SAD and EDs, we were primarily interested in the effects of SBs on appearance concerns and thus used a pure measure of appearance concerns (BDD symptom measure) as our screener. We included only females in the current study as a preliminary test of the manipulation, given the greater relevance of certain SBs to women relative to men (e.g., makeup application). Generating a different checklist for men could have introduced unwanted variability in the study design. Women also have much higher rates of EDs than men (Striegel-Moore et al., 2009). We chose to utilize a nonclinical sample for ethical reasons

associated with increasing SBs over the course of a week; this was similar to study paradigms previously reviewed.

All participants were assessed at three time points: (a) prior to the manipulation (preassessment), (b) following the manipulation (postassessment), and (c) 1 week after the postassessment, when participants were instructed to return to their typical behavior (follow-up assessment). Following the manipulation and relative to the SB- and control conditions, we predicted that participants in the SB+ condition would evidence significantly greater severity of BDD symptoms, social anxiety, body dissatisfaction, negative appearance-related and social-evaluative threat interpretation biases, and reactivity to an in vivo appearance-related stressor. Likewise, we predicted the opposite pattern of findings (less-severe responses on each outcome) for the SB- condition relative to the SB+ and control conditions. Further, consistent with previous studies, we predicted that these effects would be present at postassessment and would persist at the 1-week follow-up. To examine specificity, measures of general threat-related interpretation bias, trait anxiety, and depressive symptoms were included; given findings from previous studies, we did not predict that the manipulation would affect these outcomes.

Method

Participants

Prior to enrolling participants, they were screened for eligibility via the 10-item self-report version of the Yale-Brown Obsessive Compulsive Scale modified for BDD (BDD-YBOCS-SR; adapted from Phillips et al., 1997). This measure was chosen for the screener, as it is a pure measure of appearance concern and captures degree of preoccupation, distress, and interference anchored to thoughts and behaviors anchored to appearance. Unpublished research from our lab examining BDD-YBOCS-SR scores in undergraduate women ($N = 233$) has indicated an average score of 11.17 (25th percentile score = 4; 75th percentile score = 16). Thus, in an effort to recruit individuals with some—but not clinically elevated—appearance concerns, participants who scored below 4 or above 16 on this measure were excluded. A total of 225 female undergraduates completed the screener (BDD-YBOCS-SR range = 1–31; $M = 15.56$, $SD = 5.34$; $\alpha = .86$), 116 of which did not qualify for participation. Of note, only six of these ineligible individuals did not qualify because they reported symptoms below the cutoff; the remaining were ineligible for reporting elevated symptoms. One hundred nine individuals reported symptoms within the recruitment window and were enrolled. However, 10 of these participants withdrew from the study, for reasons unknown, before completing all three assessment points (four SB+, five SB-, and one control). Groups did not significantly differ in dropout rates (Fisher's exact test comparing the SB- and control groups: $p = .20$); given the experimental design, only completer data were included in analyses. Power analyses using G*Power based on repeated measures multivariate ANOVA, within-between interaction, and a medium effect size ($f = 0.25$) with power set at .80 indicated that a total sample size of 98 participants would be necessary to detect effects (Faul, Erdfelder, Lang, & Buchner, 2007).

The final completer sample consisted of 99 female participants without clinically elevated BDD symptoms who were randomly

assigned via block randomization (block size = 3; <http://www.randomizer.org>) to either *increase* the frequency and duration of appearance-related SBs (SB+; $n = 33$), *decrease* appearance-related SBs (SB-; $n = 31$), or increase their academic studying behaviors (control; $n = 35$). This sample size is consistent with previous SB manipulation studies (Deacon & Maack, 2008; Olatunji et al., 2011; van Uijen & Toffolo, 2015). The sample ranged in age from 18 to 24 years ($M = 19.30$, $SD = 1.34$); 19.2% identified as Hispanic/Latino, 80.8% as non-Latino. The racial breakdown was 69.5% Caucasian, 20.4% African American, 8.1% Asian, 1.0% Native Hawaiian or other Pacific Islander, and 1.0% American Indian or Alaska Native. Groups did not significantly differ in age or ethnicity.

Procedural Overview

During the first visit to the lab (preassessment), individuals were screened for eligibility using the BDD-YBOCS-SR and the BDD module of the Structured Clinical Interview for DSM-5 (SCID-5; First, Williams, Karg, & Spitzer, 2015). Enrolled participants also completed a questionnaire battery assessing study measures of interest. Participants were block-randomized to condition (SB+, SB-, or control). All participants were introduced to a checklist containing behaviors corresponding to their condition; the two SB groups were shown a list of appearance-related SBs characteristic of individuals with BDD/appearance concerns, whereas the control group was shown a list of academic studying behaviors commonly used in college (see the [online supplemental materials](#) for checklists).

Participants in the SB+ and control conditions were told to engage in these behaviors *more* than their typical routine (i.e., more frequently or over longer periods of time; if they typically do not do a certain activity, they were asked to start doing it once each day) for 1 week. Those in the SB- condition were told to engage in the behaviors *less* than their typical routine (i.e., less frequently or over shorter periods of time each day). The checklist was reviewed together with each participant to ensure that they understood when and how they could engage in (or reduce) each behavior. Over the course of the manipulation week, participants received daily e-mail reminders providing a link to an online version of the checklist. Participants reported how much they engaged in each behavior during the past 24 hr.

The second visit (postassessment) took place 1 week after the preassessment. As a manipulation check, participants were asked to indicate the extent to which they followed the manipulation using a visual analogue scale (VAS) from 0 (*not at all*) to 100 (*totally*). All participants were then administered the postassessment questionnaire battery. To assess participants' reactivity to an appearance-related stressor, they completed the in vivo task in which their picture was taken from different angles (see description of In Vivo Task). Before being dismissed, all participants were instructed to return to their normal/typical behavior during the coming week and they were asked to no longer track their behaviors via checklists.

The third visit (follow-up assessment) took place 1 week after the postassessment. To determine the persistence of manipulation effects, participants completed the questionnaire battery and the in vivo task. Participants also completed an exit interview during which they were asked to provide a guess about the purpose of the

current experiment. Of note, no participants accurately guessed the purpose of the study, suggesting that study findings are not likely attributable to demand effects. Participants in the SB+ group were offered the option of participating in the SB- condition, although no participants chose to do this.

Self-Report Measures

Yale-Brown Obsessive Compulsive Scale modified for BDD-Self Report (BDD-YBOCS-SR; adapted from Phillips et al., 1997). The BDD-YBOCS assesses the presence and severity of BDD symptoms over the past week (e.g., preoccupation with perceived flaws, compulsions, interference and distress related to appearance-related thoughts and behaviors). Each item asks participants to consider their potential “appearance concern(s)” and rate severity on a 5-point Likert scale from 0 (*no symptomatology*) to 4 (*extreme symptomatology*). In the present study, this measure was modified for self-report by removing two items (insight and avoidance). The BDD-YBOCS is typically rated by a clinician and has demonstrated excellent interrater and test-retest reliability, sensitivity to change over time, and good convergent and discriminant validity (Phillips et al., 1997). In the present study, this measure was modified for self-report by removing two items (insight and avoidance); this is consistent with previous research (Summers, Matheny, & Cogle, 2017). The BDD-YBOCS-SR was administered at all three assessments ($\alpha = .58-.83$).¹

Social Phobia Inventory (SPIN; Connor et al., 2000). The SPIN is a 17-item measure of fear, avoidance, and distress anchored to social situations and scrutiny from others. This measure has been shown to have good test-retest reliability as well as convergent and discriminant validity (Connor et al., 2000). The SPIN was administered at all three assessments ($\alpha = .88-.89$).

Eating Disorder Inventory—Body Dissatisfaction subscale (EDI; Garner, Olmstead, & Polivy, 1983). The EDI is a measure of behavioral and psychological traits in EDs; higher scores are indicative of more serious pathology. The EDI is a well-validated questionnaire with good internal consistency and discriminant validity, as well as test-retest reliability, in both individuals with and without EDs (Thiel & Paul, 2006). Current study analyses only included the Body Dissatisfaction subscale ($\alpha = .84-.89$), as these items focus on disordered beliefs/thoughts about body weight and shape rather than behaviors (which would not likely be influenced by the manipulation). The EDI Body Dissatisfaction subscale was administered at all three assessment points.

Interpretations Questionnaire (IQ; Buhlmann et al., 2002). The IQ was administered as a measure of threatening interpretations of ambiguous scenarios. The IQ is a 33-item measure that assesses biased interpretations within three types of scenarios (BDD/appearance-relevant, social-relevant, and general). The general threat scenarios were included to test specificity of manipulation effects. Participants are shown a short description of an ambiguous scenario and are asked to imagine themselves in each scenario. This is followed by the question, “What thoughts occur to you?” Participants are then provided with three thoughts (interpretations) and are asked to indicate how likely it is that these thoughts would occur to them on a scale from 0 (*very unlikely*) to 4 (*very likely*). In each scenario, out of the three possible interpretations, one reflects a negative interpretation (e.g., “I am sure they are judging the way I look”). Endorsements of negative interpre-

tations are summed for each scale score. The IQ has shown good consistency and test-retest reliability (Buhlmann et al., 2002). The IQ was administered at all three assessment points (BDD, $\alpha = .88-.91$; social: $\alpha = .87-.91$; general: $\alpha = .76-.85$).

The Beliefs About Appearance Scale (BAAS; Spangler & Stice, 2001). The BAAS is a 20-item assessment of participants’ beliefs about the perceived consequences of appearance for interpersonal relationships, achievement, self-view, and feelings. Higher scores are indicative of greater beliefs about the importance of appearance. The BAAS has exhibited good construct, criterion, and test-retest reliability (Spangler & Stice, 2001). The BAAS was administered at all three assessment points (total score $\alpha = .91-.96$).

Appearance Behavior Checklist (author-constructed). The behaviors on the checklist (see [online supplemental materials](#)) were selected based on published research and case studies indicating the areas of concern and appearance-related behaviors most commonly reported in individuals with BDD (Phillips & Diaz, 1997). Participants in both the SB+ and the SB- groups completed this checklist daily, with reference to the past 24 hr, during the manipulation week. The checklist included the following types of appearance-related behaviors: mirror checking, excessive grooming (combing hair, washing face, picking skin), camouflaging (e.g., with makeup, clothing, hair, body positioning), reassurance seeking, comparing themselves with others, appearance-related research, and appearance-related avoidance. At each of the three assessment points ($\alpha = .85-.96$), all participants were administered this checklist and indicated the frequency of engagement in each behavior during the *past week* on a scale from 0 (*never*) to 10 (*all the time*).

Studying Behavior Checklist (author-constructed). The behaviors on the checklist reflect common studying techniques (e.g., write a to-do list, take notes in class, read textbook, make flash cards, quiz yourself; see [online supplemental materials](#)). Participants in the control condition completed this checklist daily, with reference to the past 24 hr, during the manipulation week. All participants were administered this checklist ($\alpha = .82-.89$) at the three assessment points and indicated frequency of past-week behavior on a scale from 0 (*never*) to 10 (*all the time*).

Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988). The BAI was used to examine effects of the manipulation on general anxiety. It assesses experiences of 21 common anxiety symptoms (e.g., nervousness, hands trembling, face flushed), with higher scores reflecting greater severity. The BAI was administered at all three assessments ($\alpha = .88-.91$).

Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a 20-item measure that assesses the frequency of depressive feelings and behaviors over the past week. The CES-D was administered at all three assessments ($\alpha = .86-.88$).

¹ Premanipulation BDD-YBOCS-SR scores showed a negative skew, likely as a result of the recruitment strategy. Research shows that skewness influences reliability (Greer, Dunlap, Hunter, & Berman, 2006), and this may account for the low internal consistency observed for the premanipulation score. The full sample screened ($N = 225$) showed a reliability of $\alpha = .86$ on this measure.

In Vivo Stressor (Picture) Task

The picture task has been used in previous research, and task ratings have shown moderate positive associations with BDD symptoms (Summers et al., 2017). The task was introduced to participants as follows: “Please pay attention to your emotions during this task. We will first take a picture of your entire body from the front, then a picture from the back, and finally a picture of your face from the shoulders up.” Participants rated their current *fear*, *urge to seek reassurance* about their appearance, *urge to check* their appearance, and *perceived threat*. Ratings were scaled from 0 (*none*) to 10 (*extreme*); the task was administered only at the postassessment and follow-up points.

Data Analyses

Chi-square tests (for categorical variables) and one-way ANOVAs (for continuous variables) were conducted to test for potential group differences at baseline. As a manipulation check, 3 (condition) \times 3 (assessment point) mixed model ANOVAs were conducted to examine whether groups differed in their frequency of engagement in appearance-related SBs and studying behaviors (past-week checklists responses). A priori hypotheses were tested via a series of mixed model ANOVAs examining the multivariate solution for repeated measures effects (for example, 3 [condition] \times 3 [assessment point] \times 3 [symptom measure]). In these analyses, conceptually related outcomes were clustered: symptoms (BDD-YBOCS-SR, SPIN, EDI Body Dissatisfaction), maladaptive cognitions (IQ threat subscales, BAAS), negative affect (BAI, CES-D), and picture task ratings (fear, urge to seek reassurance, urge to check, and perceived threat). Significant interactions were followed up with separate mixed model ANOVAs to examine whether interactions were present from pre- to postassessment as well as from preassessment to follow-up points. Interactions were then probed at the individual measure level via ANCOVAs, controlling corresponding premanipulation variables, to compare group means. Paired *t* tests were used to examine within-group change. In vivo task findings were followed up with one-way ANOVAs, as this task was not administered at baseline.

Results

Preliminary Analyses and Manipulation Checks

The data were screened for violations of assumptions prior to analysis. Premanipulation BDD-YBOCS-SR scores showed a moderate negative skew (*skewness* = $-.795$); this is likely an artifact of the recruitment strategy, as the majority of ineligible individuals reported symptom levels above the study cutoff. Rank-based inverse normal transformations significantly improved the skew of this variable (*skewness* = $-.101$); however, the pattern of findings did not change when the normalized variable was used in analyses (compared with raw scores). Thus, we chose to retain raw premanipulation BDD-YBOCS-SR scores in analyses. Other variables with non-normal distributions were successfully normalized via log transformations (BAI and CES-D scores), nuanced differences were observed between results using these normalized variables (compared with raw scores), and thus transformed variables were used in analyses of these measures. No outliers were identified. Table 1 shows descriptives of questionnaires at all assess-

ments by group (see the online supplemental materials for a table of zero-order correlations between study variables at baseline for all participants; supplemental Table 1). Chi-square tests and one-way ANOVAs revealed no baseline group differences in demographic or dependent variables, and they did not differ in their engagement in study-relevant behaviors prior to being introduced to the manipulation ($ps > .06$). Analyses of participants' self-reported compliance to their respective contracts during the manipulation (0 = *not at all*, 100 = *totally*) indicated no group differences ($ps > .52$). Group descriptives for compliance were a mean of 79.33 ($SD = 15.26$) for the SB+ condition, 80.48 ($SD = 15.44$) for the SB- condition, and 81.66 ($SD = 13.60$) for the control condition.²

To check that the manipulation was effective, analyses were conducted to examine participants' behaviors across assessment points as measured by the two behavior checklists (see the online supplemental materials for full analyses). Broadly, analyses suggested that participants followed the manipulation as intended. At the postmanipulation assessment, the SB+ group reported engaging in more appearance-related SBs than either the SB- or control groups ($ps < .001$), whereas the SB- reported engaging in fewer SBs than the control ($p < .001$). Further, the control group engaged in significantly more study behaviors at post than either the SB+ or the SB- groups ($ps < .005$), whereas the SB+ and SB- groups did not differ from one another in their studying behaviors ($p = .82$). Some group differences in appearance-related behaviors remained at the follow-up assessment, though groups no longer differed in their academic studying behavior at this assessment.

Primary Analyses: Effect of Manipulation on Symptoms

A 3 (condition) \times 3 (preassessment, postassessment, follow-up) \times 3 (symptoms) mixed model ANOVA was conducted, with BDD symptom severity (BDD-YBOCS-SR), social anxiety symptoms (SPIN), and weight- and shape-related body dissatisfaction (EDI Body Dissatisfaction) entered as conceptually related outcome variables. Analyses revealed a significant multivariate main effect of time, $F(2, 95) = 43.26$, $p < .001$, Wilk's $\Lambda = 0.52$, $\eta_p^2 = .48$, but not condition ($p = .20$); as hypothesized, a significant interaction between these variables was observed, $F(4, 190) = 7.72$, $p < .001$, Wilk's $\Lambda = 0.74$, $\eta_p^2 = .14$. A Symptom \times Time interaction was also observed, $F(4, 93) = 8.91$, $p < .001$, Wilk's $\Lambda = 0.72$, $\eta_p^2 = .28$, which indicates that level of change differed over time by symptom outcome. No interaction was observed between symptoms and condition ($p = .73$) or between symptoms, Condition, and time ($p = .07$).

A parallel 3 (condition) \times 2 (preassessment, postassessment) \times 3 (symptoms) mixed model ANOVA revealed the same pattern of findings, with significant Time \times Condition interaction, $F(2, 96) = 11.12$, $p < .001$, Wilk's $\Lambda = 0.81$, $\eta_p^2 = .19$. However, when examining symptom change from preassessment to follow-up, there was no longer a significant Time \times Condition interaction ($p = .29$). Collectively, these findings suggest that groups differed in their symptoms at the postmanipulation assessment but not after participants were told to return to their typical behavior (follow-

² The pattern of findings remained when accounting for participants' self-reported compliance ratings.

Table 1
Descriptive Statistics Between the SB+(N = 33), SB- (N = 31), and Control (N = 35) Groups

Variable	Premanipulation			Postmanipulation			1-week follow-up		
	SB+	SB-	Control	SB+	SB-	Control	SB+	SB-	Control
Checklists (weekly)									
Appearance SBs	70.27 (24.08)	74.26 (22.49)	73.40 (22.66)	104.91 (15.30)	36.16 (23.91)	62.80 (26.19)	64.27 (21.87)	46.47 (18.06)	62.20 (30.70)
Studying behaviors	69.30 (20.66)	73.45 (28.47)	70.31 (23.36)	81.67 (24.91)	83.10 (28.44)	96.29 (22.05)	79.48 (25.42)	79.81 (29.43)	88.63 (27.30)
Primary symptom outcomes									
BDD-YBOCS-SR	11.88 (3.30)	12.00 (3.31)	12.43 (2.91)	13.48 (4.74)	8.97 (4.35)	9.63 (4.61)	10.03 (4.04)	8.81 (4.42)	8.54 (4.78)
Social Phobia Inventory	22.21 (10.12)	21.32 (11.32)	18.49 (10.25)	21.18 (8.55)	16.00 (9.90)	15.57 (10.37)	15.12 (7.64)	14.35 (10.84)	14.17 (9.73)
EDI-Body dissatisfaction	28.45 (7.45)	30.65 (9.39)	27.63 (7.93)	29.30 (8.16)	27.03 (9.58)	25.40 (8.50)	27.85 (8.13)	26.84 (10.61)	25.77 (8.88)
Dysfunctional cognitions									
Interpretation questionnaire									
BDD scenarios	14.61 (8.21)	16.00 (5.51)	14.49 (6.88)	15.88 (7.97)	14.55 (6.41)	11.57 (6.25)	14.24 (7.78)	13.81 (7.17)	12.06 (7.20)
Social-evaluative scenarios	19.15 (7.62)	19.19 (7.19)	17.94 (7.49)	20.48 (8.02)	18.65 (8.05)	15.65 (6.92)	18.27 (7.76)	18.16 (7.64)	15.71 (7.67)
General-themed scenarios	20.27 (5.87)	20.97 (5.92)	20.31 (7.11)	20.33 (6.96)	20.35 (5.95)	17.77 (6.16)	18.70 (7.21)	19.61 (6.48)	17.57 (7.13)
Beliefs About Appearance Scale	25.91 (11.97)	27.65 (12.82)	25.46 (12.33)	32.12 (14.10)	20.19 (13.39)	20.46 (14.19)	24.91 (14.70)	21.39 (15.98)	18.91 (14.43)
General emotional distress									
Beck Anxiety Inventory	9.15 (6.42)	10.29 (8.23)	7.97 (5.61)	8.82 (6.90)	6.00 (7.44)	5.80 (4.99)	4.88 (5.50)	6.29 (7.80)	4.51 (4.55)
Center for Epidemiologic Studies Depression Scale	13.85 (6.58)	13.06 (7.54)	13.80 (8.48)	14.39 (7.37)	9.13 (6.93)	11.23 (8.04)	10.18 (6.96)	10.13 (8.75)	8.97 (6.07)

Note. Data are means, with standard deviations shown in parentheses. BDD = body dysmorphic disorder; SB = safety behavior; BDD-YBOCS-SR = Body Dysmorphic Disorder Yale-Brown Obsessive Compulsive Scale modified for self-report (first 10 items); EDI = Eating Disorder Inventory.

up). Follow-up analyses on specific outcomes were conducted next.

BDD symptoms. ANCOVAs examining postmanipulation BDD symptoms, controlling presymptoms, showed an effect of condition, $F(2, 95) = 17.05, p < .001, \eta_p^2 = .26$. Post hoc group comparisons indicated that the SB+ group reported more severe BDD symptoms relative to both the SB- and control groups ($ps < .001$), whereas the SB- and control groups did not differ in postmanipulation BDD symptoms ($p = .76$). Paired sample t tests showed a pre-to-post increase in BDD symptoms in the SB+ group, $t(32) = 2.66, p = .01, d = .39$, and a decrease in symptoms in both the SB-, $t(30) = -4.62, p < .001, d = .78$, and control, $t(34) = -4.53, p < .001, d = .73$, groups.

Social anxiety symptoms. ANCOVAs examining postmanipulation social anxiety symptoms, controlling presymptoms, showed an effect of condition, $F(2, 95) = 3.68, p = .03, \eta_p^2 = .07$. Post hoc group comparisons indicated that the SB+ group reported more severe social anxiety symptoms relative to the SB- ($p = .01$), although only a trend-level difference was observed between the SB+ and control groups ($p = .06$). The SB- and control groups did not differ ($p = .44$). Paired sample t tests showed no significant pre-to-post change in social anxiety symptoms in the SB+ ($p = .51$) or control ($p = .07$) participants but revealed a significant decrease in symptoms in the SB- group, $t(30) = -5.70, p < .001, d = .50$.

Weight and shape-related body dissatisfaction. ANCOVAs examining postmanipulation body dissatisfaction, controlling premanipulation body dissatisfaction, showed an effect of condition, $F(2, 95) = 9.84, p < .001, \eta_p^2 = .17$. Group comparisons indicated that the SB+ group reported greater body dissatisfaction compared with both the SB- and control ($ps < .002$), whereas the SB- and control did not differ in postmanipulation body dissatisfaction ($p = .24$). Paired sample t tests showed no significant pre-to-post change in body dissatisfaction in the SB+ participants ($p = .33$) but revealed a significant decrease in body dissatisfaction (increase in satisfaction) in both SB-, $t(30) = -5.43, p < .001, d = .38$, and control, $t(34) = -3.85, p < .001, d = .27$.

Effect of Manipulation on Maladaptive Cognitions

A 3 (condition) \times 3 (preassessment, postassessment, follow-up) \times 4 (cognitions) mixed model ANOVA was conducted, with the three threat interpretation bias scores (IQ subscales: BDD/Appearance, Social, General), and beliefs about the importance of appearance (BAAS) entered as conceptually related outcomes. Analyses revealed a significant multivariate main effect of time, $F(2, 95) = 12.92, p < .001, \text{Wilk's } \Lambda = 0.78, \eta_p^2 = .21$, but not condition ($p = .14$); however, there was a significant time by condition interaction, $F(4, 190) = 6.53, p < .001, \text{Wilk's } \Lambda = 0.77, \eta_p^2 = .12$. No Cognition \times Time interaction was present ($p = .12$), though there was a Cognitions \times Time \times Condition interaction, $F(12, 182) = 2.53, p = .004, \text{Wilk's } \Lambda = 0.74, \eta_p^2 = .14$.

A parallel 3 (condition) \times 2 (preassessment, postassessment) \times 4 (cognitions) mixed model ANOVA revealed the same pattern of findings, with a significant Time \times Condition interaction, $F(2, 96) = 11.89, p < .001, \text{Wilk's } \Lambda = 0.80, \eta_p^2 = .20$. However, there was no longer a significant Time \times Condition interaction when examining maladaptive cognitions from preassessment to follow-up ($p = .10$). These findings suggest that groups differed in their cognitions at the postmanipulation assessment but not after participants were told to return to their typical behavior (follow-up). Follow-up analyses on specific cognitive outcomes were conducted next.

BDD/appearance threat biases. Analyses examining postmanipulation BDD/appearance threat biases showed an effect of condition, $F(2, 95) = 7.11, p = .001, \eta_p^2 = .13$. Post hoc group comparisons indicated that the SB+ group reported greater BDD/appearance threat biases relative to both the SB- and control groups ($ps < .04$), whereas the SB- and control groups did not significantly differ ($p = .11$). Paired sample t tests showed no significant pre-to-post change in BDD/appearance threat biases in the SB+ ($p = .25$) or SB- ($p = .13$) conditions but revealed a significant decrease in threat biases in the control condition, $t(35) = -5.65, p < .001, d = .44$.

Social-evaluative threat biases. Similar to the BDD threat bias findings, analyses examining postmanipulation social-evaluative threat biases showed an effect of condition, $F(2, 95) = 4.99, p = .01, \eta_p^2 = .10$. Post hoc group comparisons indicated that the SB+ group reported greater social threat biases compared with the control group ($p < .01$) but not the SB- group ($p = .14$). SB- and control participants did not differ ($p = .11$). Paired sample t tests showed no significant pre-to-post change in social threat biases in the SB+ ($p = .15$) or SB- ($p = .60$) groups but showed a significant decrease in threat biases in the control $t(35) = -2.72, p = .01, d = .32$.

General threat biases. Contrary to predictions, postmanipulation general threat biases also showed an effect of condition, $F(2, 95) = 4.38, p < .05, \eta_p^2 = .08$. Post hoc group comparisons indicated that the SB+ group did not significantly differ from the SB- group in general threat biases ($p = .58$). However, both the SB+ and the SB- groups reported greater general threat biases relative to the control ($ps < .05$). Paired sample t tests showed no significant pre-to-post change in general threat biases in the SB+ ($p = .93$) or SB- ($p = .30$) participants but showed a significant decrease in threat biases in the control participants, $t(35) = -3.23, p = .003, d = .38$.

Beliefs about the importance of appearance. Analyses examining postmanipulation BAAS scores showed an effect of condition, $F(2, 95) = 15.26, p < .001, \eta_p^2 = .24$. Post hoc group comparisons indicated that the SB+ group endorsed greater beliefs about the importance of appearance relative to both the SB- and control groups ($ps < .001$), whereas the SB- and control groups did not differ ($p = .47$). Paired sample t tests showed a pre-to-post increase in importance of appearance beliefs in participants in the SB+ condition, $t(32) = 2.85, p = .008, d = .47$, and a decrease in beliefs in both the SB-, $t(30) = -3.98, p < .001, d = .57$, and control, $t(35) = -3.11, p = .004, d = .38$, condition participants.

Effect of Manipulation on Reactivity to In Vivo Appearance-Related Stressor

We tested whether the manipulation influenced reactivity ratings to the picture task via a 3 (condition) \times 2 (postassessment, follow-up) \times 4 (fear, urge to seek reassurance, urge to check, and perceived threat) mixed model ANOVA. Analyses revealed a significant multivariate main effect of time, $F(1, 96) = 29.02, p < .001, \text{Wilk's } \Lambda = 0.76, \eta_p^2 = .24$, but not condition ($p = .15$); however, there was a significant Time \times Condition interaction,

$F(2, 96) = 9.57, p < .001, \text{Wilk's } \Lambda = 0.83, \eta_p^2 = .17$. There was also an interaction between individual picture task items and time, $F(3, 94) = 7.72, p < .001, \text{Wilk's } \Lambda = 0.80, \eta_p^2 = .20$. No Item \times Condition ($p = .77$) or Item \times Time \times Condition ($p = .88$) interactions were observed. Descriptives and group comparisons are presented in Table 2. The SB+ condition participants reported greater fear and urge to seek reassurance compared with their SB- and control counterparts at the postmanipulation assessment (all $ps < .05$). The SB- and control groups did not differ in task ratings at postassessment ($ps > .55$) and no group differences remained at the follow-up assessment ($ps > .74$).

Effect of Manipulation on General Anxiety and Depression

A 3 (condition) \times 3 (preassessment, postassessment, follow-up) \times 2 (BAI, CES-D) mixed model ANOVA revealed a significant multivariate main effect of time, $F(2, 94) = 41.65, p < .001, \text{Wilk's } \Lambda = 0.53, \eta_p^2 = .47$, but not condition ($p = .41$). Contrary to predictions, a significant Time \times Condition interaction was observed, $F(4, 188) = 6.48, p < .001, \text{Wilk's } \Lambda = 0.77, \eta_p^2 = .12$. No interaction was observed between negative affect and condition ($p = .56$), negative affect and time ($p = .09$), or negative affect, condition, and time ($p = .80$), suggesting that effects across measurements did not significantly differ.

A parallel 3 (condition) \times 2 (preassessment, postassessment) \times 2 (BAI, CES-D) mixed model ANOVA indicated the same pattern of findings: a significant Time \times Condition interaction, $F(2, 95) = 7.65, p < .001, \text{Wilk's } \Lambda = 0.86, \eta_p^2 = .14$. There was no longer a significant Time \times Condition interaction when examining scores from preassessment to follow-up ($p = .83$). These findings suggest that groups differed in their reported negative affect at the postassessment but not after participants were told to return to their typical behavior (follow-up). Follow-up analyses on each outcome were conducted next.

Anxiety symptoms. Analyses examining postmanipulation BAI scores showed an effect of condition, $F(2, 95) = 6.28, p = .003, \eta_p^2 = .12$. Group comparisons indicated that the SB+ participants reported greater anxiety symptoms relative to both the SB- and control participants ($ps < .02$), whereas the SB- and control conditions did not differ in postsymptoms ($p = .24$). Paired sample t tests showed no significant pre-to-post change in anxiety in the SB+ participants ($p = .76$) but a significant decrease in anxiety in both the SB-,

Table 2
In Vivo Stressor (Picture) Task Descriptives and Group Comparisons

Picture task item	Postmanipulation				1-week follow-up			
	SB+	SB-	Control	Group comparisons	SB+	SB-	Control	Group comparisons
Fear	2.15 ^a (2.45)	.90 (1.54)	1.18 (1.85)	$F(2, 96) = 3.53, p = .03, \eta_p^2 = .07$.88 (1.34)	.73 (1.46)	.89 (1.51)	$F(2, 96) = .11, p = .90, \eta_p^2 = .00$
Urge to seek reassurance	3.06 ^a (3.20)	1.16 (2.00)	1.53 (2.09)	$F(2, 96) = 5.29, p = .01, \eta_p^2 = .10$	1.53 (2.26)	1.23 (1.87)	1.17 (1.89)	$F(2, 96) = .30, p = .74, \eta_p^2 = .01$
Urge to check appearance	4.61 (3.03)	2.84 (2.65)	3.68 (3.17)	$F(2, 96) = 2.85, p = .06, \eta_p^2 = .06$	2.41 (2.66)	2.27 (2.61)	2.37 (2.61)	$F(2, 96) = .02, p = .98, \eta_p^2 = .00$
Perceived threat	2.18 (2.54)	.94 (1.53)	1.29 (2.21)	$F(2, 96) = 2.88, p = .06, \eta_p^2 = .06$	1.00 (1.52)	1.20 (1.92)	1.06 (1.77)	$F(2, 96) = .11, p = .90, \eta_p^2 = .00$

Note. Data are means, with standard deviations shown in parentheses. Superscripts indicate group differences such that the SB+ reported significantly greater reactivity compared with SB- and controls. $p < .05$.

$t(30) = -5.32, p < .001, d = .55$, and control, $t(35) = -3.05, p = .004, d = .41$, participants.

Depression symptoms. Analyses examining postmanipulation CES-D scores showed an effect of condition, $F(2, 95) = 5.93, p = .004, \eta_p^2 = .11$. Group comparisons indicated that the SB+ group reported greater depression symptoms relative to both the SB- and control groups ($ps < .02$), whereas the SB- and control groups did not differ in postmanipulation symptoms ($p = .30$). Paired sample t tests showed no significant pre-to-post change in depressive symptoms in the SB+ ($p = .66$) or control ($p = .10$) participants but revealed a significant *decrease* in depression in the SB- participants, $t(30) = -3.77, p < .001, d = .55$.

Discussion

The current study sought to test the potential role of appearance-related SBs in the development and exacerbation of symptoms of disorders characterized by appearance concerns and associated maladaptive cognitions. Consistent with predictions, participants instructed to increase SBs (SB+) demonstrated significantly greater symptoms anchored to all three disorders (BDD, social anxiety, EDs) following the manipulation week compared with both the SB- and control participants. The SB+ group also evidenced a significant within-group increase in BDD symptoms only. Counter to predictions, the SB- and control condition participants did not differ from one another at the postmanipulation assessment, both largely showing within-group reductions in symptoms (within-group change in social anxiety symptoms for the control condition were at a trend level).

As an additional measure of appearance-concern symptoms, we assessed participants' reactivity to a novel in vivo stressor task designed to evoke appearance-related concerns (i.e., having their picture taken from different angles). Following the manipulation week, we found that the SB+ group reported higher fear and urge to seek reassurance relative to their SB- and control counterparts. Again, the SB- and control condition participants did not differ in their ratings.

With regard to maladaptive cognitions, SB+ participants endorsed greater belief about the importance of appearance and more threat interpretations of ambiguous appearance-related scenarios compared with those in the SB- and control conditions as well as more threat interpretations of social situations relative to controls. The SB- and control groups did not differ from one another on these outcomes. Similar to the BDD symptom findings, the SB+ group showed a significant pre-to-post increase in beliefs about the importance of appearance. The SB- and control groups showed a reduction in importance beliefs. No significant pre-to-post changes in interpretations were observed within the two SB groups, but the control evidenced decreases in threat biases. It is possible that the reduced threat interpretations observed in the control group are attributable to the effects of repeated assessment or passage of time; a waitlist control would have addressed this possibility. The maintenance of these biases in the SB- group may have been because of some potential negative effects of their manipulation (e.g., being reminded of appearance-related behaviors each day via the checklist).

To test specificity of manipulation effects, we also included measures of general threat biases (as measured by the IQ) and general anxiety and depressive symptoms. Counter to predictions,

analyses indicated that the manipulation did influence each of these outcomes. For general threat biases, the SB+ and SB- groups endorsed more threat interpretations of general ambiguous situations relative to the control; this difference seemed to be attributable to the control group evidencing a significant pre-to-post decrease in threat biases. With regard to trait anxiety and depressive symptoms, though the SB+ group did not evidence pre-to-post changes in either of these symptoms, the SB- group showed significant reductions in both anxiety and depression, and the control condition participants showed reductions in anxiety. These findings are noteworthy, as they suggest that potential harmful effects of appearance SBs (and beneficial effects of reducing those behaviors) may generalize even beyond appearance-related outcomes. Previous SB manipulations did not show effects of the manipulation beyond disorder-specific threat beliefs (Deacon & Maack, 2008; Olatunji et al., 2011; van Uijen & Toffolo, 2015). Had these other studies included an SB- condition, it is possible that they would have also observed symptom reductions in that group. Alternatively, perhaps appearance-related SBs have a more ubiquitous influence on psychopathology than previously thought. In the case of the current study findings, the SB+ group maintained their symptoms, whereas the other groups experienced reductions; thus, appearance-related SBs also contribute to co-occurring anxiety and depressive symptoms. This observed relationship between symptoms is consistent with the high comorbidity rates of depression and anxiety across these disorders.

Examinations of group differences at follow-up—after participants were told to return to their normal behavior—indicated that the three conditions no longer differed in study variables of interest, with the exception of the SB- group continuing to report fewer appearance-related SBs relative to their SB+ and control counterparts. From an ethical standpoint, this finding is positive, as it shows that the manipulation did not yield any lasting negative effects on our participants. However, these results differ somewhat from previous studies that showed continued elevations in disorder-specific fear and threat beliefs following increased engagement in disorder-specific SBs, even after participants were encouraged to return to their normal behavior (Deacon & Maack, 2008; Olatunji et al., 2011). Though the current study points to appearance-related SBs exacerbating certain disorder-related outcomes, and maintaining general anxiety and depression, these behaviors may need to be performed at increased levels for extended durations for longer-lasting problematic effects.

Many of the current study analyses indicated no differences between the SB- and the control conditions, which was contrary to our predictions. One possible explanation for this is that the SB- group may have experienced a floor effect due to our screening process, as the majority of participants deemed ineligible for enrollment reported symptoms above—rather than below—our study cutoff. It is possible that our sample was not symptomatic enough to show much improvement on BDD-related outcomes. For context, the mean symptom score of the SB- group at the postmanipulation assessment was 8.97, and a recent study showed an average score of 13.32 on the BDD-YBOCS-SR scores in an unselected student sample ($N = 88$; Summers, Matheny, Sarawgi, & Cogle, 2016). Thus, the SB- group may have had little room to demonstrate symptom reductions that surpassed the control. However, the observed reductions in trait anxiety and depression evidenced by the SB- group is interesting, as we did not directly

cap those symptoms via our recruitment strategy; they may have had more room to improve on those variables. Further, asking SB— participants to reduce their appearance behaviors—and track this daily—may have still required them to allocate their attentional resources to *not* engaging in the behaviors, whereas the control condition participants were not cued to think about these types of behaviors.

Another possible explanation for the lack of differences between the SB— and control conditions is that our control manipulation had unintended positive effects. Perhaps increasing studying behaviors served to increase participants' sense of self-efficacy, which indirectly led to general improvements. Studying behaviors may have also diverted control participants' resources (cognitive and time spent) away from negative appearance-related thoughts and behaviors, leading to certain reductions in BDD-relevant outcomes. Future extensions of this work might consider recruiting a high symptom sample and isolating the effect of the SB— condition compared with a control, as this approach would more directly test the potential effects of SB fading in clinical populations. Future work might also benefit from utilizing either a behavior-monitoring group, a no-instructions waitlist condition, or a more benign control activity that requires less time and is therefore less likely to distract participants from other daily activities. Though these other controls have idiosyncratic weaknesses, use of multiple control conditions could also allow the researcher to distinguish between condition-specific effects (e.g., effects of increased studying) and effects of behavior monitoring or repeated assessment.

Regarding possible theoretical explanations of the current study findings, it may be the case that appearance-related SBs increase selective attention toward perceived flaws in one's appearance along with potential personal or social consequences associated with not looking a certain way. Thus, it may be that the SB conditions involved both the manipulation of overt behavior and the cognitive/attentional resources necessary for the engagement in such behavior. It is also possible that the observed effects are artifacts of cognitive dissonance (e.g., "I am spending time on my appearance, so it must be important"). Indeed, the SB manipulation lead to within-group changes in participants' beliefs about the importance in the anticipated direction. Further, individuals who consistently engage in excessive or ritualistic appearance behaviors may not give themselves the opportunity to learn how to tolerate distress or uncertainty associated with their concerns independent of the behaviors. Finally, these behaviors may preclude disconfirmation of erroneous threat beliefs anchored to the importance of appearance and lead individuals to misattribute positive encounters, or the lack of negative encounters, to their engagement in appearance-related behaviors.

These findings also have theoretical implications for the cognitive model of BDD (Veale, 2004), as the direct influence of these SBs had not previously been experimentally tested. The current study represents an important contribution to the literature, as it provides novel empirical evidence for the direct role of appearance-related SBs in the development and exacerbation of BDD symptoms, disorder-relevant cognitions, and related sequelae. Our SB manipulation also led to group differences in social anxiety symptoms and body dissatisfaction anchored to weight and shape. Though preliminary, these transdiagnostic findings may have some immediate clinical utility, as symptoms of these three disorders often co-occur. For instance, clinicians might consider assessing

these behaviors more thoroughly in patients being treated for one or more of these conditions and have patients fade out their use of these SBs over the course of treatment. Further, monitoring of excessive appearance SBs may have prophylactic utility, as they could represent "warning signs" of budding pathology, particularly in adolescence, when these disorders begin to emerge.

The current study was limited in that we relied on a female student sample. This was done because the study is an initial investigation and appearance-related SBs differ somewhat between men and women (e.g., in individuals with BDD; Phillips, Menard, & Fay, 2006). Further, although our sample size was consistent with previous SB manipulation studies, and power analyses suggested our sample size was sufficient, we may have been underpowered for some of our analyses. Future research should examine the effect of increasing and reducing SBs in larger-scale, mixed-gender community samples, as appearance concerns affect people of all genders, ages, and educational and cultural backgrounds (Harris & Carr, 2001). Larger data sets could also offer more power and variance to test potential moderators of manipulation effects. Further, the majority of our data comes from self-report instruments, which measured participants' experience but may not have captured certain clinically relevant nuances in symptoms and cognitions that clinician-rated measures could assess. Future work could incorporate interviews alongside self-report and in vivo measurements for a richer understanding of changes in constructs of interest. It would also be interesting for future studies to include a matched-activity control that requires participants to reduce (as opposed to increase) certain behaviors not expected to influence appearance-related outcomes. Results of this kind of follow-up study could speak to the potential clinical utility of SB fading to augment traditional treatment approaches for BDD and other disorders characterized by appearance concerns such as SAD and EDs.

This study's strengths include a clinically representative and ecologically valid SB manipulation as well as multimodal assessment of appearance concerns (self-report and in vivo task). Further, it is, to our knowledge, the first SB manipulation to include an SB reduction (SB—) condition, in tandem with the increase (SB+) condition, to examine whether disorder-relevant outcomes can be influenced in either direction. This is also the first study of its kind to utilize a matched-activity control condition in which participants received equivalent instructions and experimenter contact between assessments.

Maladaptive appearance concerns are widespread in the general population (Harris & Carr, 2001), and extant literature suggests that research involving analogue samples offers rich and clinically relevant information about disorder phenomenology (Abramowitz et al., 2014). Thus, our findings may be pertinent to an even broader range of individuals than those considered in the scope of the current study. Continued research is needed to better understand the mechanisms underlying this phenomenon along with the relative contributions of individual SBs to disorder-specific symptomatology in both analogue and clinical samples, as it is possible that appearance-related SBs function differently in high-symptom populations. Further, given that engagement in appearance-related SBs is differentially motivated depending on the underlying pathology (e.g., mirror gazing in BDD due to perceived flaw, body checking in EDs due to overvaluation of weight and shape, averting eye contact in SAD due to fear of embarrassment), it is

important for future research to explore the etiological implications of these behaviors in each disorder. A deeper understanding of the role of these SBs in clinical populations could be achieved via clinical interviews in tandem with dispositional measures, treatment outcome studies, and/or ecological momentary assessment paradigms (EMA, i.e., meta data gathered via participants' personal smart devices such as smartphones).

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Call for Nominations for Journal Editor of *Translational Issues in Psychological Science*

APA's Publications and Communications (P&C) Board has opened nominations for the editorship of *Translational Issues in Psychological Science (TPS)* for the years 2021–2025. This new journal is co-sponsored by the American Psychological Association and the American Psychological Association of Graduate Students (APAGS). The journal's two missions are to publish timely critical reviews of psychological research that can be applied to broad aspects of life and to serve as a mentoring vehicle for advanced graduate students and early career psychologists to gain editing and reviewing experience. Please read details about the journal at <http://www.apa.org/pubs/journals/tps/index.aspx>.

Candidates should be members of APA and should be available to start receiving manuscripts in early 2020 to prepare for issues published in 2021. In addition, given the unique focus of the journal, candidates should:

- have received their doctorate in 2005 or earlier;
- hold a tenured position; and
- have *either* served as an Editor of an established journal (defined as 10 or more years of publication prior to candidate having started term as Editor) **OR** served as an Associate Editor of an American Psychological Association (APA) or APA Division Journal.

Please note that the P&C Board encourages participation by members of underrepresented groups in the publication process and would particularly welcome such nominees. Self-nominations are also encouraged.

Nominate candidates through APA's Editor Search website.

Prepared statements of one page or less in support of a nominee can also be submitted by email to Sarah Wiederkehr, Associate Publisher.

Deadline for accepting nominations is **January 7, 2019**, when reviews will begin.

The search committee is co-chaired by Stephen Rao, PhD, and Renee Cloutier, MS.